‘Small-scale farmer utilisation of diatomaceous earths during storage’, Project R8179: An institutional history

Exercise objective

CPHP has indicated that the objective of inviting project teams to draw up institutional histories of their project is:

‘To provide guidelines to coalitions teams about how to chart the institutional histories of their own project in order to as a way of learning lessons both improve project performance and to share lessons with others.’

That is (we understand) that each completed ‘institutional history’ case study will serve as an example and learning opportunity in its own right for a wider audience, while its very production may prove insightful to those engaged in the production process.

The ‘history’ we present is far from comprehensive; we were severely time constrained, and the proposed coalition ‘meeting’ was a luxury we could not fit in or afford. We have nonetheless tried to present a picture that is illustrative of some of the features of a process project, and which has and will continue to be a focus point for our own learning.

Methodology

The methodology adopted and the one recommended in the guidelines circulated by CPHP share some features in common. Individuals offered up responses to different sections of the ‘history’, which were subsequently edited and elaborated by the projects social and institutional specialist. The edited version was circulated, and further comments made and incorporated. The team would still hope to discuss together the present product.

Timeline: The project’s evolution

The current project was preceded by another CPHP DFID funded project (R7034) on ‘Grain storage management using inert dusts’ commissioned in 1998 ending in 2000. The project (R7034) was implemented in Zimbabwe and the major finding was that imported diatomaceous earths (DEs) Protect-It and Dryacide were highly effective against storage pests of maize, sorghum and cowpeas under small-scale tropical conditions in different agro-ecological zones. It was however realised that there was need to determine the efficacy of DEs in areas where the Larger Grain Borer (LGB), a notorious storage pest of maize, sorghum and dried cassava chips was endemic. The Tanzanian Ministry of Agriculture and Food Security Plant Health Services had been in contact with NRI researchers since 1999, about the DE work and were keen to trial DEs in Tanzania as an alternative to the registered synthetic chemical pesticide Actellic Super dust, which was reportedly causing lots of problems for farmers throughout the country, mainly emanating from adulteration and misuse. As LGB was endemic in Tanzania, trials would also offer an opportunity to field-test DEs against LGB in the field and to test DEs in wider geographical areas in Tanzania. Towards the end of project R7034, samples of Zimbabwean DE had been obtained and preliminary tests suggested they were promising as insecticides, hence the aspect of assessing African deposits of DEs was included in the proposal. A concept note was developed and submitted to CPHP on 20 December 2000. However due to a temporary shortage of funds, the CPHP asked the project leader to submit a proposal for a short (<£10,000) linked piece of work (details given in Table 1) to take place until further funds were available.

The current project (R8179) ‘Small-scale farmer utilisation of diatomaceous earths during storage’ to provide farmers with alternatives was officially launched on 11th June 2002 when the contract was received. Table 1 chronicles critical events which remain landmarks in the project’s evolution.

Table 1: Timing of critical events which remain landmarks in the evolution of project R8179

Date	Event and Venue	Comments
2000 Dec.	Submission of concept note on 'Small-scale farmer utilisation of diatomaceous earths during storage' to CPHP	
2001 Jul.	CPHP asked project leader to develop a small linked piece of work <£10,000 as they didn't currently have sufficient funds to fund proposal in CN, but were interested	This linked piece of work included: – Laboratory trials to determine whether DEs were effective against LGB and at what concentrations – Project memorandum development including a stakeholder workshop in Shinyanga – Extension to PhD students grant – Construction of storage structures in Tanzania and grain purchasing
2001 Aug.	1st draft of PM circulated for comments	
2001 Aug.	Stakeholders' Consultation Workshop[1], Shinyanga, Tanzania	A range of stakeholders were identified and participated in initial development of ideas for the project memorandum and mandate to do the work given
2001 Sep. -Nov.	Shared development of PM	Draft project memorandum circulated electronically to all team member and commented on by some team members
2001 Nov.	Project Memorandum submitted to CPHP	
2002 June 11	Project Contract Issued by CPHP backdated to April 1, 2002 and project officially launched, but for one year only to be reviewed in Jan/Feb 2003.	Delay in response could have affected timeliness of implementing planned post-harvest activities such as grain sourcing for the next storage season, but team had pre-empted this problem and included funds in the linked piece of works proposal they had.
2002 Jul.	Researcher-Managed-Trials commenced in Tanzania at the beginning of the 2002/03 storage season	Meetings with different stakeholders at different levels, including the communities, were held prior to setting up the trials. Five trial sites in 3 regions of Tanzania were identified based on agro-ecological diversity and high incidence of the Larger Grain Borer, a notorious maize storage pest. Village notice boards in local languages developed as information source for all Tanzanian trial sites
2002 Nov.	Meeting at Tengeru, Tanzania	Explicit recognition of process management issues and their effect on implementation and project outcomes raised for the first time. New ideas introduced to help manage process (e.g. agenda setting and prioritisation undertaken by all project team rather than top-down approach).
2002 Nov.	Grain Storage Stakeholders Workshop, IPM Project Compound, Shinyanga, Tanzania	Stakeholders were updated on project developments. They were also eager to know what had transpired since the last stakeholders meeting in 2001.
2003 Jan.	Expected mid term of review of project delayed, a further six month contract issued	
2003 Feb.	Issue 1 of project newsletter (Oct-Dec 2002) circulated electronically	
2003 Mar.	Project website launched	Widened access to project information
2003 Apr.	Tropical Products Research Institute (TPRI) joined the research team	A bonus for project as TPRI is the pesticide registration authority in Tanzania and envisaged would expedite the process of DE registration in Tanzania.
2003 May	Partnership poster paper for GFAR 2003, Dakar, Senegal	The concept of multi-layer partnership in the project was born.
2003 Aug.	Mid-term Project review, Shinyanga, Tanzania.	Review 'unreservedly' recommended continuation of project, but spoke about a 'new phase', in which "the former emphasis on good science would now require complimenting with equal emphasis on social and institutional aspects relating to the mainline role of farmers in the project and to greater engagement of the private sector". Livelihood concepts and approaches were first introduced to the team, as an alternative to technology, crop or pest based approaches; and a tool developed for assessing the relevance and utility of different farmer identity types.

[1] There were 17 workshop participants from 11 different institutions (CARE Magu District Livelihood Security Project, World Vision Tanzania, Oxfam, Plant Health Services of the Ministry of Agriculture and Food Security, GTZ-IPM project Shinyanga, Kahama and Shinyanga Agricultural Extension Services, Catholic Diocese of Shinyanga Agricultural and Rural Development Programme, Shinyanga Regional Agricultural Advisers Office, farmer input marketing group collaborating with CARE, NRI)

		'Farmer diversity' is recognised as an issue and a change of thrust to mainline farmers was initiated.
2003 Oct.	Participatory Monitoring and Evaluation Workshop, Babati, Tanzania	PM&E of project processes was formally explored for the first time. Constraints to and gaps in the communication processes between different players and between different levels were identified, solutions proposed, and indicators identified. Preceding this workshop an extended team (plus staff from PHMS, less PL) reflected on the different roles & levels of participation of farmers in the project to date, and what 'farmer participatory approaches' (FPA) might involve. Together the team significantly revised output 3, and developed a participatory enquiry tool[2] for exploring the factors behind farmer decision-making, together with a framework for analysis.
2003 Aug. – Oct.	Researcher-Managed-Trials (RMTs) initiated at IAE, Zimbabwe, focussing on local DEs (2003/04 storage season). Farmer-Managed-Trials set up in Zimbabwe and Tanzania	The RMTs were expanded to two other Districts in the 2004/05 storage season after holding meetings at different levels, with relevant stakeholders. The site selection took into consideration agro-ecological, crop and insect pest diversities.
2003 Aug. – May 2004	Design, development & testing of farmer 'enquiry' tool at 2 study sites in Tanzania, and data entry, by local staff, with support from projects' social /institutional specialist.	
2004 Jun.	Participatory Planning Meeting, Dar es Salaam, Tanzania	The workshop, designed and facilitated by in-house players, was the first participatory planning exercise undertaken by the team as a whole. Recording and report writing was taken over by local team members – a first. A presentation of the FPAs work proved to be contentious, albeit it was agreed that the work must remain a priority. A proposal to develop a common approach to the FMTs in Tanzania and Zimbabwe was moved. The issue of providing incentives to project team members was raised.
2004 Sep.	Field Staff Workshop, Buhera District, Zimbabwe	The social/institutional specialist visited Zimbabwe for the 1st time to share and develop thinking on farmer diversity and farmer PH decision-making, and on standardising the FMT work.

[2] The social science component was new to most participants and proved difficult to comprehend and implement especially considering that none had any previous formal training in this field except the Social/Institutional specialist.

Partner inventory and roles[3]

Who were the project coalition partners and what were their roles?

Have these roles changed during the course of the project and why?

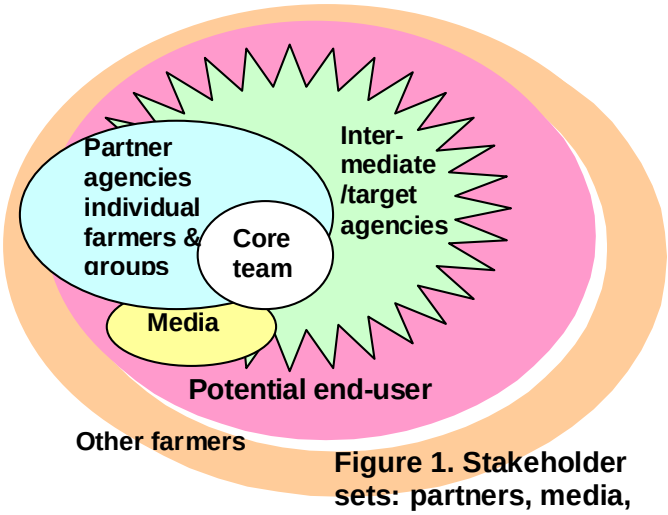

Figure 1. Stakeholder sets: partners, media, intermediate & end-users

The core team (see Figure 1) - a concept which is not itself without definitional problems, and which continues to be subject to change (see Table 2) - is characterised by various features. These include: its overwhelmingly 'scientific/technical' composition – only one social scientist; its North-South split; the predominance of public sector service providers, and in Tanzania no representation from (mainline) public sector research; technical staff, from all levels within the sector (i.e. national, zonal, regional, district/municipal, and village), being asked to put into practice new approaches and skills associated with social science; two study countries, but greater core team focus on Tanzania. Finally, all of us are part-time workers on this project, which will have inevitably given rise to measures of anxiety and frustration as we try to 'squeeze quarts into pint pots'.

Table 2: The original project partners, their roles and changes

	Initial coalition members	Changes	Current coalition member
UK	Tanya Stathers, NRI, UK Scientist and project leader		Same
	Mike Morris Institutional and social development specialist		Same: increased involvement in later stages
Tanzania	Victoria Kisamfu & Deusdedith Mathias Plant Health Services Division, MAFS, Tanzania. Technical staff with great in-country knowledge	Victoria Kisamfu stepped in as in country coordinator when Mr Riwa moved to be the acting private secretary to the Minister, however she then departed for a 3 year degree in Ireland 2002. Mr Mathias was involved in developing the project memorandum and then got promoted to national coordinator for the Post-Harvest Management Services in August 2002, but has stayed in touch though not heavily involved in the project. He has now started a 3yr degree at SUA. Rachel Mosha joined took over Mathias project responsibilities in Nov 2002, from her base at the Port Customs & Quarantine Inspection office. Mr Riwa who had been involved in the concept note but then temporarily changed roles, returned to PHS and took over from Mr Matthias at the start of the project. Mr Kitandu has been involved in the project since August 2001 during the development of the proposal and manages the Shinyanga-based activities. Mr Mngara has been involved in the project since August 2002 and manages the Babati-based activities.	William Riwa (in-country project coordinator) Rachel Mosha, Lazaro Kitandu, Kihedu Mngara Plant Health Services MAFS, Tanzania
		Adella Moshy, Head of Post-Harvest Management Services, Tz, has been intermittently involved with coalition – presently not available due to ill-health	

[3] In considering roles coalition members play it might be useful to ask participants if they see themselves as predominantly "users of knowledge" or "suppliers of new knowledge", or whether they perform some "intermediary function" helping suppliers and users of knowledge to understand each other to bring other inputs to the innovation process. Clearly all members of the coalition are suppliers of knowledge in some sense, but what is meant here is the suppliers of formal knowledge (often described as "codified" knowledge, that is written down in manuals or advisory notes). This is distinguished from knowledge based on their experience (often known as tacit knowledge).

		Inclusion of Dr Kaoneka for both tactical (adds to scientific base) and strategic (key player in registration processes)	Dr Kaoneka Tropical Pesticides Research Institute, MAFS. Scientific inputs and advisor re 'registration in Tanzania
Zimbabwe	Brighton Mvumi Department of Soil Science and Agricultural Engineering, University of Zimbabwe. Scientist and in-country coordinator		Same
	Jonas Chigariro Post Harvest Technology, Institute of Agricultural Engineering, Zimbabwe.	Departed for Namibia; there was no replacement for a long time and then Mr. Rodwell Kashoti was assigned to work on the project and was involved in setting up the 2003/04 trials at IAE; In 2004, re-structuring brought in Mr. Tirivangani Koza as acting head of Postharvest Management of Produce at IAE but was later moved to head another branch after participating in setting up RMTs at IAE and FMTs in Buhera.	Sipho Sibanda now acting head of Postharvest Management of Produce at IAE since mid2004 though not yet directly involved in the project
	Maurice Mudiwa Department of Agritex, Zimbabwe.	Left to work for FAO emergency food distribution programme in Zimbabwe	
	David Zinyengere Managing Director, EcoMark Limited Zimbabwe	Now works for EcoMark Ltd on a consultancy basis	Lewis Muhwati (Export Business Manager) took over responsibilities of grain protectants issues
Other	Zlatko Korunic Diatom Research and Consulting Canada	Dr Korunic was involved in the initial laboratory screening of the African DEs as this is his area of expertise.	

Have some partners become more or less important since funding for the project was approved? If so, why? Have new partners been added or dropped, if so, why was this and how did it happen?

Individual's 'profiles' have changed as the project has unfolded for a variety of reasons, some project related (e.g. switch of output focus) others for personal reasons (e.g. promotion, health, study leave, maternity leave). Re changes in the importance of partners: for 'core' partners (i.e. those who were always recognised as being key to the project realising its purpose) it is perhaps the development of understanding amongst team members of the 'importance' of these partners that has changed. Working together has built individual bonds, but also a more realistic awareness of the organisations with whom others work. New partners however, have been selected both for their tactical contributions and their strategic potential. Aside from joining itself, the strategic component clearly suggest an increase in importance of that partner, for example the inclusion of the TPRI in the coalition is an acknowledgement of the importance of the TPRI to the realisation of project purpose, and specifically the registration of DEs in Tanzania.

Was there a champion organization or individual in the project who promoted the idea of the project and saw to it was implemented? If so what is there to learn about the role they played?

The idea of the project was very much due to the visions of Tanya Stathers, Pete Golob and Brighton Mvumi who were involved in the earlier project and who were stimulated to develop it further by William Riwa, Tanzania who contacted them about the opportunity of testing DEs in Tanzania. Moreover it was very much Tanya's drive, as a full time researcher, with support from William, and later others, that led to the project's implementation. The 'project' needed these disproportional inputs from different individuals and quarters to get it going. Whether changes in these roles over time, as the project develops its own momentum, is problematic remains to be seen.

Who were the main stakeholders that were formal members of the coalition?

In Tanzania the following target institutions were or are coalition members, but not necessarily part of the core team:

- Plant Health Services, Ministry of Agriculture
- Min of Agriculture, Extension Department (several regions)
- Tropical Pesticide Research Institute
- Frontline extension staff of Regional and Local Government ministry
- Various NGOs have also played varying roles (e.g. OXFAM, FARM AFRICA)
- Various farmers (e.g. contracted farmers; farmer managed trials (FMT)/enquiry farmers)

In Zimbabwe, the following target institutions were or are coalition members, but not necessarily part of the core team:

- Department of Soil Science and Agricultural Engineering, University of Zimbabwe – public sector research organisation.
- AREX, National agricultural research and extension provider, and its frontline staff.
- Institute of Agricultural Engineering, Department of Agricultural Engineering Services, agricultural engineering research and extension service provider
- NGOs and community organisations (e.g. KMTC - Binga, Agricultural Training Centre)
- Various farmers (e.g. contracted farmers; FMT/enquiry farmers)

The institutional arrangements in the coalition

How was and is the project managed as a coalition.

Communications: The project has different levels of core teams to whom all documents and project issues are circulated and discussed either electronically, or physically if there is the opportunity to be together, or by mobile phone. Because so much of the communication happens electronically this automatically excludes those team members without email access, however progress has been made over the last two years by bring two more of the team members online, and by supporting (with an internet cafe budget) those who previously could not always access email when they wanted to.

As management decisions differ, e.g. some must involve the whole team, others such as arranging a trial site visit or planning a sampling date need only involve a few of the team members, so it is difficult to generalize, but where possible issues are raised electronically by one of the team members and others are free to contribute their thoughts. The ensuing decision-making by management is generally informed by the interests and views of the wider team.

Management by objectives: The project is contracted to deliver against the output objectives in the project logframe. This responsibility resides both legally and effectively with the project leader, who in effect acts as the project manager, with sub-managers at the national level. Generally team members are identified as having specific responsibilities for the given activity sets associated with particular outputs. In the case of output 1 for example, which is essentially 'technical' in nature, roles and responsibilities were clearly specified (with room for individuals to take on wider responsibilities), and management has generally been by delegation. Information necessary for the analysis is then fed back to the scientists. Some discussion and changes in these arrangements are always possible, and flexibility and some functional 'redundancy' is essential for completing tasks according to plan.

Experience and exposure have perhaps pointed up some of the limitations of the original activities associated with output 3, establishing DE user acceptability, to a lesser extent outputs 4 and 5, dissemination and promotion respectively, and output 6, PM&E, and changes have been made to the logframe. These outputs have invited more of a process approach – action and reflection, learning by doing, participatory derived performance indicators – which has necessitated a different management style.

Who wrote and developed the proposal and the budget?

The proposal was developed collaboratively by many of the current project team members. However the main insights for the proposal and the drive to seek funds stemmed from Tanya Stathers, the future project leader, and William Riwa, the future Tanzanian national coordinator, both of whom saw the potential importance of DEs and had professional interests in pursuing this 'vision'. Draft versions of the proposal were circulated by the 'project leader', and a workshop was held in Shinyanga Tanzania at which a number of the stakeholders thought most likely to be interested in on-farm grain storage options were invited. The next draft of the proposal was developed there and the first draft of the budget, this was then circulated electronically to the incipient team who were asked to go through it in detail and suggest ways to improve it and to suggest the inclusion of additional team members with different skills than those already detailed in the proposal (e.g. the NRI social/ institutional specialist was asked about a Tanzanian 'counterpart'; Tanzanian team were asked to identify a potential local social scientist, and to find out which NGOs were active in the trial site areas).

Due to all the time between the end of the Zimbabwe project R7034 and the start of this one, and the fact CPHP said they wanted to support this DE work further but did not have funds until the following year, they gave us a years worth of funds, to cover the cost of running lab trials at NRI to learn about DEs and LGB control, to support Brighton Mvumi to complete his PhD, to support the running of the Shinyanga project proposal development workshop, the preparation of the field sites for the first years activities (because of the clash of the CPHP calendar with the Tanzanian post harvest calendar (e.g. vihenge and storage platform construction, grain purchasing, travel to and from field sites by Tanzanian staff)), and for some commissioned time inputs for Tanya Stathers and Mike Morris to develop the proposal. Final developments

and submission of the proposal were largely undertaken by the 'project leader', as the deadline for submission unfortunately coincided with very busy periods for the other partners.

How are decisions made about project activities, approaches and resource allocation?

Resource allocations have generally been determined by the original budget. In-country resource decisions are made by the national coordinators, who in Tanzania act as a line manager, and in Zimbabwe where there is no equivalent team, organises and oversees all arrangements; both are accountable to the project leader. There have been no significant renegotiations of the original budget. Plans for the third year activities were developed through discussion by the project team at a planning workshop, which included some detailing of resources needed.

How are conflicts resolved?

Conflicts and/or differences in opinion have occurred and continue to pose challenges especially on the integration of the natural and social science aspects. As the focus of attention moves away from 'good science' towards addressing the all important institutional issues (e.g. the limitations of delivery systems, commercial sector and farmer decision-making) for example, 'weaknesses' in the team's capabilities and in the participating organisations' approaches, become apparent; and the chances of stepping on the toes of others' disciplines and professionalism, increases. At the personal level it is useful to keep the communication going and to provide time to let members cool down and for 'advice' to take effect, before deciding how to take the situation forward. Organisationally, 'strategic' planning and in particular the recent CPHP call offer ways to move forward on some of these issues, that give space to individuals who otherwise may feel cornered by their own organisations short-comings and the project's momentum for identifying institutional constraints.

Training and skills development, developing new approaches to familiar problems have also allowed individuals and organisations to move forward where otherwise there may have been conflict. *There is not one view point on this issue, although further discussion substantiated with solid examples may reveal that the view points are not so different, however during this institutional history documenting exercise we have not yet had an opportunity to do this.*

How are the lessons from the coalition learned? For instance, how do coalitions learn about their successes, failures and progress? Has this changed by being part of the coalition? How is information shared within the coalition? How are results evaluated?

Individual team members will all naturally be learning in different ways and then utilizing this knowledge in future activities that the team are involved in, it is not always recorded formally (there is not an excess of time for this to happen, and this does take a lot of time). In team meetings, issues are raised either verbally or by using brainstorming sessions; these are then read out, grouped and then addressed by the team until a solution is reached that seems workable. Records are kept of some of these meetings, photographic records of the brainstorming post-its exist, and in some case these issues have been revisited after several months or a year to see how well the proposed solution is actually working and whether further suggestions are needed and what new issues have arisen.

Several largely unfamiliar concepts have been translated into project processes and activities, which most team members have grappled with and are still. Generally the activities undergo a cycle (e.g. pre-testing, dry runs, repeated iterations), are reviewed and discussed at team meetings, and the whole process results in individuals developing a better understanding of how the 'activities' relate to the concept, and the concept is linked to a project level objective. Many such concepts / approaches / ideas (e.g. brainstorming, levels of participation, PM&E, sustainable livelihoods, farmer participatory approaches, institutions, indicators) were introduced to develop thinking around the non-scientific outputs (3, 4, 5 & 6). Several briefing papers on different themes have been written by the projects social/institutional specialist (although these have been difficult to comprehend). The themes have then been further shared and elaborated during team meetings (initially only squeezed in with the more rigid scientific timetabling), and familiarity with the idea developed. Approach and tool development has then been done in part classroom mode, through participatory group work, role play and pre-testing. Ultimately 'learning by doing' has been a key channel for project learning; but if individuals do not subscribe to the rationale of a given approach, then this can misfire. Mostly the available time for these particular activities has been relatively short, and their value and the team's achievements are still questioned by members of the team. *There is disagreement about this, and the team do not hold a common opinion about it.*

The results of the researcher managed trials (output 1) are evaluated in several ways by different groups of stakeholders, they are evaluated continuously by those hosting the trials in their own homes by listening or observing grain damage occurring in the different treatments and by showing the trial to visitors and neighbours, each time samples are taken (every 8 -10 weeks during the storage season) by those taking the samples and those hosting the trials, they are also evaluated during the laboratory assessment of the samples by those involved in counting insect and grain damage, they are also circulated as graphs at least

twice a season to the core team members and bwana shambas and village officials at the trial sites, at the end of the storage season (40 weeks storage) field days are held at which different wealth and gender groups of farmers at the trial sites have assessed the quality of the grains stored using the different treatments and used their own criteria to evaluate the treatments as grain protectants.

Provide examples which illustrate the" learning by doing" approach:

Several individuals have been trained in various scientific/technical skills associated with the sampling and analysis of the stored grain, and 'learning by doing' has been a key means of instruction.

The switch from a more typical top-down project management style (as wider project ownership developed) necessitated team members to express their concerns 'in public' through brainstorming sessions etc. For some employees this was also very different from the line management system that exists within their own organisations. The benefits of engaging everyone in say, problem identification and problem solving, were soon apparent – more real issues identified and more realistic solutions. Also individual concerns that previously unspoken may have led to increasing frustration, were in most cases discharged.

Development of the 'enquiry' tool and inclusion of the 'livelihoods section involved 'learning by doing', and significant skill development by individuals. Selection of farmer types for the first year FMT, and the development of the initial set of questions, were very much team 'learning by doing'. Significant changes were made over an extended time, as limitations became apparent and better ways were found.

Are there coalition members that now work well together who did not do so before the coalition was formed?

Various working partnerships have emerged that did not exist before, both across different levels, between different organisations, and between different disciplines. The project has facilitated the Tanzanian MAFS to deploy its staff and a strong team spirit has evolved through working together on something project team members find interesting and promising within their field of business.

What constraints have coalition members identified that needed to be removed if the project's outcomes were to be achieved – which of these constraints has it been possible to remove, and which have not been removed?

Internally communication constraints have been particularly key, e.g. bringing more team members on board through email usage and a communications budget makes them feel more involved in the project, although there are also complaints of being then bombarded by too much information. There are problems of language usage, too much jargon and use of complicated phrases when a simpler one would do, these issues have been highlighted but considerable progress still needs to be made, we have seen and heard that the use of too complicated or unfamiliar words has meant some team members don't want to read those messages and then their participation is reduced.

Institutional constraints associated with service delivery processes and with the registration processes are central stumbling blocks to progress. Some of these constraints will be too embedded in the system for a project like this to address (e.g. capacity related constraints; incentives and motivation of civil service staff), however some capacity building has been attempted with varying degrees of success (e.g. skills training at the individual level; introduction of new approaches at the operation level; development of partnerships at the organisational level)

How have partners had to change the way they work to be part of a coalition, what are the positive and negative outcomes of this?

I think the positive outcome of most of the team being involved in many of the decisions etc is the level of ownership and also of pride people feel about being part of the DE work (perhaps misplaced pride but still it must be positive that we feel good about our work). However participation is hugely expensive in terms of time and resources and donors are often unwilling to recognize that when budgets are submitted. Being asked to fill this document in, is another example of this, no resources were given (where is the project supposed to fund this previously unmentioned and therefore unplanned or budgeted for activity from).

Embracing inter-disciplinarity can be a painful process. People from different backgrounds have widely different opinions on how and why things should be done, and re-establishing a mutually suitable starting point from which to negotiate the way forward, will always seem like a retrograde step to those used to working to clearer mandates and protocols. Ultimately, as with 'participation', it should lead to better problem identification, better solutions and less down-time associated with the objections that non-participatory approaches give rise to. Uniting the scientific and social agendas in this project - the first clear and familiar to some from the beginning, the second very unfamiliar to most and having undergone considerable change over time – has been taxing. It is relatively easier to quantify resources – time and funds – for a known methodology than for the unknown or still to be developed methodology. With fixed resources, in operationalising the social agenda, it has inevitably been perceived as if resources for the science component (e.g. time), were being unfairly poached. *There are different opinions on this, others feel it is a*

shame 'more demand and use' of the projects resources for operationalising the social agenda hasn't been made and 'planned for' as the project has developed. However, it must be remembered that the PM was originally not conceived with a social agenda thrust back in 2000 but the thinking has now changed, even in CPHP itself so the transition cannot happen overnight – it is a process where mindsets need adjustment time.

What are the problems or challenges faced as a result of working as a coalition?

The mains ones are covered in the paragraph above, plus the fact that team members have very different levels of experience and education which will obviously be challenging.

The different interests, agendas and modus operandi of the participating organisations and individuals is a major challenge. All the more so where as above the participating organisations have on-going responsibilities for the future delivery of research findings. Good science and good development are both admirable but in the working context are not always compatible. Different cultural and social norms, at both organisational and individual levels, can prove divisive.

Are there any specific ways that the projects had to alter the way they work to make them more responsive to poor stakeholders and partners?

We have had to challenge some team members' perceptions that 'farmers are the same' and to develop processes to help learn about this in more detail so that these differences become important in how the project thinks about how it works with farmers who are far from homogenous. The approach used for the research managed trials, in which farmers were often interested observers, hosts or contract workers, , and that typically used in extension of discussing with, advising and instructing farmers etc. had effectively to be turned on its head, to better listen to and develop understanding of farmers, and poorer farmers in particular.

Triggers for innovation and responses

Were there key results or findings from the project that the coalition needed to respond to? If so, what was the response?

Yes. Immediately we started planning the setting of the trials with the farmers in the trial sites the coalition had a lot of learning to do from the farmers. Learning about how the farmers are organized, learning and seeing how they practice their Post Harvest activities and their attitudes towards storage and food security. They would ask a lot of questions about the project and how it would fit into their systems and solve their problems. The coalition had meetings with the village leadership and farmers in which related issues were discussed and local language weather proof village notice boards were created to inform those not present and visitors. When it came to procurement of grain and selection of participating farmers many farmers turned up to sell their grain taking advantage of a "ready 'transport free' market" and wanting to be part of the coalition/project. The coalition negotiated the grain sale price to arrive at the prevailing market price. In Tanzania, the bulking of the maize was done in the village 'go-downs' which in all sites was located central to the village and where shops were also located and hence frequently visited by many farmers. Farmers were invited to provide paid labour for winnowing and other processes and those who participated in the first season trials were masters in the second season as they could do the tasks in their homes without further instructions. At the setting of trials, i.e weighing the grain, admixing the protectants, working the shovel to thoroughly mix, loading and sewing the bags, some farmers did volunteer "their hands on" to check if they were doing it well, while others watched with curiosity and asked questions which were immediately responded to. Some of the questions included the reasons for weighing out the grain, why put so much dawa (protectant), why winnow, how long will it store etc. where did we obtain the dawa from etc. In Zimbabwe, grain bulking, weighing and treatment occurred at one household who volunteered to host the exercises. The grain sold to the project by the local farmers was already clean and there was no need for winnowing. However, there was one case of grain not adequately clean and the other farmers hosting the trials asked the owner of the grain to clean it at her cost, the argument being that when selling grain to anyone, it must be clean. Immediate observations by the coalition included:

- the huge post-harvest knowledge gaps of the communities and even extension workers at all trial sites in terms of how to use and apply grain protectants and how to practice good storage management.
- the absence of knowledge by service providers (those located both inside and outside the villages) about farmers grain storage practices (e.g. misconception that all farmers used kihenge when in reality most of those whose homes we have visited use sacks for various reasons)
- the absence of knowledge about and/or data on diversity of farmer behaviour in a village (e.g. no ideas how many use traditional protectants vs commercial protectants vs no protectants etc)
- the communities in Buhera district, Zimbabwe are aware of grain marketing standards (presumably because of proximity to a Grain Marketing Board depot in the district) and each member of the communities was expected to observe them even when selling amongst themselves otherwise the price will be negatively affected.

The first year of the research trials had interesting results: The DE treatments in the Researcher managed Trials (RMT) performed very well. Maize and beans treated with DE at different concentrations had stored for 40 weeks remaining undamaged and with no live insects. However the local treatments using farmers choice of protectants and concentrations, botanicals and ashes was heavily infested with live insects and grains highly damaged. These results encouraged the coalition to liaise with the Ministry of Energy and Minerals (MEM) to find out more about the local deposits of diatomaceous earths and their profiles. We found out that in Tanzania there are records of 3 deposits, one in Kagera region and two others in Dodoma and Singida regions. Their profiles are yet to be known but according to officials of the Ministry of Energy and Minerals the Kagera deposits are the largest and contains the "better" DE. While the RMTs were progressing and farmers were in contact with the coalition, samples of local DEs were simultaneously being assessed in Canada for their insecticidal efficacy but none of them showed high insecticidal efficacy in terms of comparison with other raw DEs. Although this was disappointing, further studies in UK and then Zimbabwe showed that at application rates of 0.25%w/w (e.g. 250g/100kg grain) high mortality of insects occurred so although for some international grain and trade systems this application rate would be considered too high, for small scale producers storing for home consumption or local sales this application rates was actually a lot lower than the rates at which sand, ashes and many of the botanicals were being applied. The 1st season successful RMT results provided good reasons for initiating the Registration process in Tanzania. The results of the RMT were evaluated at 8 weekly intervals by laboratory analysis and intermittent farmer observations and at the end of the 40 week storage period by detailed farmer evaluations. Laboratory analysis confirmed the suitability of DE as grain protectants and provided an indication of non abundance of LGB in that 1st season. The farmer evaluations established criteria for quality grain against which the treated grains were assessed and influenced farmers attitude towards storage protectacts. "Seeing is believing". By design, some of the questions raised during setup were answered!

A report and flier distributed among the coalition and stakeholders, sensitized post harvest stakeholders to request for further information. The coalition elaborated the project processes in workshops, and there was the felt need to speed up the preparation of a project newsletter and a website in which project updates have been continually posted.

In the second season trials 2003, Results of farmer managed trials (FMT) were as encouraging as the RMT trials results. As a result, many farmers demanded to be supplied with DE and more wished they had participated in the trials and asked to be included in future trials. The coalition had to explain the "rules of research" which were to apply until the trials were concluded. In one trial site, 20 farmers volunteered to participate at their own cost, only to be provided with the DE. The coalition provided the DE and the VEOs has been trained to work with them the way they normally perform their mandates.

How did events outside the project affect the project? If there were, how did the project respond and what was the response?

- Staff changes among the project team, e.g. movement of Matthias to PHMS, loss of Jonas and Maurice in Zimbabwe
- CPHP not issuing initial contract timely and not providing information as to whether contract would be issued, leading to lots of difficult situations with farmers and raised expectations which we did not know if we could meet. Project told initially it had only a one year contract and would then be reviewed, then given another six months contract and then finally reviewed successfully by Prof D Giga, then issued with another 16-month contract, making long term planning very difficult because of so much uncertainty and poor communication and last minute decision making and notification.
- Poor harvest and food shortages in the project trial sites
- A hyper-inflationary economic environment in Zimbabwe; project funds had to be kept in hard currency
- Critical fuel shortages in Zimbabwe which made field work extremely difficult; sometimes fuel had to be paid in forex.
- Brain-drain caused by macro-economic problems leading to a lot of movement of staff to 'greener pastures' within and beyond Zimbabwe, resulting in instabilities in the Zimbabwean team which was already comparatively smaller than in Tanzania.
- Difficulties in transferring funds to Zimbabwe; initially cash hand-carried and with very few NRI-staff from UK, FCA eventually opened at UZ which is working well so far.
- Low LGB year and need to set up on station TPRI trials
- Inadequate information as regards registration procedures for DEs in Tanzania, decision to incorporate TPRI as team member. In Zimbabwe, DE registration dossier submitted but approval unnecessarily delayed due to staff changes and shortages, priority being given to other issues and bureaucracy at the Pesticide Registration Authority (PRA). Follow-up meetings have been held and are continuing. Efforts

to engage PRA staff in project work to expedite the registration have been made and are also continuing.

- Project team leader physically absent (although still electronically present) during 6 months maternity leave following the setting of the 2003/04 storage seasons RMT & FMT field trials. The decentralised project management approach and significant training and experience of project team members by this time, limited the impact of this event (nicknamed output 7) on the project.

What has failed?

List at least 5 things that went wrong during the course of the project; what can be learnt from this?

The project's contracted output objectives are a mix of 'scientific' aims - the first crucial to securing and facilitating registration of DEs - and aims which relate more generally to promoting the up-take of DEs. Success (or failure) with respect to the second type of aim will depend on the understanding of 'delivery systems' and the 'decision-making' of potential users of DEs and the scientific findings. Constraints here generally relate to 'institutions' - established practices, norms, behaviours or relationships. The project's present emphasis on 'process' was initially a response to dealing with the institutional side of managing the coalition - managing the science was far less complicated. There would appear to be a similar dichotomy with respect to failure: on the scientific side mistakes may be clear cut; on the process side, learning by doing is more important, and most failures represent plural and strategic opportunities as opposed to single and remedial actions?

Failures in the scientific work include:

- Loss of information about the moisture content of samples at set-up at one trial site. Implications: loss of evidence; inability to be certain of explanation for anomalous findings. Remedial action: to tighten up relevant system.
- Prolonged registration of DE in Zimbabwe; the application dossier was submitted by the registrant (a private company) in March 2003. Planned trials on consumer – acceptability of DE-treated grain could not be undertaken because legislation probibits consumption of grain treated with unregistered products.

Perceived failures associated with 'process' outputs or management:

- It has been suggested that interactions with farmers by extension staff generally, and the 'farmer selection' for the farmer managed trials (FMTs) by the project team, has been 'biased'. Implications include and range from limiting the extent to which any findings are transferable (outside the 'favoured' farmer type), to service providers not having an adequate understanding of their client-base.

  The 'issue' has been contentious; some solutions put forward infer that the shortcoming lies with village elders and not with project and extension staff. The systematic participatory 'enquiry' being undertaken by the project has been redirected to engage with some poorer farmers, and the instrument itself should provide triangulation with village based wealth ranking. The issue of household and farmer diversity has been discussed at length, but still remains challenging.

- The excellent efficacy of DEs during the trials has raised the expectations many of the participating farmers; expectations that are unlikely to be met in the near future (except through continued contact with the project). Implications might include losing the goodwill already generated and a 'backlash' against the product.

  Suggested remedies include targeting the trial villages with the product once approved; but even before that the project is actively seeking to influence key players in decision-making roles re registration and commercialisation.

- Some farmers consumed their grain prior to the completion of the farmers' trials (FMTs) (due to food shortage, good market prices etc).

  This happened during the first season of FMTs, when the terms and the conditions, management regime etc was still being driven by the researchers and only ostensibly in the hands of the farmers. The aim was that of having farmers 'validate' confirm the researchers' findings under their own management. The limitations of this approach were discussed at length - argued over - and it was agreed that the particular output (3) would be significantly revised. This was done, together with presentations on livelihood concepts, different levels of 'participation', and farmer participatory approaches (2 weeks). The ethics of undertaking such research with food insecure people was also discussed.

  Many accept that the new output and approach (including the demoting of the FMTs to activity level) is a considerable improvement, albeit it has required new approaches and skills to be learnt, and may yet compromise the project's resources. Concern has also been expressed that these changes were 'introduced' by project staff and were not based on existing in-house ministry expertise.

- Taking account of farmer diversity, and specifically the disaggregation of farmers that was undertaken for the assessment of the first season's stored grain (RMTs), and not at the setting up of the first FMTs. This was cited as a failure of the project to give adequate priority to the phasing in of the social/institutional inputs.

  The mid-term review identified the need for the project to focus on the social/institutional axis, but not to relegate its scientific aims, which (we believe) remain paramount to securing early registration. This process is however underway, albeit with set-backs (e.g. the technical skew in the team's make-up, and only one social scientist; the inevitable absence of the project leader (maternity leave) during the team's development of its participatory approaches; the scientific skew in the original proposal as a result of the some players being too busy with other tasks to input at this critical stage, motivating forces and valid interests).

  The original PM was very much driven by a scientific agenda and scientific personnel. And one must wonder just how receptive CPHP PAC would have been at that time to a proposal that gave equal or more emphasis to exploring farmer diversity and farmer decision-making, as to consolidating existing science and technologies.

Institutional innovations and lessons

Were new ways of doing things devised? What new approaches emerged due to the project and coalition?

Any new ways of learning, sharing information, accessing information that were developed? If so were these successful ways of doing things tried out in new contexts and adapted?

Project development: Project ownership, inevitably skewed at the design stage for multiple reasons (e.g. motivation provided by key individuals with existing interests; design phase favours those with conceptual skills; research contracts are more (or less) important to different organisations/individuals etc.) widened with time and engagement. This coincided with the phasing in of the different output activities. Initial activities revolved around more formal/standard physical science research (Outputs 1 & 2), which played to the strengths of a predominantly technical team. Other later activities presented less familiar challenges, raising the profile of the social (e.g. farmer diversity, livelihoods, 'voice', perceptions of poverty) and institutional issues (e.g. processes, mechanisms, norms facilitating/constraining farmers and service providers) in the PM - and of the one social scientist. Revisiting the PM as a matter of course (e.g. in review & PM&E workshop objectives, quarterly reports, individual's concerns) with the fuller, more committed team, prompted questions not only about implementation but also about realisation of the project's higher level objectives. This process involved the team in a number of new approaches and initiatives:

- Revising - redesigning - the logframe, debating the conceptual basis for the work etc, was probably itself a different approach for most team members, many of whom will have been more comfortable with task-related activities. One such (documented) debate related to the respective merits of interventions which focused on technology, pest or crops, as opposed to one which focuses on rural people and their livelihoods.
- The development of 'ideas' in working sessions (e.g. use of diagramming, brainstorming, tool design, role play etc.); workshop design using an in-house design team to develop objectives, identify potential inputs etc; introduction to and development of 'indicators' for monitoring performance (e.g. PM&E workshop, communication improvement targets); use of some basic PRA tools (e.g. wealth ranking, getting farmers to 'weight' grain quality indicators); introduction and use of 'livelihoods' thinking to provide an analytical framework both for the 'factors' identified by farmers as determining their PH outcomes, and to disaggregate households; use of farmer participatory approaches to better learn from farmers etc.

Managing process: The need to improve ways of managing process became apparent at an early stage. Narrower more prescriptive management regimes associated with managing purely physical science research, were clearly not suited to the changing dynamics of member organisations, number and diversity of organisations/team interests, complexity of the new challenges - social & institutional - raised in the logframe, and the project's time and resource constraints. Initial innovations included:

- Meeting agendas being arrived in more participatory ways (e.g. team members noting down concerns on 'post-its'; participatory prioritisation of agenda items etc).
- Workshop agendas and objectives opened to the wider team.
- Participatory development of revisions to logframe (output 3).
- PM&E workshop.
- Participatory planning workshop was used for planning activities for the 2004-05 season.

Managing events:

- Project workshops were designed using a 'design' team, a sub-group of the project team (eg using Brainstorming sessions to identify issues, opportunities etc
- Responsibilities for specific task were spread or 'handed over' as individuals' or organisations' capabilities developed (e.g. Output 1 sampling and analysis; interviewing farmers; report writing).

Have any new alliances or networks arisen out of the project – other than the coalition itself?

Coalition members are working together on new initiatives, prompted by their experiences within the coalition.

In Zimbabwe frontline extension staff in other districts and supervisory staff coordinated their mutual interests in finding out about DEs, and successfully requested a 'workshop' on the use and efficacy of DEs.

A 'network' of interest in the project and DEs has been encouraged and developed amongst the media - electronic and print - in Tanzania.

What were the things that you would have done differently if the project had the chance to do it again?

- Found a way to have enabled key people not to have been busy during the development of the proposal and brought them together, had more and different people involved in the initial Shinyanga proposal development workshop
- Have had pre-project time to better identify who could/ should have been the key players for the project in order for it to meet its purpose, and got them involved right from the beginning
- Have had a better understanding of the registration process in Tanzania
- More active focus - and resources - on team building, and training.
- Involvement of in-country (Tz) public sector research players (i.e. outside of MAFS researchers).
- Earlier and louder involvement and localisation of social and institutional inputs.
- Better planning of activities, particularly for Output 3, where despite team development of the new Output and associated activities, there was large uncertainty as to what was actually supposed to be happening on the ground, when, where and by who. The resources were there, but no participatory planning occurred for these activities until the beginning of the 3rd year.
- Held team events in Zimbabwe.
- Switched (or limited) resources from RMT farmer grain assessment exercises (although these were extremely important in terms of team building and project ownership by the team), and output 1 activity, to output 3 activities. This might have been partially achieved by just carrying out Output 1 in fewer sites in Tanzania. *There are different opinions on this.*

Were there any unforeseen or unintended impacts and outcomes from the project?

- Confirmation of the widespread prevalence of poor and bad practices associated with the use of synthetic PH pesticides.
- Extent of impact of project - both favourable and unintended - on the lives of rural people (e.g. marketing strategies of some households influenced by project purchases; selection of farmers viewed as devised by some farmers [in Arri]; initial approaches reinforced existing skews in PH extension which appears to favour farmers with surpluses, non-indigenous technologies, 'progressive' farmers etc).
- Farmers involved in the FMTs in Zimbabwe and Tanzania found an opportunity to 'test' and learn about some of the local/traditional grain protection methods. Some of which are no longer commonly used.

What are the key lessons that were learned from this project which other projects might find useful (about forming the coalition, about managing the coalition, about getting the maximum benefit from the coalition)?

- 'Institutional' aspects are key and need mainlining in the project approach from the project identification stage onwards
- If people aren't involved at the beginning in the proposal development, for whatever reasons, its better not to go-ahead with the project until they have time to be involved in its development. Otherwise everything is always looking retrospectively backwards to the fact the initial proposal didn't think about this or include this etc. It might be almost impossible to actually implement this with submission and funding deadlines, but it is critical. Naturally projects will learn as they develop and would want to make changes to what was planned in the original proposal, but this is a different issue.
- Good communication between team members is critical, and this includes ensuring that: the language we use is easily understood by those receiving the information (it's the same issue as needing to developing appropriate and targeted extension materials); where possible all have access to and skills

to use the main mode of communication (which in this project has been email) or that alternative two-way communication channels are set up (e.g. possibly through texting backed up by hard copies, but this gets pretty complicated) ;

- That enjoying working together is an important part of coalition building and humour is a great tool
- Coalition building as with the building of any other relationships is complex and takes time and resources, and when the donors want to keep learning about it they should ensure they have planned for this with the coalition from the start of the project and built in the adequate resources needed
- Being the subject of someone's research without ever receiving feedback is demoralising. Coalition members would feel better if CPHP management could give some form of feedback to members on the numerous detailed reports that are often submitted contractually or otherwise. In fact CPHP is inevitably part of the stakeholders and letting us know what they think about our project through the reports, is vital.
- Coalition members will hold different view points and in order to allow the holders of these different viewpoints to work well together its easier if everyone shares the evidence that their view point is based on with the others
- A mechanism of providing motivation is required to maintain or enhance the eagerness of some key project members.
- A wider project ownership was developed especially when the management style changed from the typical top-down to an all-embracing approach which enabled team members to express their concerns 'in public' during brainstorming sessions.

Acronyms and Abbreviations

AREX	Dept. of Agricultural Research and Extension Services (Zimbabwe)
CN	Concept Note
CPHP	Crop Post Harvest Programme
DE	Diatomaceous Earths
DFID	Department for International Development (UK)
FMT	Farmer managed trials
FPA	Farmer Participatory Approaches
GFAR	Global Fund for Agricultural Research
godown	Village or communal warehouse
IAE	Institute of Agricultural Engineering (Zimbabwe)
KMTC	Kulima Mbobumi Training Centre (Binga District, Zimbabwe)
LGB	Larger Grain Borer
MAFS	Ministry of Agriculture and Food Security (Tanzania)
MEM	Ministry of Energy and Minerals (Tanzania)
NGO	Non Governmental Organisation
PAC	Project Advisory Committee
PH	Post Harvest
PHS	Plant Health Services (Tanzanian MAFS)
PHMS	Post Harvest Management Services (Tanzanian MAFS)
PL	Project Leader
PM	Project Memorandum
PM&E	Participatory Monitoring and Evaluation
PRA	Pesticide Registration Authority (Zimbabwe)
RMT	Researcher managed trials
TPRI	Tropical Pesticides Research Institute
Tz	Tanzania
VEO	Village extension officer
Zw	Zimbabwe