

Adopting Participatory Action Research in Strengthening Pastoral Communities to Improve Resilience to Climate Change

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Abstract

Pastoralists have a diversity of strategies to sustain livestock production which is important for their livelihoods. However, recently climate change has had devastating impact on pastoral way of life resulting into high livestock mortalities. Their strategies, based on centuries of exposure to intra- and inter-annual droughts may not work well now due to extended drought and constraints related to livestock movements. Thus there is a need to introduce innovations that will increase resilience of pastoralists to cope with the vagaries of weather. In situ cattle fattening is one of the adopted strategies. However, this is a new approach compared to free grazing and may require empowerment of the communities to adopt new technologies especially during period of pasture scarcity. The research adopted Participatory Action Research (PAR) to empower livestock keepers to take advantage of the available resources. Consequently it was expected that the nutritional and health status of animals will improve and pastoralist will venture into dry season cattle fattening conditions. Preliminary evaluation shows that the project has been accepted, but full adoption will depend on whether the technology will fit into farmers' own strategies as well as resolving some challenges associated with the practice.

Keywords: Pastoralist, fattening, cattle, climate change

Introduction

While East African pastoralists have been able to track climate variability very well in the past, their strategies, based on centuries of exposure to intra- and inter-annual droughts may not work well now due to extended droughts and constraints related to livestock movements. Furthermore, the nature of the climate variability that pastoralists are used to dealing with, have changed, and under extreme cases it has added a new dimension to the system. The recent drought in northern part of Tanzania in 2009 and 2010/11 is a case in point. The

droughts have led to significant negative impact on the economy of pastoral and agro-pastoral communities due to livestock deaths and crop failure to the extent that some of the households are now depending on hand-outs from the government. In some households pastoralism is the only economically viable development option, thus maintaining and enhancing adaptable and flexible systems in the face of increasing environmental and global economic challenges is necessary.

Given the persistent drought, diminishing grazing area, some pastoralists have opted for crop production as a way of diversifying

their livelihoods, hence becoming agro-pastoralists. This project takes advantage of current situation whereby in good season crop-by products are abundant. However, these resources are often underutilized and in some cases burnt in the process of preparing land for crops. If such by-products are harvested in time and stored, they have a potential of reducing feed scarcity during the dry season. A livestock fattening project was designed and introduced to the pastoralists in order to reduce the risk associated with climate change. This strategy aims at supporting drought-affected pastoralists to fatten and sell livestock commercially during the dry season hence avoid animals' body condition loss and the resulting low livestock prices caused by drought.

This intervention is expected to increase pastoralists' profits through value addition, improved market access, while increasing their economic and climatic resilience. However, in situ cattle fattening is uncommon among pastoral communities in Tanzania and thus, many challenges abound. Thus appropriate participatory engagement is expected to enable pastoral communities to increase their capacities and exploit existing opportunities. This will go hand in hand with broadening linkages between research-extension-farmer to include partnerships with stakeholders who have interest in livestock markets and welfare of pastoralist. A participatory Action Research (PAR) was therefore adopted as a tool to create awareness, dialogue with the communities, plan, implement and evaluate the expected outcomes. The research project is implemented in two districts of Arusha region: Monduli and Longido.

The approach

Participatory Action Research has three facets: 1) understanding innovation process 2) developing and testing participatory processes to improve adoption, and 3) facilitating institutional arrangement for instigating innovations. The PAR design takes abreast the aspects of poverty, environment, gender and other livelihood activities. In this project practical issues are typically addressed through cycles of action and reflection, in which the outcomes of each cycle are checked against plans and intentions (Reason, 2006). Each cycle goes through a range of steps that include diagnosing, action planning, taking action, evaluating and specifying learning (Riisgaard *et al.*, 2008) (Figure 1).

Results

Diagnostic phase: Based on the above model, familiarization visits were carried out to introduce the project to district officials (DALDOs, DEDs) and Village executives in Monduli and Longido districts. The officials received the project positively and this was followed by inception workshops whereby the participants included farmers' representatives, village officials, area extension officers and NGOs representatives. On average each meeting was attended by about 25 participants. The objectives of the meetings were to identify, define the problem, share experiences especially the negative impact of climate change and agree on the implementation plans. The workshops also described the roles in which each of the potential stakeholder or collaborator is expected to play. Furthermore, issues of gender consideration in project implementation process were emphasised. Some of the pastoralist (in Monduli District) had a one

time experience in fattening and considered that the project ideal will add value to their experience particularly on the technical aspects. It was learned from the workshop that the project timely and participants showed readiness to participate. Following the inception workshops, a baseline study was carried out to establish the extent of impact of climate change on livelihoods of pastoral communities.

Action planning: According to stakeholders views drought normally begins around August and continues up to December. During this time pasture and water become scarce and the situation deteriorates until the onset of short rains. Consequently animals lose weight and condition, and under extreme cases death may occur. It was agreed that this is the best time to start feedlotting. The agro-pastoralists were therefore requested to store crop residues as basal feed soon after harvesting. Such crop residues include maize stover, beans, wheat and rice straws. Other ingredients such as maize bran, sunflower seed cakes were to be sourced from agro-input suppliers.

For easiness of demonstrating the innovation, pastoralist and agropastoralist were requested to form groups with about 30 members.

Taking action: Before embarking on actual feedlotting the project ensured that the groups had been formed and interim leaders were elected. Willingness to participate and contribute in the process i.e. provision of feeds and test animals were the key criteria. Being a new intervention it was deemed necessary that the groups be empowered to have a deeper understanding of the rationale and benefits of to feedlotting. As such the

group received training on various aspects including choice of animals to be fattened, health of animals, feeds and feeding, marketing and simple cost-benefit analysis among other topics. A total of 101 cattle farmers were trained (84 men 17 women) in the four villages.

Plenary sessions allowed farmers to brainstorm on their expectations and share experiences regarding the activities ahead. Queries were presented and discussed which increased participant confidence. In some village e.g. Irkaswaa availability of water was singled out as the main challenge whilst, the researchers were sceptical if the groups will collect crop residues, a practice that was not common in the traditional free grazing system. Within the context of PAR it was emphasised that each individual or groups were expected to contribute both in kind and in cash. Furthermore, the group had to agree on where and who will provide land for construction of demonstration unit.

In all study villages the process started with construction of feedlot structures which include: feeding area, feed stores and fencing. Due to budgetary constraints fattening was done only in two villages viz. Irkaswaa and Lerang'wa in Longido district while the trials in Monduli district have to be rescheduled to year 2. This was followed by securing of crop residues and concentrate mixtures. The project ensured that the group was responsible for collecting crop residues and the group also made sure that each participating individual has to contribute at least an equivalent of 20 bales of maize stover. The project provided concentrate feeds as well as drugs. The activity was followed by recruiting animals to be feedlotted in which it was agreed that such

animal should be about 2 years and weight between 160-240 kg. The intention was to recruit at least 40 animals per village. However, due to unavailability of suitable animals, only 30 and 25 animals were recruited in Irkaswaa and Lerang'wa village respectively. Shortage of animals for this exercise arose from the fact that most of the household lost their animals in 2009/10 as a result of prolonged drought.

Appraisal of interventions

Four cattle fattening groups one for each village have been formed (Irkaswaa and Lerang'wa –in Longido district and Losirwa and Nanja in Monduli district). Feed lot structures have been built where construction materials and building contractor were provided/paid by the project. The groups participated fully in the construction process

e.g. land clearing, construction of fence, and assisting the main contractor. The groups also provided animals to be fattened, feeds (crop residues) and day and night security. As aforementioned, fattening exercise has only been initiated in Longido district. Halfway through the process (about 45 days), farmers had already noted big difference between animals under feedlot and their contemporaries who were not included in the trial. Reading from their verbal expressions there was a general feeling that the interventions were appropriate and timely. Furthermore, some members expressed that they would wish to recruit another group of animals soon after selling the first batch. The main observations as well as challenges are summarised in Table 1.

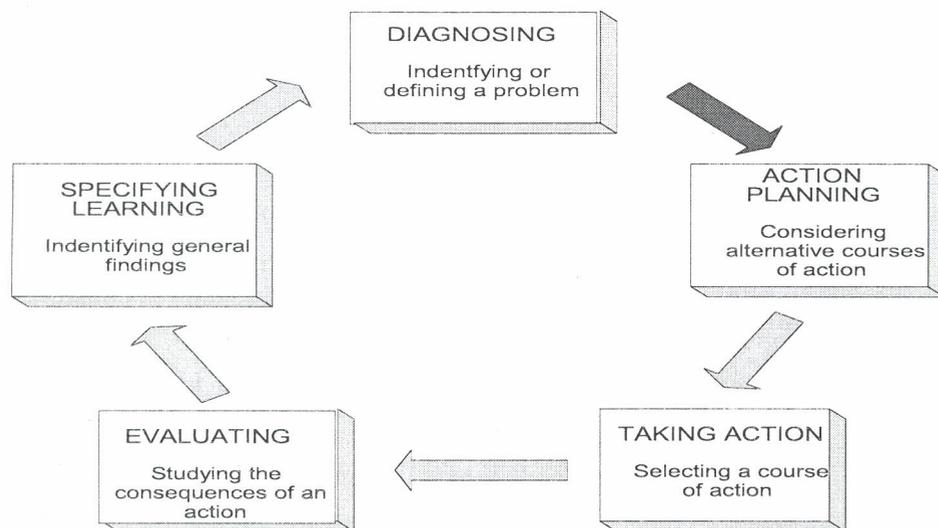


Figure 1:

Table1: Observations and implications

Positive	Challenges and proposed solutions
The project was timely and accepted by the stakeholders	Initially there was feeling that the project was a hoax given the past experience. Being a new concept cattle keepers could not comprehend that they will have to fetch fodder and water for the animals
Gender participation (men, women, adult, young)	Few women and youth were included in the groups. However this is understandable given the culture and tradition of cattle ownership
Groups formed and in the process of drafting their constitution	Some members initially joined expecting the project to provide everything. These were dropped by the group after failing to cope with requirements. Bias in selection of participants based on ethnic lines e.g. Waarusha and Maasai (this was noted in Irkaswaa). However, it was resolved at later stage.
Land for demo units- provided by one of the group member	In some places (Losirwa) there was misunderstanding between the group and village authority i.e. why should the fattening structure be built in an individual land.? In case of dispute how will it be resolved?. Advised that ownership of such structures be addressed in the constitution.
Contribution in kind (labour, feeds, security) and cash	Elder Maasai shun from physical labour. However, Morans and hired labour (paid by the group) were recruited. Women had to carry the burden of ferrying crop residue. Advised to utilize donkeys instead
Animals for feeding experiment: Each group member contributes at least one animal	Some had no animal fitting the criteria set despite the interest. They had to be requested to buy animals if they had to be included.
Sceptical individual started to take interest	Encouraged the group to accommodate them as long as they subscribe to rules set by the groups
	Availability of water: In three out of four villages they have access to piped water. In the fourth (Irkaswaa) piped water will soon be available through a project funded by Wildlife Management Authority (WMA). However, farmers were also urged to adopt rain water harvesting.

Challenges

The project was aware that changing pastoral mindset that involve moving from the traditional extensive grazing to in situ feeding will be a gradual process. Adoption of in situ feeding entails additional labour i.e. collecting feeds (hay and crop residues) and water for the animals. However, it was well explained that the essence of feedlotting is to reduce energy expenditure and improve weight gain by supplementing animals with energy, protein and minerals which are critical during period of drought, hence avoid

the loss in weight. However, despite acknowledging that the practice is good some cattle keepers outside the group were still skeptical. This is understandable because adoption of new practices/technologies is a step-wise process. According to Van Es, (1984) farmers are rational decision makers i.e. farmers have full control over the decision to invest in agricultural technology. Thus perSUAsion to encourage changes in attitudes, practices and assessment of outcome may be the best way to technology adaption (Lynne *et al.*, 1995).

Farmers may need to perceive at least some control in order for them to move forward with technology decisions: with more (internal) control, farmers are more likely to take action, and to invest more intensely.

We also recognize that there is a need to link the groups to the potential markets. Traditional marketing channels with ad hoc sales are being gradually replaced by coordinated links among farmers, processors, retailers and others. In this context, the question is not whether, but how to include the different actors in the value chains, including women, applying a balanced approach that takes into account both competitiveness and equity issues (Donor Committee for Enterprise Development, 2006). Since the groups will participate in selling decision, we anticipate that the buyer and the seller will agree on the sale price that will not discourage the cattle keeper to scale-up the fattening practices.

Other challenges include making the approach to have ability to scale-up both vertically and horizontally. According to DRD (2000) in adopting participatory approaches stakeholders including farmers have to contribute in funding research and extension activities as well as empower and mobilize stakeholder to contribute to participatory activities. For the latter, some achievements have been registered despite the project being at its infant stage. Given the cyclic nature of PAR challenges are expected, however, these will be resolved in a participatory manner in the course of implementation.

Sustainability and scaling-up

Sustainability of the project will depend on various factors that may include: outcome of participatory process to improve adoption, group cohesiveness, cost implications of interventions and institutional arrangement to promote innovations. However, there are positive signs that the intervention will be scaled up and already one neighboring village (Kitendeni) in Longido has lodged a request to get training and assistance in carrying similar activity. We expect that the approach will facilitate scaling up within and beyond the study villages. However, the decision whether or not to use an innovation will be based on how the technology fits into farmer's own strategies (Kaarhus, 1994).

Way forward

In order to improve the effectiveness of interventions, in addition to working with farmers' groups, we plan to introduce the concept of Farmer Field School (FFS). Farmer Field School (FFS) is a group extension process based on non-formal adult education methods. FFS recognizes the partnership role of farmers, extensionists and researchers in the development process. They involve farmers in learning and discovering for themselves relationships between the various interacting factors in the production cycle. The FFS concept grew out of the fact that people learn better by doing and by being involved in experimentation, observation, discussion and informed decision making. There is thus a strong element of *research* in the field schools. The training will take place in the field and the curriculum will be defined by the field conditions. FFS banks on farmers sharing knowledge and experiences with researchers and extensionists. Field problems are

observed and analyzed throughout the production cycle.

It is thus expected that by utilizing the already constructed feedlots as Farmer Field Schools will strengthen the processes of knowledge generation and knowledge dissemination *within* and *amongst* the farming communities. It is also expected that through FFS more women and youth will be involved. This approach does not negate the value of research, but it does propose that research and learning are not exclusive domains of trained experts. Wide spread capability at the farmer level will ensure that any useful knowledge or technology developed quickly and effectively be tested, *adapted*, transformed and integrated into viable practices within actual farming systems by farmers themselves. The envisaged FFSs are expected to instill a habit of investigation that ultimately will lead farmers to discover for themselves best technological aspects to mitigate shortfalls in livestock production.

Conclusion

Although the project is in its initial stages it can be concluded that participatory approach seem to offer the best option where various opportunities and challenges are discussed. Adoption of agricultural technologies is a gradual process and farmers have to weigh the cost-benefit of interventions prior to adoption of any new technology. Furthermore, the success of PAR requires that it is made clear from the onset on expected contribution of participants.

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