



**Knowledge Transfer:
the Role of Community Extension
in Increasing Food Security**

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Abbreviations

ABP	Area Based Programme – Uganda
ADC	Area Development Committee - Malawi
ADD	Agricultural Development Division - Malawi
AEDO	Agricultural Extension Development Officer - Malawi
CAW	Community Agricultural Worker - Malawi
CBE	Community Based Extension
CBEs	Community Based Extensionist(s)
CDA	Community Development Agent – SHA Uganda
CT	Community Trainer – TRAX Ghana
EPA	Extension Planning Area - Malawi
LF	Lead Farmer - Malawi
MoAAIF	Ministry of Agriculture, Animal Industry and Fisheries - Uganda
MoAFS	Ministry of Agriculture and Food Security – Malawi
MZADD	Mzuzu Agricultural Development Division - Malawi
NAADS	National Agricultural Advisory Services - Uganda
NGO	Non-governmental organisation
PLWHA	People Living with HIV and AIDS
PM	Programme Manager
RDP	Rural Development Programme - Uganda
RFSP	Rumphi Food Security Project - Malawi
SHA	Self Help Africa
VDC	Village Development Committee - Malawi

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Summary

Self Help Africa (SHA) is working with partners to tackle hunger and promote food security. Community based extension (CBE) is a key aspect of this: building capacity of a few people to reach out to the wider community and scale up impact. This study brings together experiences of Lead Farmers (LF) in Malawi (Mzuzu ADD Lead Farmer Project and Rumphu Food Security Project), SHA-Uganda's Community Development Agents (CDA) and TRAX Ghana's Community Trainers (CT) to inform policy and practice within the organisation, partner countries and the wider development community.

The study explores the role community extension approaches play in enabling farmers to be food secure. Key questions examined are:

- What is good practice in community extension for agriculture?
- What is the impact of community extension on food security for smallholder farmers?
- What is the potential for scale up and policy influence?

The research combined quantitative and qualitative methods, including desk study, focus group discussions, key informant interviews, stakeholder workshop and household interviews in Ghana, Uganda and Malawi.

Good practice in CBE programmes

- Two models for selecting CBEs were identified with implications for CBE profiles: most LFs are selected by their communities; in the past some were competition winners.
- Main roles of CBEs are: liaison and mobilisation, training farmers in new technologies and facilitating community development, with possible trade-offs between these.
- All CBEs are trained in sustainable agriculture and community capacity building, the balance depending on parent programme and expected CBE roles. Most programmes provide a week's induction plus short training in specialist areas, mainly by Ministries of Agriculture. TRAX Ghana has a 5 year training cycle delivered by its staff.
- All programmes provide bicycles for CBEs to visit farmers. SHA Uganda provides a small meeting allowance: some community members perceive this as payment. Community members in Ghana regularly give CTs in-kind support.
- Farmer followers to CBE are 35-55:1, except Mzuzu ADD (90:1). Active CBE followers are around 10-30.

Impact of CBEs

- Lead Farmers in Malawi train a high proportion of followers in sustainable agriculture. In Uganda and Ghana, where SHA and TRAX staff also train farmers, CDA/CT training reach is considerably lower. Non-followers/non-project members in all 3 countries generally receive significantly less training than followers/members.
- Uptake of agricultural technologies is high: 75-100% of project members in Uganda and Ghana. In Malawi, followers and non-followers adopted improved agricultural practices, though followers were more likely to do so. Members and non-members in all countries rated most technologies highly, indicating the training is highly relevant.

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- Impact of CBE programmes on smallholders' crop production is positive. Group members/LF followers in Ghana, Malawi and Uganda saw significant increases in average millet, maize and cassava production respectively compared to non-members. This translates into improved food security across the programmes. All households are more likely to own more assets and feel better off since the programmes started.
- Women make up over 50 percent of programme membership and a third of CBEs. Female members have received equal training and achieved larger increases in food production than their male counterparts (from a lower starting point). All programmes have seen improvements in women's participation in community affairs and household decision-making.
- Benefits, estimated as net changes in returns from food production of members over non-members, are quite high. Supervision and training are the largest costs of CBE programmes. Benefit-cost ratios are high at 7:1 for Ghana-TRAX, 14:1 for Uganda-SHA, 12:1 for Rumphu FS programme and 7:1 for Mzuzu ADD LF Programme. This suggests investing in CBEs gives very good returns.

Sustainability

- *Environmental:* Promotion of sustainable agriculture and fuel efficient stoves has reduced dependency on fertilizer and fuelwood use. Small-scale irrigation schemes are supporting dry-season gardening. Tree-planting is being taken up slowly. Group members/followers in Uganda and Malawi have improved their ability to cope with drought, but in northern Ghana farmers have seen little change.
- *Financial:* Low running costs of 'weaned off' CBE programmes make it plausible for communities to continue supporting the role with bicycle spares and small incentives in kind: this is already happening regularly in Ghana. In Malawi supervision of Lead Farmers is integrated into Mzuzu ADD's ongoing activities, but support for inputs and spares is sporadic. Refresher training courses have not been factored in. In Uganda, where a small allowance is paid for attending meetings, there is some evidence of higher drop-out rates once this support is withdrawn.
- *Institutional:* CBE organisations are proposed in Uganda and Malawi for support and lobbying. Linkages with local government to support CBE activities have faced challenges of capacity and motivation in Ghana and Uganda. Both programmes in Malawi, as well as new programmes in Uganda, are working through Ministry of Agriculture field staff.
- Evidence of sustainability: CBEs are still active in weaned off areas in Ghana, where TRAX has a long-term presence in the region; in some places in Uganda, where CDAs are working as a group; and in Malawi where Mzuzu LFs meet Extension staff monthly. Some CBEs have continued with other programmes; others are dropped in favour of new blood.
- CBEs are pivotal in establishing and running CBOs and are usually office-bearers. However, there may be some trade-off with agricultural activities.
- CBEs and groups are being trained in complementary areas such as seed multiplication to overcome challenge of access to good quality seed and microcredit to enable groups to be financially and institutionally self-reliant. SHA Uganda has developed a comprehensive exit strategy.

Scaling-up and policy influence

- *Community scaling-out:* Spontaneous scaling-out of technologies is occurring amongst communities in Uganda and Ghana with group members (in addition to CBEs) passing on knowledge to 2-3 other farmers within and outside their own areas.
- *Project and country level:* TRAX Ghana is training government and NGO staff in sustainable agriculture and community development, and schools in environmental education programme. In Uganda NAADS has taken up a similar approach to CDAs and is working through some SHA CDAs. In Malawi, the Lead Farmer concept is being scaled up by the Ministry of Agriculture country-wide and by NGOs in Rumphu District and elsewhere. Factors behind the success include: innovative leadership, well-publicised successes, backstopping support, feedback mechanisms and a relatively low cost programme.
- *Regionally:* SHA is well placed to lead on scaling-up CBE approaches and influencing policy-makers to provide a supportive environment. A comprehensive framework for scaling-up would encompass identification of stakeholders and entry points for dialogue, networking, awareness raising, capacity building and monitoring and evaluation.

1. Introduction

1.1 Background to the study

Self Help Africa (SHA) has as a strategic priority: enabling sustainable rural livelihoods to improve food and economic security. Community-based extension (CBE) is a key aspect of this: building capacity of a few people to reach out to the wider community and scale up impact. These are variously known as: Lead Farmers, Extension Farmers, Model Farmers, Community Agricultural Workers, Community Development Agents and Community Trainers. In this report the generic term Community Based Extensionists (CBEs) is used. There is considerable variation within SHA and partners in CBE approaches including in: training and selection of volunteers, support and incentives, linkages and partnerships with government extension services. Extension is defined here as activities that should facilitate the access of farmers, their organizations and other market actors to knowledge, information and technologies; facilitate their interaction with partners in research, education, agri-business, and other relevant institutions; and assist them to develop their own technical, organizational and management skills and practices (FAO 2010).

National government ministries of agriculture across Africa are overstretched and underfunded. There is considerable variation in their capacity and reach but in recent decades there has been limited donor investment to support improvements. This makes the role of community extension in agriculture critical, particularly given the challenges of environmental degradation, climate change and HIV and AIDS. Despite the widespread use of this approach there is a lack of information on the impact and sustainability of community extension approaches.

SHA is exploring potential for a significant scaling up of 'light-touch' approaches (low cost initiatives that are sustainable and replicable) to farmer knowledge transfer and the outcomes from the research will have a direct impact on programme policy as well as advocacy.

This study brings together experiences within Self-Help Africa of the approaches to pro poor extension promoted in the organisation over the last decade and to inform the future direction of the organisation as well as contributing to the current debate on community-led livelihood development.

1.2 Study objectives

The study explores the role that community extension approaches can play in delivering agriculture and rural advisory services to the improvement of the profitability, sustainability and equity of smallholder agriculture within broader innovation systems.

Key questions examined are:

- i. ***What is good practice in community extension for agriculture?*** This looks at different approaches/delivery mechanisms (roles, selection, support, incentives etc) and how this affects the reach and sustainability of services. Performance of different SHA supported models are benchmarked against criteria from literature, other organisations and wider SHA practice.
- ii. ***What is the impact of community extension on food security for small holder farmers?*** Community perceptions and quantitative indicators of change are

captured which might reasonably be attributed to the farmer extension approaches studied. These include: access to inputs and services, diversification and resulting impact on food production.

- iii. ***What is the potential for scale up and policy influence?*** How can good practice in community extension approaches be shared and influence national government and NGO strategies to knowledge transfer in agriculture. In relation to the specific countries included in the study and more generally across Africa.

1.3 Approach

The research combined reflective evaluation, quantitative surveys and participatory research methodologies. A detailed research framework (Appendix 1) was drawn up covering key study questions, indicators, data to be collected and sources. Fine-tuning to local situations and concerns were made through consultations with partners and at community level.

Criteria for the assessment included:

- a. **Effectiveness** of the CBE approach: how far technologies are being tried out/taken up/adapted on the ground, impact on agricultural production and food security.
- b. **Equity** of the CBE process: is it reaching identified target groups (including socially and economically disadvantaged groups), and their level of participation in planning, decision-making etc.
- c. **Efficiency** of the CBE process in delivering services, including training; costs and benefits involved.
- d. **Sustainability** of CBE approach
 - i. Financially: e.g. contributions from members, group income generating opportunities
 - ii. Institutionally: robustness of local organisations and processes around CBE – ability to deal with issues arising with lead farmers: rewards, conflicts etc.
 - iii. Environmentally: changes occurring to natural resources and their management.
- e. **Replicability** of the approach by SHA and partner organisations, other NGOs and government institutions: actual or potential strategies for scaling-up, forging linkages etc.

1.4 Study methods

1. Review of literature, project reports

A search of published and unpublished literature on community based extension has yielded a limited but useful set of experiences to date. The most comprehensive review of farmer-led extension is by ODI (Scarborough et al. 1997) which assesses experiences from Latin America and Asia. Practical Action carried out a study of agricultural and veterinary community extensionists in Sudan, Kenya and elsewhere (Coupe and Pasteur 2009) - a service with payments for inputs, operating in areas where government services are virtually absent. Concern Universal (2010) have recently reviewed their Village Extension Model in Masasa, Ntcheu, Malawi which trains farmers as livestock, crops and seeds, irrigation or soil and water specialists. Internal documents include Good Practice Guidelines on Community

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Development Facilitation, a synthesis of experience of SHA (Harvest Help) projects in Zambia (Situmbuli, 2007).

The literature documents a range of CBE approaches and delivery mechanisms including roles, selection, support, incentives, linkages. Performance of SHA models in terms of reach, sustainability of services and scalability are benchmarked against criteria from literature, other organisations and SHA practice.

2. Qualitative study

Field work was carried out in three countries with SHA country staff and partners: TRAX-Ghana, SHA Uganda, and Rumphu Food Security Project and Mzuzu Agricultural Development Division in Malawi. In each country, interviews were conducted with staff within the programmes at country head office, district and project level, and with key informants in government and NGOs. Two project sites were selected in each country: at least one with a long-running or recently completed programme. Focus group discussions were conducted with 4-6 groups of CBEs and with group members and followers in each site. Several more successful farmers were interviewed as case studies. A stakeholder meeting of 8 NGOs with lead farmer programmes in Rumphu District, Malawi was also convened (see Appendix).

3. Quantitative survey

Household interviews were conducted in Ghana, Uganda and Malawi to elicit more detailed information on interactions with CBEs and projects and its impact. Forty group members/followers and 40 non-members (roughly 50:50 male: female followers and non-followers) were selected randomly for interview in two (neighbouring) project locations in each country. Household interviews were carried out by an enumerator in each country using a standardized questionnaire (with local adaptations). The questionnaire included open-ended questions and ranking by the respondent (Appendix).

4. Comparative analysis

It was envisaged that data from recently completed evaluations of SHA programmes in Ethiopia and Zambia would include findings on lead farmers. In the event, this was limited. Nevertheless experiences with Lead Farmers in Zambia have directly informed SHA approaches in Malawi and elsewhere so follow-up interviews with key informants there would be useful.

5. Policy and institutional analysis

Review of literature and discussions with key informants (individually and in specially convened meetings) in-country on opportunities, gaps and entry points informed findings on sustainability and scale-up.

1.5 Study areas

The study focuses on community-based extensionists in programmes supported by SHA and partners in three countries:

- **Ghana:** Community Trainers (CTs) carry out sustainable agriculture and community empowerment activities through TRAX-Ghana, a local NGO based in Bolgatanga, Upper East Region, northern Ghana. TRAX developed the CT concept to strengthen civil society and ensure the replication of Low External Input Sustainable Agriculture (LEISA) techniques: soil conserving stone bunds, tree planting for soil and water management, composting and energy saving stoves. TRAX has 15 project areas in Northern and Upper East Regions: 4 are ongoing. The research focused on Duusi and Zuarungu Moshie project areas (active 2004-8) and Pelungu (ongoing).
- **Uganda:** Community Development Agents (CDAs) underpin SHA Uganda's four Rural Development Programmes (RDP) (formerly Area Based Programmes (ABP)) covering food security, animal health, water development and sanitation, natural resource management, income-generating activities, support for People Living with HIV and AIDS (PLWHA) and community organisations. The programmes provide improved planting material, particularly for maize, groundnut and cassava, and livestock breeds on a revolving input basis. The recently completed Kamuli RDP (2004-8), eastern Uganda, was the focus of the research, as well as Kayunga (on-going). The programmes are directly implemented by SHA staff, though they are now working with extension staff from the Ministry of Agriculture.
- **Malawi¹:** Lead Farmers (LFs) are trained under two programmes: Mzuzu Agricultural Development Division (MZADD)'s Lead Farmers Project (2002-11), within the Ministry of Agriculture and Food Security (MoAFS) in Mzimba, Rumphi and Nkhata Bay Districts; and Rumphi Food Security Project (Rumphi FS) (2007-11), operated in partnership with MoAFS and local NGOs, RUFA and MACRO in Rumphi District. Both programmes are in Malawi's Northern Region. MZADD Lead Farmers have been promoting sustainable agriculture - primarily composting, pit planting and tree growing. Rumphi FS project activities include small-scale irrigation, planting material for drought tolerant crops, grain stores, improved natural resource management, livestock, microenterprises, HIV and AIDS support and community organisation development.

[MAP]

¹ The programmes studied here were part of a joint programme: FAIR, a partnership between SHA, Find Your Feet and Development Fund of Norway. SHA was formerly known as Harvest Help in Malawi.

2. Good practice in community extension

2.1 Introduction

Current practice in community extension can be grouped into five broad areas: selection, roles, training and support provided by the development organisation and the community, approaches and linkages with other organisations. This qualitative study draws on both available literature and comparisons across SHA and partner programmes. A range of perspectives are considered from organisations' policy, voiced or written, to views of field staff, CBE and communities. Rather than identifying a single best practice, a more nuanced set of practices are identified, each specific to a particular context and objective.

2.2 Community entry and selection

Community entry

SHA programmes, in common with most development organisations, have used traditional or local leadership structures as the entry point to communities (village heads and councils). Getting the blessing of the chief is generally a first step to acceptance and cooperation within a community. 'A courtesy call, coordination and constant updating of village officials on the status of the project are very important in gaining their support in the promotion of the technologies, but also encourage a high regard for the interventions in their area' (Baile in Scarborough et al. 1997).

Development organisations follow different approaches in initiating interventions within the communities. Identification of community needs using participatory needs assessment is the first step for TRAX-Ghana and SHA-Uganda, both taking a broader development approach. Rumphu FS project uses ADC/VDC meetings to register support for its various development activities. Being part of a decentralised government department, Mzuzu ADD relies on its field staff at local level (AEDOs) as well as local leaders to facilitate community entry.

Working through groups

Working through groups is a well-established practice in extension, with numerous potential benefits including mutual support around common interests and problem solving, enabling joint activities such as shared labour on a members' farm or community natural resource management and providing a voice for members in communicating with outside organisations (LEISA 2007). Groups can also provide an efficient way for extensionists to reach larger numbers of farmers. Where traditional groups are functional and potentially effective partners, these can be an ideal basis for development groups.

Groups are an important approach in all SHA and partner programmes studied. Group formation is facilitated by TRAX in northern Ghana - some based on existing labour exchange groups - and the whole group trained in community development before beginning the process of identifying CTs. In SHA-Uganda Rural Development Programmes and Rumphu FS project, groups and clubs are formed following community stakeholder meetings. Selection of CBEs by communities takes place at similar meetings early on in the

entry process. This is either facilitated by programme field staff or local development staff. Criteria for selection are discussed with the communities and then a vote taken if there is more than one candidate for a position. CTs sign MoUs with TRAX-Ghana. Mzuzu ADD takes a different approach with follower farmers formed into less formal groups by the Lead Farmers themselves from active farmers willing to adopt the technologies promoted.

Profiles of group members differ across the programme, reflecting local factors such as demography and culture, as well as group formation processes and partner priorities. In Ghana, TRAX groups are either female only, male only or mixed. Women make up 55 percent of total membership of 6,350. Between 35-90 percent of households are group members in the communities where TRAX works, covering all social groups. (Table 1). In Uganda (Kamuli) groups are mainly mixed. In Malawi, Rumphu FS project is targeting 12,000 resource poor households. To date, membership is around 9,900. Mzuzu ADD follower farmers number around 4,600 and tend to be 'average' farmers – not the richest or poorest within a community (FGD discussions). In contrast to other programmes, Mzuzu ADD followers are slightly more likely to be male (male to female 1:0.7).

CBE Selection criteria and profile

All the development partners have a clear selection process and selection criteria, although the final decision on this is generally determined at community level. Hard work, commitment to development, volunteering spirit and enthusiasm for development were common to all partners and communities as well as more general personal qualities such as honesty, approachability, respect and patience. Leadership, mobilisation and organisation skills were also widely cited as criteria. The need for a gender balance was also raised by NGO and government facilities and taken on board by communities. Previous experience of development work was given weight by some communities in Uganda – possibly because of a higher intensity of development interventions. A minimal level of educational achievement was also cited by most communities and programmes (basic literacy and numeracy). Programme staff in SHA Uganda and MZADD staff felt that more educated CBEs are able to implement activities more effectively. On the other hand TRAX-Ghana and SHA Kamuli group members felt this was not as important as community spirited factors. Farming ability and knowledge was cited as important by group members in Rumphu FS project and Mzuzu ADD. However, Holt-Gimenez (1997) argues: 'If the promoters advance too far ahead of their neighbours technologically, their farming system will appear too complex for the latter to adopt'. Farmers in Kamuli and Rumphu acknowledged the technological and educational (and social) gap between themselves and the CBEs: 'Sometimes they [CBEs] criticise and are rude to us – but it's for our own good' (group members in Kamuli, Uganda).

A different selection process took place for the 20 'old' Lead Farmers under Mzuzu ADD who were chosen by ADD staff following compost-making and tree planting competitions in 2002-4. These are akin to 'Master Farmers', intended to transmit by example improved farming techniques to others in their areas. Some of these farmers then trained their best followers to be assistant lead farmers. However, since 2006, the ADD has introduced community selection with Lead Farmers being elected by communities under the VDC or ADC.

There does appear to be a relationship between selection process and profile of CBEs, though it is difficult to quantify without a full CBE inventory. Mzuzu ADD 'old' Lead Farmers (chosen 2002-4) are mainly male and appear the most literate and oldest of the CBEs; the newer LFs are younger and include more women. Kamuli ABP CDAs and Rumphi FS project LFs appear to be a mix of better and less well educated farmers, some with leadership positions in the community. TRAX CTs appear representative of poor to medium wealth farmers. The ratio of males to females CBEs is between 1.5-3:1 (Table 1). This may partly be a result of pressure to set a minimum ratio from programme partners.

Coverage

Ratios of government extension worker to farmers are high in all of the countries studied (1:1500 compared to a target of 1:750 in Malawi, for example): one of the justifications for the CBE approach. Ratios of CBE to group members or followers are considerably lower. In Ghana, there is one CT for every community under the programme: averaging 54 households. In Uganda a CDA usually covers 2 villages each with a group membership of 16-20, giving an average of around 37 members. LFs under Rumphi FS project have a target of 60 followers. They cover around 10-15 groups in up to 5 villages, each with 10-15 members. 'Active' followers are around 50. Mzuzu ADD LFs have a target of 100 followers each from 2-4 villages although in practice the small numbers of LFs mean that they have to spread themselves thinly over a larger area with limited time to follow-up. Actual followers are around 90.

Table 1: Project members/followers and community based extensionists, 2010

	TRAX Ghana	SHA Uganda (Kamuli RDP)	Rumphi FS project	MZADD LF (old+new)
Project member /followers	6349	17000 (6000)	9879	4600
Male	2796		4756	2750
Female	3553		5123	1850
Ratio members M:F	1:1.3	tbc	1:1.1	1:0.7
CBEs: Total	118	620 (164)	200	51
Male	77		152	30
Female	41		48	21
Ratio CBEs M:F	2:1	tbc	3:1	1.5:1
CBE : followers	1:54	1:37	1:49	1:90
No. project groups	285	1065 (381)		-
No. members per group	15-30	16-20	40-60	-

Overall SHA and partners' programme coverage in the three countries is shown in Table 1. Total number of CTs in TRAX-Ghana is 118, with 620 CDAs in SHA Uganda, 192 Lead Farmers in Rumphi FS project and 71 under Mzuzu ADD Lead Farmer programme. Total farm families reached by CTs in Ghana is around 6350, by CDAs in Uganda's four RDPs an

estimated 17000 (6000 in Kamuli RDP), by Lead Farmers under Rumphu Food Security Project, 10800, and by Mzuzu ADD Lead Farmers, up to 7100 households.

2.3 Roles of CBEs

A wide range of roles are assigned to community based extensionists (Lopez in Scarborough et al. 1997). These can be looked at under five main areas:

- **Liaison and mobilisation.** The importance of CBEs as a link between communities and the development organisation is recognised by most of the programmes studied. The two-way link supports articulation of demand for technologies and services by communities through CBEs to the service provider (though evidence of impact on service provision is limited). In Uganda, liaison between the organisation and communities, two-way channelling of information and convening meetings is cited as the primary function of CDAs by both SHA programme staff and community groups. In Rumphu FS Project mediation between the Ministry and communities is cited as LF's second most important function. TRAX-Ghana programme staff put this function fifth behind other priorities such as sustainable development and community capacity building initiatives. The possible exception is Mzuzu ADD Lead Farmer project where communities and the ADD appear to consider LFs primarily as local experts and conveyors of knowledge with a lesser role in transmitting information back up from the community.
- **Training farmers in new technologies.** Increasing smallholder agricultural production and livelihoods through the adoption of improved technologies (especially sustainable agriculture) is a basic premise of SHA activities. The role of CBEs in acquiring, practising and disseminating these technologies is pivotal. For TRAX, facilitating the uptake of LEISA through training farmers is one of the CTs' most important roles. In Malawi, LFs' role in teaching or training of farmers in improved agriculture, land husbandry, irrigation, animal husbandry and natural resource management is also cited first by the programmes and communities. In Kamuli Rural Development Programme, acting as extension staff in the community is seen as the second most important role after liaison. At a basic level, CBEs are supposed to receive information on solutions to common problems during training or briefings, put this into practice in their own fields, and then pass the information on to other farmers. But the process of transforming information received into knowledge which can be internalised and utilised first by the CBE and then other farmers is complex. Feedback from communities is very positive: CBEs do a generally good job in simplifying and interpreting information they have received from professional extension workers, the media etc., a small number of communities (mainly in Uganda) complained of confusing messages. CBEs' superior practical knowledge of the local agroecology and socio-economy (vis-a-vis extension workers who have a wider, theoretical knowledge) may include: how technologies interact with local soils, climate, seasonal labour availability etc. Several Lead Farmers in Mzuzu ADD are outstanding examples of farmer innovation and adaptation of standardised technologies to the local area: carrying out experiments into new types of composting, pest control etc (Box 1). The ability of different farmers to take up the technologies is looked at in Chapter 3.

Box 1: Lead Farmers as role models – Mzuzu ADD

Mr Eston Mazolo, Lead Farmer, was voted the second NATION ACHIEVER for 2008: an annual award given by a national newspaper to individuals, groups or institutions that have made a unique and outstanding contribution in the communities they live or country as a whole. FAIR nominated Mr Eston Mazolo for the award. Eston Mazolo was selected as a Lead Farmer by Mzuzu ADD and Harvest Help/Find Your Feet (FAIR) in 2004 following a composting competition where 20 farmers were identified as making the most manure. Each Lead Farmer works with around 100 follower farmers, demonstrating composting and sustainable farming practices. Mr Mazolo has built a schoolroom for training and sometimes hosts visiting farmers from FAIR projects and other organisations. He demonstrates different compost-making techniques as promoted by Mzuzu ADD and actively experiments with different types of composts, developing his own mixtures and pellets. Some of these are being tested by researchers at Chitedze national Agricultural Research Station.

- **Role model on farming and natural resource management.** The potential for positive influence of a CBE – who has achieved food security, income and status through farming – on others in the community through raising aspirations is cited by TRAX Ghana staff and Mzuzu ADD LF programme. Raising community consciousness on the need for and existence of sustainable natural resource management strategies is also an important role, often pursued through group activities (e.g. fire prevention activities in northern Ghana).
- **Facilitating community development.** The development model of building capacity of communities to plan for their own development and effectively access government, civil society and private sector services has been adopted across SHA programmes. For TRAX-Ghana, this is the nexus of the CT approach - operationalising sustainability and self-reliance through community groups. SHA Uganda RDPs and Rumphu FS also assign community development activities to CBEs. Evidence of the success of this role is discussed under Sustainability (below). Mzuzu ADD, as a provider of government services, has a different development model based on supporting improved livelihoods through agricultural production and marketing. Community development is under the remit of the Department for Community Development Services and the decentralised Area and Village Development Committees (Ministry of Local Government).
- **Providing other services.** CDAs in Uganda and LFs in Rumphu FS are involved in identification of beneficiaries and distribution of inputs under the active phase of the project, and in following up on revolving seed and livestock during and after project implementation. This necessitates a relationship closer to service-provider client and CDAs have adopted different approaches to deal with this, including working as a team. The range of CBE-Community relations identified in the study is shown in Box 2. Other services provided by CBEs, such as support and counselling for People Living with HIV AIDS (PLWHA) and adult literacy in Uganda involve CDA time rather than material resources and are thus perceived differently by communities.

Box 2: Typology of CBE-Community relations

- Group member/facilitator: facilitate joint community development, technology adaptation
- Implementer: carry out improved techniques with farmers on their fields
- Trainer: teaching farmers improved methods
- Master farmer: practise improved farming
- Service provider: Livestock treatment
- Input provider: Identification of beneficiaries, follow-up revolving fund

2.4 Approaches and methods

Programmes promote various approaches to reach communities and these are adopted and adapted by CBEs in encouraging their co-farmers to take-up the technologies. Successful strategies include:

- Demonstration plots
- Working with a group on community or individual farms
- Follow-up visits to farmers fields
- SHA Uganda: some CDAs work as a group, especially useful on recovery of revolving inputs and funds

These can usefully be compared to experiences in the Philippines (Box 3) (Bhuktan in Scarborough et al. 52-4). What works well may need to be tailored to specific circumstances and community groups.

Box 3: Successful Methods used by Farmer-Extensionists Baile Upland Management Project, Philippines

- Taking pictures during activities – encourages farmers to participate in group
- Facilitating cross-visits to farms – learn more from each other's experiences
- Teaching while demonstrating – seeing and doing
- Distributing new planting materials – encourages farmers to try out
- Livestock pass-on
- Informal meetings for sharing experiences – including on savings/credit
- Illustrated booklets – used even where non-literate by member's children
- Assigning farmer-extensionists to villages other than their home village – more credible, effective

2.5 Training

All CBEs receive training from programmes in both sustainable agriculture and development, but there are significant differences between the type and length of training and support provided across the programmes.

TRAX-Ghana operates a five year training programme using its own Field Officers/Senior FOs to deliver initial capacity building training to groups and from year 2 more intensive training with CTs (20-27 CTs). CTs are trained in 14 development themes and 4 or more

technical areas, often concurrently (Box 4). Training sessions last for 1-5 days. Additional training in HIV and AIDS, fire prevention and control etc. has been organised by TRAX and provided by specialist organisations (e.g. Ghana Fire Service).

Box 4: TRAX-Ghana Training Modules		
Theme	Module	
Capacity	1	The training process - overview
Building	2	Group development techniques – group dynamics
And	3	Communication in groups
Development	4	Conflict management in groups
	5	Conducting group meetings
	6	Development
	7	People centred/Grassroots advocacy
	8	Practical steps in community needs assessment
	9	Practical steps in forming a dynamic CBO
	10	Behavioural styles in groups
	11	Gender role analysis
	12	Leadership styles
	13	Community land use planning
	14	Participatory community planning
Low External	15	Preparation of compost manure
Input	16	Tree growing
Sustainable	17	Use of 'A' frame to identify contours for bunding
Agriculture	18	Business management and entrepreneurial skills

TRAX also offers its in-house experience in capacity building to staff from other organisations in northern Ghana and the region: over the past 10 years at least 18 training courses have been provided to mainly NGOs and CBOs in LEISA and community development.

Mzuzu ADD provides in-house training to its Lead Farmers: the Department of Land Resources trains LFs in sustainable agriculture for an initial 1 week (3-5 days) and then follow-up sessions led by specialists from the ADD such as livestock management and health, gender. LR Department also trains Rumphi FS lead farmers for an initial 1 week on sustainable agriculture, tree management and business management, with follow-up 3 day sessions on topics such as livestock management and health. Extension staff at EPA level train LFs in leadership, group formation and gender. Rumphi FS programme has provided funding for Mzuzu ADD LR Division to produce up-to-date training materials which are being used to train Lead Farmers both with the FS Programme and across the ADD (Box 4).

SHA-Uganda provides most of its training through government departments at District Level. Community-Based Services Department trains CDAs in group dynamics, leadership and governance, HIV AIDS guidance and M&E (3 days). CDAs are trained alongside group members in modern and sustainable agriculture. Training sessions in areas such as seed certification are provided for CDAs by specialists from government Research Stations etc.

During training CBEs frequently establish contact with technical experts from the private and public sectors and with other farmers, a useful network which they can tap into when they need information and technical advice once they finish their training.

2.6 Support

The nature and extent of support which should be provided to CBEs is hotly discussed by organisations and CBEs: some arguing that without incentives there will be little action, with others insisting that a volunteering spirit is vital to sustainable community development. Experiences from Asia and Latin America are mixed. Holt-Gimenez (1997) believe that 'if the promoters are perceived as receiving too many special advantages (salaries, perks etc.) they will be considered as 'different' and the alternative technologies implemented by them may be considered beyond the reach of the 'average' or 'ordinary' smallholder farmer'. However Bhuktan et al. (1997:54) found that 'providing honoraria to farmer-extensionists at a rate equivalent to the income they could lose by foregoing their farm work in the service of their fellow farmers, not only inspires them to do extension work, but also encourages other interested farmers to double their effort in order to pass the criteria to become a farmer-extensionist'.

There is agreement on providing transport for CBEs: all programmes supplied bicycles for visiting farmers and attending meetings. In northern Ghana the number of CTs slightly exceeds the 2-3 bicycles provided per project area; similarly in Uganda. Recently recruited CBEs such as LFs in Rumphu Food Security programme were more likely to have working bicycles, whilst many of those provided to Mzuzu LFs in 2004 are in disrepair. Maintenance of the bicycles is generally the responsibility of CBEs and/or communities. CBEs from all programmes pointed to bicycle maintenance as a cost to them. In Ghana and (occasionally) Uganda communities sometimes assist with spares or lending bicycles.

Some programmes provide gumboots to CBEs; T-shirts by Uganda SHA after request from CDAs. Some hand tools are provided by TRAX and Rumphu FS for measuring contour bunds etc. Stationery for record-keeping is generally provided by programmes.

For meetings and training conducted outside their community, Rumphu FS covers all costs for participants; similarly TRAX Ghana and Mzuzu ADD (funds permitting). Only SHA Uganda provides a small cash quarterly meeting allowance of 5000/- (£1.40). The range of support provided by NGOs and government organisations is shown through a case study of Rumphu District (Appendix). Here only 1 NGO is providing a cash quarterly allowance for its Lead Farmers.

Support is also provided to many CBEs by communities in appreciation of their work. In northern Ghana, after the CT (often with other group members) has helped with marking out contour bunds, people usually follow a tradition of providing food, but if the beneficiary is unable to do so (for example widows), CTs willingly assist for free. This contrasts with traditional labour groups where very poor or vulnerable people are frequently excluded if they are unable to contribute either labour or resources. TRAX beneficiaries frequently provide a chicken, eggs or groundnuts for the CT, or they may decide as a group to help on the CT's field. In Malawi, most communities said they supported the LF by following what they said and thank them verbally: most had not considered providing material support. In

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Uganda, a few communities reported giving groundnuts, seed, milk or even money to CDAs. However, other communities gave nothing insisting 'SHA rewards them'. Apparently group members and followers themselves are often unaware, misinformed or have different expectations on support provided to CBEs.

Issues around sustainability and scale-up are discussed in Chapter 4.

3. Impact on smallholders' food security and livelihoods

3.1 Introduction

Impact of SHA Community-based extension approaches on smallholders' food security and livelihoods can be looked at from a number of perspectives. This chapter examines how effective CBE are in promoting uptake of technologies and how far this has improved food security and livelihoods; how equitable the programmes are in terms of reaching all smallholder groups; and how efficient they are in terms of meeting these objectives. It draws on qualitative and quantitative indicators to capture individual community members' perceptions.

3.2 Effectiveness

Effectiveness of CBE approaches in contributing to improved food security and livelihoods of smallholder farmers can be assessed at several levels. Rogers' (1995) innovation decision process describes stages in farmer decision-making as: acquiring knowledge about the technology; deciding to try it out; and making a decision on whether to take it up or reject it. Further stages might be farmer adaptation of the technology to fit their own socioeconomic and agroecological conditions, and passing on the technology to other farmers. The model can be used to assess farmer decisions on technologies before full adoption (intermediate impact). However, it is notoriously difficult to establish attribution given other (multiple) sources of innovation and external factors influencing uptake (such as input and output pricing and marketing). There are also differences between the programmes in terms of provision of inputs (such as planting materials) and timing of programmes (how recently started/completed) which are likely to affect prevailing uptake rates. Finally, sample sizes in the study were relatively small. Thus findings are merely indicative and need to be interpreted with caution.

Technology training and knowledge

Training is a first stage in providing farmers with an opportunity to take up new technologies. The study looked at the types of technologies farmers were trained in and sources of training. In all countries studied a high proportion (80-100 percent) of group members or follower farmers had received training on soil conservation, tree planting, composting, crop storage and livestock production: in most cases this was significantly higher than non-group members (Table 2). Farmers in Uganda and Malawi received more specialised training on seed selection as well as hygiene and sanitation (Uganda) and nutrition (Malawi), again significantly higher than non-participating farmers. The greatest difference appears in training in development activities such as group dynamics, business development and energy saving stoves, where 50-85 percent of followers and group members have received training, compared to 8-40 percent of non-followers. In Malawi and Uganda group followers and group members were also significantly more likely to have received training on HIV and AIDS awareness and support.

Table 2: Training on technologies received by CBE followers/group members and non-members/followers (% of farmers surveyed)

	Ghana		Uganda		Malawi		
	TRAX n=41	Non- group n=39	SHA n=45	Non-group n=35	MZADD n=20	RLP n=20	Nonfollow n=40
Soil conservation	100.0*	84.6	93.5*	45.7	95.0	100.0	90.0
Tree planting	100.0*	69.2	87.0*	48.6	100.0	100.0	82.5*
Not burning	100.0	89.7	-	-	95.0	100.0	75.0*
Composting	100.0	97.4	93.5*	54.3	100.0	100.0	85.0*
Storage	97.6*	25.6	95.7*	51.4	100.0	100.0	85.0
Diversification	63.4*	25.6	-	-	85.0	100.0	97.5
Livestock	100.0*	61.5	93.5*	51.4	80.0	100.0	82.5
Agronomy/seeds	48.8*	10.3	97.8*	62.9	90.0	100.0	100.0
Stoves	82.9*	41.0	69.6	37.1	45.0	100.0	20.0*
Groups	85.4	20.5	78.3*	34.3	5.0	85.0	7.5*
HIV AIDS	100.0	100.0	93.5*	68.6	5.0	95.0	2.5*
Business/IGA	51.2*	12.8	84.8*	20.0	40.0	85.0	7.5*
Nutrition/hygiene	-	-	97.8*	77.1	10.0	70.0	0*

*Significant (99% confidence level)

The study sought to establish who had provided the training: community-based extensionists, project staff, government extension staff or other organisations. In Malawi, where both Mzuzu ADD and Rumphu FS project are following extension models where farmers are trained primarily by Lead Farmers, over 80 percent of follower farmers' training in sustainable agriculture was delivered by the LFs, with less than 10 percent by government extension staff (Table 3). Non-followers received the majority of their agricultural technology training from government extension workers (70-80 percent), with a small proportion (up to 18 percent) also getting some training from the Lead Farmers. Reach to non-project/non-follower farmers is discussed in Scaling-up (below). In Uganda and Ghana, farmers reported that for most technologies, training had been given by Project staff (up to 90 percent and 100 percent respectively). Around 10-40 percent of farmers had received training from CBE staff, frequently in addition to project staff. This is in line with TRAX-Ghana and SHA-Uganda approaches of project staff providing initial training to all members, with follow-ups by CTs and CDAs. Few of these group members had received any training from government extension staff. For non-group members, much less training was received: generally less than 10 percent had attended training by the project and a similar proportion by government extension. CTs were the source of training for a small number of non-group farmers (up to 8 percent), more for composting (21 percent). In Uganda, similarly small numbers of non-project members appear to have been trained by project staff (up to 9 percent), except for soil conservation (20 percent). However CDA training appears to be reaching a higher proportion of non-group members in Uganda: around 20 percent of those interviewed.

For development topics, such as group management, business development, sanitation, nutrition and post-harvest storage the training provided by project staff in Ghana and Uganda and by CBEs in Malawi and Uganda is significant, with limited inputs from

government extension. Non-group members have generally received little training in these areas, except in Uganda where CBEs appear particularly effective in reaching non-project as well as project members.

Table 3: Sources of training on technologies (% of farmers surveyed)

	Ghana		Uganda		Malawi		
	TRAX n=41	Non-group n=39	SHA n=45	Non-group n=35	MZADD n=20	RFS n=20	Nonfollow n=40
Soil cons.							
CBE		7.7	21.7	20.0	95	100	17.5
Project	100	5.1	90.5	20.0	-	-	-
Govt ext.		2.6	2.2	5.7	-	15	77.5
Trees							
CBE		5.1	21.7	17.2	100	100	10.0
Project	100	5.1	86.9	2.9	-	-	-
Govt ext.		10.3	-	22.9	-	15	75.5
Compost							
CBE		20.5	41.3	20.0	100	100	12.5
Project	100	7.7	89.1	8.6	-	-	-
Govt ext.		-	2.2	20.0	-	15	72.5
Storage							
CBE		7.7	30.5	17.2	95	100	15.0
Project	100	-	89.1	5.8	-	-	-
Govt ext.		-	4.3	8.6	-	10	72.5
Diversific.							
CBE	4.9	2.6	-	-	85	100	12.5
Project	51.2	2.6	-	-	-	-	-
Govt ext.	4.9	7.7	-	-	-	10	85.0
Livestock							
CBE		-	10.9	17.2	80	100	15.0
Project	100	2.6	78.3	2.9	-	-	-
Govt ext.	41.4	38.5	15.2	25.7	5	10	70.0
Stoves							
CBE		-	6.5	2.9	45	55	2.5
Project	80.5	-	54.3	-	-	-	-
Govt ext.	2.4	-	10.9	25.7	-	5	17.5
Groups							
CBE		2.6	10.9	5.8	5	100	5.0
Project	82.9	5.1	73.9	2.9	-	-	-
Govt ext.		2.6	2.2	25.7	-	-	5.0
HIV AIDS							
CBE		2.6	19.6	22.8	5	95	2.5
Project	68.3	5.1	82.4	2.9	-	-	-
Govt ext.	19.5	56.4	-	25.7	-	10	-
IGAs							
CBE		-	21.7	11.4	35	85	2.5
Project	48.8	-	78.2	5.7	-	-	-
Govt ext.		-	4.3	2.9	-	5	-
Nutrition/ Hygiene							
CBE	-	-	34.8	34.3	10	70	-
Project		-	95.6	5.8	-	-	-
Govt ext.		-	2.2	25.7	-	5	-

Notes: Totals may not add to 100 due to multiple sources of training and/or no training received

Evidence of take-up of the technologies is shown in Table 4. For most of the key sustainable agriculture technologies – soil conservation, tree planting, not burning, composting and improved storage and livestock keeping – 75 to 100 percent of followers/group members are practising. This is significantly higher than practising rates for non-group members in Ghana and Uganda (ranging from 18 to 67 percent). In Malawi, the proportions of both recognised Lead Farmer followers and non-followers practising the sustainable agricultural technologies

being promoted are high: 80-100 percent and 75-90 percent respectively. This may reflect the training provided by government extension staff as well as Lead Farmers. Development skills – group activities, HIV and AIDS awareness and support, business, nutrition and hygiene are also being practised by a large proportion of those trained. Significantly more group members than non-members are practising these skills, contributing to both individual or household and community development.

Table 4: Farmers practising technologies (% farmers surveyed)

	Ghana		Uganda		Malawi		
	TRAX n=41	Non-group n=39	SHA n=45	Non-group n=35	MZADD n=20	RFS n=20	Non- follow n=40
Soil conservation	73.2*	17.9	89.1*	42.9	95	100	90.0
Tree planting	90.2	48.7	84.8*	42.9	100	100	82.5
Not burning	95.1	48.7	-	-	95	100	75.0
Composting	95.1	66.7	93.5*	54.3	100	100	82.5
Storage	85.4*	23.1	89.1*	45.7	100	100	85.0
Diversification	36.6*	7.7	-		100	100	97.5
Livestock	95.1*	61.5	84.8*	48.6	85	100	82.5
Agronomy/seed	19.5	5.1	95.7*	84.6	80	100	-
Stoves	46.3	5.1	41.3	37.1	90	100	20.0
Groups	58.5*	5.1	71.7*	34.3	45	55	7.5
HIV AIDS	95.1	92.3	95.7*	68.6	5	100	2.5
IGAs	34.1	2.6	65.2	17.1	5	95	7.5
Nutrition/hygiene	-	-	97.8	77.1	10	70	-

As discussed above, it is difficult to attribute technology take-up to a single source such as training received. However, given the large proportion of training being delivered by the project and/or CBEs for group members/followers and the high take-up rates, it appears that much of the training provided is being implemented. This is consistent with findings on farmer assessment of usefulness of the technologies to them (Table 5). In general, technologies were found to be useful or very useful. A few, such as soil conservation in Ghana were reported as significantly more useful by group members than non-members. However, the generally high ratings indicate the usefulness of training in general to farmers, regardless of source of training. It should also be noted that the content of much of the technical training is consistent across sources: with sharing of materials and trainers between SHA programmes and partners (in country).

Table 5: Farmer ranking of usefulness of technologies (average scores)

	Ghana		Uganda		Malawi		
	TRAX n=41	Nongroup n=39	SHA n=45	Non-group n=35	MZADD n=20	RFS n=20	Non-follow n=40
Soil conservation	4.8	3.3	4.8	4.4	4.4	4.6	4.1
Tree planting	3.9	4.1	4.7	4.3	4.4	4.4	4.2
Not burning	4.8	4.4	4.6	4.5	3.8	4.1	4.0
Composting	4.8	4.5	4.6	4.3	4.3	4.6	4.3
Storage	3.9	3.9	4.6	4.8	3.9	4.2	4.1
Diversification	3.2	3.5	-	-	3.9	4.1	4.0
Livestock	3.5	3.1	4.4	4.5	3.9	4.2	4.0
Agronomy	3.3	3.0	4.6	4.1	3.9	4.1	4.2
Stoves	4.3	4.0	4.5	4.2	3.7	4.1	4.1
Groups	3.6	4.0	4.6	4.6	4.0	4.2	4.3
HIV AIDS	3.8	4.0	4.7	4.7	4.0	4.1	4.0
IGAs	3.8	4.0	4.2	4.0	3.7	4.0	4.7
Nutrition	-	-	4.7	4.7	4.0	4.0	-

Note: 5=very useful 1=not useful

Impact on food security and assets

Any assessment of impact of SHA projects as a whole and CBEs in particular on smallholder livelihoods gives at best only a very rough indication of direction and order of magnitude. Several different indicators were used in this assessment. Changes in smallholder production of the main staples since the inception of the project by members and non-members show significant average increases in millet for TRAX-Ghana members and in maize production for LF followers in Malawi compared to decreases for non-members/followers (Table 6). In Uganda both SHA group members and non-members recorded increases in maize production since project inception. Soya is shown as an example of increased diversification as well as a source of income and nutrition. Production has increased in Ghana and Malawi but fallen in Uganda (due to declining market prices and switches to other crops). Cassava production is shown for Uganda where improved cultivars have significantly increased yields of group members compared to non-members. Other crops show similar production increases (where recorded) associated with use of improved seeds and planting materials and improved soil fertility practices.

Table 6: Production of major crops since start of project (average kg/household)

Production Changes	Ghana		Uganda		Malawi		
	TRAX member	Non-members	SHA group	Non-members	MZADD Follower	RFS Follow	Non-follower
Maize kg now	41	40	1382	1451	2280	2040	1451
Maize before	13	32	648	701	1601	1590	1846
Maize change	+28	+8	+734	+750	+679	+450	-395*
Millet now	159	112	na	na	na	na	na
Millet before	87	112					
Millet change	+72*	0					
Soya now	12	10	51	60	60	23	12*
Soya before	0	1	72	48	8	0	15
Soya change	+12	+9	-21	+12	+52	+23	-3
Cassava now	na	Na	4366	2826	na	na	na
Cassava before			1266	1227			
Cassava change			+3070	+1599			

A central goal of SHA programmes is to enable smallholder farmers to improve their household food security. Before the interventions there were high levels of food insecurity in both Ghana and Uganda: 100 percent of TRAX-Ghana members and 41 percent of SHA-Uganda farmers were unable to produce enough food for their families to last even six months of the year (Table 7). The rate of insecurity for non-members before the project started was similarly high. Now, 56 percent of TRAX group members have sufficient food for up to 6 months, though they remain chronically food insecure in this very dry and drought-prone area. Food is now available for an extra 3 months on average in TRAX group households whilst non-members have seen little change in their food production. In Uganda, the situation has also improved dramatically with 89 percent of project households now food secure and food supplies lasting an extra 4.5 months. Non-project households have also seen improvements, though not as large, with 74 percent now food secure. In Malawi, government policy on targeted subsidised agricultural inputs together with a series of relatively good rains had already improved the food security situation of households to at least 9 months for three-quarters of households. The Lead Farmer project and Rumphu Food Security project appear to have contributed to improving this further so that 80 and 100 percent of LF follower farmers respectively are now food secure compared to 59 percent of non-followers.

Table 7: Number of months households are food secure (% households)

Food secure months		Ghana		Uganda		Malawi		
		TRAX members	Non-members	SHA group	Non-members	MZADD follower	RFS follower	Non-follower
<6	Before	100	76.9	41.3	42.9	0	0	0
	Now	43.9	64.1	0	2.9	0	0	0
6-8	Before	0	19.9	28.3	31.4	10	0	2.4
	Now	51.2	30.8	10.8	20.0	0	0	0
9-11	Before	0	2.6	6.5	0	80	70	78.0
	Now	4.9	5.2	0	2.9	20	0	41.4
12+	Before	0	0	23.9	25.7	10	30	19.5
	Now	0	0	89.1	74.3	80	100	58.6
Ave. months								
	before	2.9	4.3	7.0	6.8	9.8	11.0	10.1
	Now	5.9	4.9	11.5	10.7	15.6	15.6	13.6
	Change in months	+3.0*	+0.6	+4.5	+3.9	+5.8	+4.6	+3.5

Several indicators were looked at in an attempt to assess improvements in overall livelihoods and well-being of households affected by the CBE projects and other SHA interventions. Ownership of all types of assets has increased since the start of the projects, both for members and non-members (Table 8). In Ghana, TRAX members are slightly more likely to own material assets such as mattresses and mobile phones than non-members. In Uganda and Malawi the difference is less marked.

Table 8: Assets owned before project and now (% households)

Asset change	Ghana		Uganda		Malawi		
	TRAX member	Non-member	SHA group	Non-member	MZADD follower	RFS follower	Non-follower
Improved house							
Before	82.9	64.1	57.8	37.2	55	55	39.0
Now	97.6	82.1	95.0	74.3	70	60	56.1
Mattress before	53.7	30.8	93.5	91.4	45	35	57.3
Now	73.6	48.7	95.7	88.6	80	85	73.2
Cattle before	46.3	48.7	63.0	54.3	30	0	17.1
now	43.9	38.5	84.8	77.1	45	0	22.0
Goats before	82.9	84.6	66.7	68.6	45	30	19.5
now	81.5	79.5	82.6	80.0	55	35	24.4
Pigs before	-	-	28.3	25.7	40	30	34.1
now	-	-	29.3	34.3	50	70	53.7
Radio before	70.7	59.0	87.0	65.7	55	45	51.2
Now	87.8	76.9	95.7	88.6	85	75	78.0
Phone before	22.0	15.4	2.2	0	20	25	24.4
now	78.0	48.7	73.9	71.4	70	75	73.2
Bike before	65.9	71.8	84.8	57.1	40	25	46.3
Now	87.8	76.9	95.7	88.6	65	40	53.7
Motorbike bef.	2.4	7.7	6.5	2.9	0	0	7.4
now	7.3	10.3	17.4	28.6	5	0	2.4

Farmers also gave their own assessments of changes in their livelihoods and assets since the start of the projects (Table 9). Group members and followers in all three countries were significantly more likely than non-members to report improvements in livelihood assets such as soils and livestock and in a whole set of outcomes – crop production, food security, income, health and fuel situation (latter two: Ghana and Malawi only). Uganda SHA members and Malawi LF followers and project members also expressed significant improvements in their ability to cope with drought, but in Ghana neither TRAX members nor non-members experienced any change, reflecting the challenge of finding appropriate agricultural technologies for severe drought zones. On wider development indicators such as community relations, women’s participation in community activities and women’s role in household decision-making, virtually all members and non-members reported improvements. This finding is supported by comments and views of men and women within project communities (see Box) and reflects a wider community impact of the training and development approaches centred around the CBEs and groups.

Table 9 Farmer ranking of changes in Livelihoods and Assets since start of project

Livelihoods Asset Change	Ghana		Uganda		Malawi		
	TRAX members	Non- members	SHA group	Non- members	MZADD follower	RFS follower	Non- follower
Soils	3.0*	2.0	3.0*	2.6	3.0	2.7	1.8*
Livestock	2.6*	1.6	3.0*	2.7	2.6	2.3	1.8*
Crop production	3.0*	2.1	3.0*	2.7	2.1	2.2	1.4*
Food security	3.0*	2.3	3.0*	2.8	2.3	2.3	1.7*
Income	3.0*	2.2	3.0*	2.7	2.6	2.3	1.7*
Health	3.0*	2.2	3.0	2.9	2.9	2.3	1.6*
Fuel	2.5*	2.1	2.4	2.4	3.0	2.5	1.9*
Drought coping	2.0	2.0	2.9*	2.5	2.9	2.9	2.0*
Community rel	3.0	2.8	3.0	2.9	2.9	3.0	^a
Women	3.0	3.0	3.0	2.8	2.9	3.0	^a
participation							
Women HH	3.0	2.9	3.0	2.9	2.9	3.0	^a
decision- making							

3=positive change 2=no change 1=negative change

^a Data not available for Malawi

*Significant (99% confidence limit)

Farmer perceptions of change in their overall household status since the start of SHA interventions show significant improvements (Table 10). Before the project around 60 percent of households in Ghana and Uganda and all LF followers in Malawi were struggling or not doing well. Now, less than 10 percent of project households consider themselves to be not doing well. Eighty-five percent of group members in Uganda, 75 percent in Malawi and 30 percent in Ghana now consider themselves to be doing well or well off. Improvements have been experienced by both project and non-project households, but in all countries improvements have been greater for those supported by projects and CBE (highly significant in Ghana and Uganda).

Table 10: Farmer perceptions of own household status before project and now (% households)

Household status	Ghana		Uganda		Malawi		Non-followers
	TRAX members	Non-members	SHA group	Non-members	MZADD follower	RFS	
Before:							
Not meeting needs	0	0	21.7	31.4	65	60	56.1
Not doing well	61.0	38.5	37.0	40.0	35	40	31.7
Doing ok	36.6	59.0	37.0	25.7	0	0	7.3
Doing well	2.4	2.6	0	2.9	0	0	2.4
Well off	0	0	4.3	0	0	0	0
Now:							
Not meeting needs	0	0	0	0	0	0	0
Not doing well	9.8	33.3	0	5.7	10	0	31.7
Doing ok	61.0	48.7	15.2	34.3	15	25	22.0
Doing well	24.4	15.4	82.6	60.0	45	45	41.5
Well off	4.9	0	2.2	0	30	30	2.4
Average status							
before ^(a)	2.4	2.6	2.3	2.0	1.4	1.4	1.5
now	3.2*	2.7	3.9*	3.5	4.0	4.1	3.1
change	+0.8	+0.1	+1.6	+1.5	+2.6	+2.7	+1.6

^(a) 1=not meeting needs 2=not doing well 3=doing ok 4=doing well 5=well off

Overall reach of the CBE programmes is looked at in efficiency below.

3.3 Equity

SHA aims to reach the poorest and most vulnerable members of the community through its community-based extension approach. These have been identified as women and food insecure households. Evidence of their participation and securing benefits from the project has been assessed in terms of membership and participation as CBEs and follower farmers/group members, access to training and improvements in agricultural production, food security, asset ownership, household status and well-being.

Gender

In Ghana, women make up 56 percent of TRAX group membership (Table 1): some women have elected to form women-only groups, whilst others participate in mixed groups. Rumph FS groups are mixed with women slightly outnumbering men. Under Mzuzu ADD male LF followers outstrip women by 30% (despite the higher numbers of female farmers in total), suggesting some bias in reach towards male farmers. The ADD has encouraged the selection of female Lead Farmers in recent intakes which should help address this bias. Gender-disaggregated data was not available for SHA Uganda.

All SHA supported programmes have carried out gender-sensitization, though at different levels. Projects have sensitised communities on selection of women as community-based

extensionists. In TRAX-Ghana and Malawi Rumphu FS, the ratio of male to female Community trainers and Lead Farmers is approximately of 2:1 and 3:1 respectively. Under Mzuzu ADD LF programme only 2 of the original LFs were women, but this has increased significantly with the new Lead Farmers, achieving an overall ratio of 1.5:1.

Training is provided to both male and female group members and followers and they appear to have participated fairly equally in training sessions on both sustainable agriculture and development topics (Table 11). There were some differences in training on fuel efficient stoves and on business activities, where women were slightly more likely to have received training than men. Gender differences in training in stoves appears to reflect traditional divisions in labour, whilst small business activities are seen as important in improving women's income. There are no significant differences in access to training by men and women from CBE, project staff or government extension staff.

Table 11: Training on technologies received by male and female CBE followers/group (% of farmers surveyed)

	Ghana		Uganda		Malawi	
	Men n=30	Women n=16	Men n=22	Women n=24	Men n=18	Women n=22
Soil conservation	96.7	100.0	95.5	91.7	94.4	100.0
Tree planting	96.7	100.0	86.4	87.5	100.0	100.0
Composting	96.7	100.0	100.0	87.5	100.0	100.0
Storage	96.7	87.5	95.5	95.8	100.0	100.0
Livestock	60.0	100.0	95.5	91.7	88.9	90.9
Agronomy/seeds	46.7	43.8	100.0	95.8	94.4	95.5
Stoves	76.7	87.5	63.6	75.0	44.6	54.5
Groups	80.0	68.8	73.3	79.2	50.0	54.5
HIV AIDS	100.0	100.0	95.5	91.7	50.0	50.0
Business/IGA	46.7	50.0	86.4	83.3	55.6	68.2

In terms of impact of the training, uptake rates of technologies by male and female project members/followers are similar across the three countries (Table 11). Sustainable agriculture technologies have been widely taken up by both men and women members. Improved agronomic practices and seed selection are practised by somewhat more men than women in Ghana and Uganda, These slight differences in uptake appear to reflect differences in training (Table 10 above). Perhaps surprisingly, fewer women than men in Uganda and Malawi have taken up use of fuel efficient stoves. On development skills, women in Ghana and Uganda appear slightly less likely than men to be using group management skills, but slightly more women appear to be using the business skills they have acquired in Ghana and Malawi.

Table 12: Male and female group members practising the technologies (percent)

	Ghana		Uganda		Malawi	
	Men n=30	Women n=16	Men n=22	Women n=24	Men n=18	Women n=22
Soil conservation	70.0	62.5	86.4	91.7	94.4	100.0
Tree planting	83.3	100.0	86.4	83.3	100.0	100.0
Composting	90.0	93.8	95.5	87.5	100.0	100.0
Storage	83.3	81.3	90.9	87.5	100.0	100.0
Livestock	86.7	100.0	86.4	83.3	88.9	90.9
Agronomy/seeds	23.3	12.5	100.0	91.7	94.4	95.5
Stoves	40.0	50.0	45.5	37.5	55.6	45.5
Groups	53.3	50.0	77.3	66.7	50.0	54.5
HIV AIDS	96.7	93.8	100.0	91.7	50.0	50.0
Business/IGAs	30.0	31.3	68.2	62.5	55.6	63.6

NB: Differences between means not tested due to small sample size

Impact of the training and support from the project and CBEs on the livelihoods of smallholders and their families is difficult to assess but the various measures used show improvements for both men and women. Production of staple crops, maize and millet, has increased over the project period (Table 13). Women in the three countries appear to have realised larger increases especially in Malawi where this year they produced on average 850kg more maize than before they became follower farmers – partly due to the improvements in dry season gardening around Rumphi.

Table 13 Change in production of major crops since start of project (average kg per household)

Agricultural production	Ghana		Uganda		Malawi	
	Men n=30	Women n=16	Men n=22	Women n=24	Men n=18	Women n=22
Maize change	+19	+32	+723	+743	+222	+849
Millet change	+60	+71	-	-	-	-
Soya change	+9	+17	+5	-44	+43	+39
Cassava change	na	na	+4100	+2085	na	na

Both male and female project members/followers have seen significant improvements in their household food security situation over the project period (Table 13). In Uganda more women members were initially highly food insecure than men, whilst in Ghana they were equally food insecure, and in Malawi both had attained a good level of food security (the government fertiliser subsidy and relatively good rainfall were important contributory factors). After taking up technologies as LF followers/group members almost all farmers appear better off in Uganda and Malawi, with women achieving greater improvements for their households. In Ghana food insecurity remains high at only 6 months, though the situation has improved from around 3 months for both male and female members.

Table 14 Number of months households are food secure (% households)

Food secure months		Ghana		Uganda		Malawi	
		Men n=30	Women n=16	Men n=22	Women n=24	Men n=18	Women n=22
Less 6	before	100	100	31.8	50.0	0	0
	Now	46.2	40.0	0	0	0	0
6-8	before	0	0	40.0	16.6	5.6	4.5
	Now	50.0	53.3	9.0	12.5	5.6	0
9-11	before	0	0	9.1	4.2	77.8	72.7
	now	3.8	6.7	0	0	11.1	4.5
12 +	before	0	0	18.2	29.2	16.7	22.7
	now	0	0	90.9	87.5	83.3	95.5
Average no. months before		2.9	2.9	7.3	6.8	10.1	10.6
	now	5.9	5.9	11.6	11.4	14.4	16.5
Change months		+3.0	+3.0	+4.3	+4.6	+4.3	+5.9

A significant proportion of households have increased their assets over the project and this appears to be the case for both male and female members and their households (Table 15). Before the projects started fewer women members tended to own livestock than men in all project areas. In each of the sites women members were slightly more likely to live in improved houses than men; with other assets the picture was more variable.

Table 15: Assets owned before project and now (% households)

Asset change		Ghana		Uganda		Malawi	
		Men n=30	Women n=16	Men n=22	Women n=24	Men n=18	Women n=22
Improved house	Before	76.9	93.3	54.5	64.6	35.3	47.6
	Now	76.9	93.3	100.0	91.7	50.0	77.2
Mattress	before	46.2	66.7	95.5	91.7	44.4	36.4
	Now	73.1	80.0			88.9	77.3
Cattle	before	50.0	40.0	63.6	62.5	16.7	13.6
	now	50.0	32.3	71.8	87.5	22.2	22.7
Goats	before	84.6	80.0	72.7	62.5	38.9	36.4
	now	84.6	74.3	90.9	75.0	44.4	45.5
Pigs	before	-	-	18.2	37.5	22.2	45.5
	now	-	-	22.7	33.3	44.4	72.7
Radio	before	65.4	80.0	90.9	83.3	44.4	54.5
	Now	84.6	93.3	100.0	91.7	94.4	68.2
Phone	before	19.2	26.7	0	4.2	27.8	18.2
	now	69.2	93.3	68.2	79.2	77.8	68.2
Bicycle	before	80.8	40.0	72.7	95.8	38.9	27.2
	Now	92.3	80.0	95.5	95.8	61.1	45.5
Motorbike	before	0	6.7	4.5	8.4	5.6	0
	now	0	20.0	9.1	20.8	11.1	4.5

Now, women's ownership of livestock has improved alongside men's in Uganda and at a faster rate in Malawi for pigs, a Rumphi FS project activity: three-quarters of women

members interviewed now own pigs. Goat ownership (improved breeds promoted by SHA-Uganda) in Uganda still appears slightly lower for women, though differences are not highly significant. In Ghana, the proportion of women owning larger assets such as bicycles and motorbikes has increased compared to men, though cannot be directly attributed to the project. In Uganda women and men appear to have increased their assets at similar rates, while in Malawi women's ownership of assets such as radios and bicycles has not been as fast as men's.

Women's and men's perceptions of changes in their livelihoods since the project started show similar improvements in most areas (Table 16). This applies to both household status and the role of women in community affairs and household decision-making: the latter showing a universal improvement. Women TRAX-Ghana members are significantly more likely perceive their income and fuel situation to have improved than men. Malawi women follower farmers report they are more likely to have improved food security than men.

Table 16: Farmer ranking of changes in Livelihoods and Assets before project and now

Livelihoods Asset Change	Ghana		Uganda		Malawi	
	Men n=30	Women n=16	Men n=22	Women n=24	Men n=18	Women n=22
Soils	3.0	2.9	3.0	3.0	2.1	2.2
Livestock	2.9	2.8	3.0	2.9	2.8	2.9
Crop production	2.7	2.3	3.0	3.0	2.5	2.4
Food security	2.9	2.8	3.0	3.0	2.1	2.4
Income	2.7*	3.0	3.0	3.0	2.4	2.4
Health	2.9	2.9	3.0	3.0	2.6	2.6
Fuel	2.4	2.7	2.5	3.0	2.8	2.7
Drought coping	2.0	2.1	2.9	2.4	3.0	2.9
Community rels	2.9	2.9	3.0	2.9	3.0	3.0
Women participation	3.0	3.0	3.0	3.0	3.0	3.0
Women HH decision-making	3.0	3.0	3.0	3.0	3.0	3.0

3=positive change 2=no change 1=negative change

A majority of men and women participants across the project areas have seen improvements in their household status (Table 17). In Ghana and Uganda there appear to be similar improvements between the sexes, but in Malawi women follower farmers are more likely to report that they are doing well or are well off and their overall status appears to have improved faster than men.

Table 17: Farmer perceptions of household status before project and now (% Households)

Household status	Ghana		Uganda		Malawi	
	Men n=30	Women n=16	Men n=22	Women n=24	Men n=18	Women n=22
Before:						
Not meeting needs	0	0	18.2	25.0	0	0
Not doing well	65.4	53.5	45.5	29.2	72.2	54.5
Doing ok	34.6	40.0	31.8	41.7	27.8	45.5
Doing well	0	6.7	0	0	0	0
Well off	0	0	4.5	4.2	0	0
Now:						
Not meeting needs	0	0	0	0	0	0
Not doing well	3.8	20.0	0	0	11.1	0
Doing ok	69.2	46.7	13.6	16.7	27.8	13.6
Doing well	23.1	26.7	86.4	79.2	38.9	50.0
Well off	3.8	6.7	0	4.2	22.2	36.4
Average status						
before ^a	2.4	2.5	2.3	2.3	1.3	1.5
now	3.3	3.2	3.9	3.9	3.7	4.3
change	+0.9	+0.7	+1.6	+1.6	+2.4	+2.8

^a 1=not meeting needs 2=not doing well 3=doing ok 4=doing well 5=well off

Wealth groups

Indicators of wealth status of members and non-members at the start of the project is given in Table 8 which suggests that in Ghana and Uganda members were slightly more likely to own assets such as an improved house, mattress, radio, phone and bicycle (not Ghana), although the differences were not highly significant. In Malawi, non-followers were slightly more likely than followers to own mattresses, bicycles and motorcycles at the start of the project, with little difference in ownership of other assets. Although membership of groups or participation as followers is open to all farmers in an area, it is likely that factors such as time, expected benefits and, according to groups interviewed, lack of a development ethos, may affect a household's willingness and ability to participate. By the end of the project participating households were slightly more likely to have increased their assets than non-participants. Using food security as an indicator of household status group members in Ghana were more likely to be highly food insecure at the beginning of the project than non-members; whilst in Uganda and Malawi there were no marked differences (Table 7). Households' own assessment of well-being gives a more differentiated picture. In Ghana and Malawi more project than non-project households were not doing well at the start of the project (but not significantly so in Malawi); in Uganda non-SHA group households were more likely to have not been doing well (Table 10).

3.4 Efficiency

One of the perceived advantages of community-based extension approaches is their ability to deliver messages at relatively low cost to a large number of beneficiaries. Attempts to test this assertion face considerable challenges in specifying, quantifying and valuing both the costs and benefits of the approaches. Nevertheless benefit-cost ratios have been estimated for the project areas using assumptions set out below.

The major costs of community-based extension programmes are training of CBEs (including payment of resource people either through salaries of in-house trainers or allowances to government specialists, board and lodging for CBE participants, transport for participants, development of training materials), inputs for CBEs (bicycles and sometimes protective clothing and tools, stationery), supervision by project or Ministry staff of CBEs in their home areas (salary costs, vehicles, fuel, stationery) and other back-stopping costs (planning, coordination and reporting by district, country, regional offices). Indicative costs of SHA support for CBE programmes is shown in Table 18 although differences in reporting across programmes make direct comparisons difficult. All of the above costs except back-stopping have been included. TRAX Ghana appears to have lower training costs, probably due to its use of in-house trainers. Under Rumphu FS project support is provided for Rumphu District office (office costs).

Benefits of the programmes are measured in terms of incremental change in production of staple crops over the project period, over and above that which might have been obtained without the project (net change in average production by members/followers less change in average production by non-members). Only maize, millet (Ghana) and cassava (Uganda) production figures are used due to data limitations. These are valued using 2009/10 average farm gate prices. Input costs are not deducted for Ghana and Uganda since the majority of farmers were using limited external inputs. In Malawi fertiliser was used by 95 percent of farmers interviewed (in combination with compost and other technologies): these costs are netted from revenue (assuming 50 percent of followers receive subsidies). Large increases in production attained by members mean that benefits of all projects are quite large.

Costs and benefits have been extrapolated over the project period and discounted to give total net benefits (Table 19). Four years was taken as the minimum project period and a discount rate of 15 percent was used. The resultant estimated costs per CBE are around £500-720 (£3000 for Mzuzu ADD where LFs cover more followers) whilst benefits range from around £3600 in Ghana to £13755 in Malawi's Mzuzu ADD programme for the whole period. Resultant Benefit-Cost ratios are very high at 7.7:1, 14.2:1, 11.6:1 and 6.8:1 for Ghana, Uganda, Malawi Rumphu FS and Mzuzu ADD LF programmes respectively. Even with quite large changes in assumptions on costs (adding in backstopping project costs and increasing fertiliser costs for farmers in Malawi) and benefits (declines in production) the Benefit-Cost ratios are still high. This suggests that investing in CBEs and related support to smallholder farmers gives very good returns.

Table 18: Estimated input costs and returns of CBE programmes (average costs per year £GBP)

	TRAX Ghana	SHA Uganda (Kamuli RDP)	Rumphi FS	Mzuzu ADD LF
COSTS				
Training	2279	5888	5417	5750
Supervision	9149	6159	12000	4425
Bicycles and inputs	1180	854	2984	10200
Office costs			10000	650
Exchange visits				3975
Total costs	12607	12902	30401	19250
RETURNS				
Average net change maize production	16	-16	+450	+679
Price maize per kg	0.21	0.08	0.15	0.15
Average change net maize returns	3.4	-1.3	27.5	61.9
Average net change millet production	31	-	-	-
Price millet per kg	0.30	-	-	-
Average change returns millet	22	-	-	-
Average net change cassava production	-	0.4	-	-
Price cassava per kg	-	0.05	-	-
Average change returns cassava	-	73.6	-	-
Average total net returns (per member)	25	72	28	62
Number of CBEs	118	164	200	51
Total members	6350	6100	10,800	4600
Average members per CBE	54	37	49	90

Table 19: Benefit-Cost Analysis of CBE programme (Discounted GB£)

	TRAX Ghana	SHA Uganda	Rumphi FS	Mzuzu ADD LF
Total costs	32787	36834	61100	71374
Total benefits	253383	522014	711217	484965
Benefit: cost ratio	7.7 : 1	14.2 : 1	11.6 : 1	6.8:1
Cost per CBE	641	507	721	3156
Benefit per CBE	3623	4460	5488	13755

Issues of sustaining benefits made by the CBE projects and scaling-up the approaches are discussed below.

4. Sustainability and Potential for Scale-up and policy influence

4.1 Introduction

SHA is seeking to be a catalyst for widespread community-led development. This depends on identifying the best trigger points for investment of knowledge, creation of links and if necessary start-up resources to enable activities to be self-sustaining and self-replicating without additional external NGO support (to go viral). Community based extensionists are at the centre of these light-touch approaches (low cost initiatives that are sustainable and replicable) (SHA 2009).

Sustainability of the Community-based extension programmes can be looked at from three or more perspectives: compatibility with the environment; ability of the programme to support itself economically or financially without external support; and institutional sustainability: the ability of local institutions to sustain community based extension systems once SHA has withdrawn.

4.2 Sustainability

Environmental sustainability

A central objective of SHA community-based extension programmes is increasing food production by smallholder farmers through the use of improved sustainable farming practices and agroecological approaches. The focus is on technologies which revitalise soils and judicious use of scarce water, both at farm and catchment level.

Findings in Section 3 above indicate high farmer take-up of 'improved practices' promoted by CBEs and the project, including incorporating (rather than burning) crop residue, construction of stone bunds (Ghana) and other soil conservation measures and composting. These have improved yields of food crops by around 50 percent without the use of inorganic fertiliser; except in Malawi where many farmers combine basal compost with fertiliser top-dressing. Almost all group members in Ghana and Uganda observe that their soils have improved, whilst non-project members report no change to their soils (Ghana) and declining soil fertility (Malawi).

Fuel efficient stoves demonstrated and built by programme staff and CBEs use at least one-third less firewood than conventional stoves according to women farmers and are having a positive impact on the fuel situation of around half of member households in Ghana and Uganda (not part of programmes in Malawi).

Sustainable water management is an integral component of most SHA programmes. Lead Farmers in Malawi and CTs in Ghana train followers in improved small-scale irrigation techniques, mainly using low-cost gravity-fed systems and treadle pumps, which have enabled them to irrigate larger areas and produce dry season crops for food and sale. The schemes contribute to drought mitigation by extending the cropping season and reducing dependency on rainfall. Sustainability of water resources was not assessed. The number of

farmers participating in schemes appears relatively small (partly because of the additional set-up costs of the schemes and limitations on potential sites).

Other technologies to mitigate the effects of, and improve adaptation, to climate variability are tree planting and nursery establishment and management which are promoted by CBEs across the programmes. In Malawi, Rumphu FS project is carrying out afforestation activities through the Rural Foundation for Afforestation (RUFA), training Lead Farmers and farmers in establishment of nurseries which are then managed by specialist forestry LFs. Whilst there are many good examples of individual and group planting, overall the average number of fruit, exotic and natural trees owned and managed by farmers has not increased significantly and remains low. Agroforestry technologies have also been promoted by projects and CBEs, particularly intercropping with leguminous shrubs such as pigeon pea and tephrosia. Again, uptake by smallholder farmers to date has been low.

Overall, followers and group members in Uganda and Malawi perceive their ability to cope with drought to have improved significantly, but in northern Ghana – a dry and drought prone area - farmers have seen no significant change since they started participating in TRAX and CBE activities.

Economic/financial sustainability

The question of whether CBEs are willing and able to continue their activities once SHA project support is withdrawn is highly relevant now that many programmes have reached or are nearing 'weaning off' stage. The CBE approach is intended to be low cost and thus financially sustainable for communities over the longer term. CBE costs can be broken down into investment costs: sensitisation, training and equipment; and running (recurrent) costs: back-up, monitoring, repairs and rewards. The programmes have borne almost the entire financial costs of setting up community based extension systems (with contributions from government through Mzuzu ADD in Malawi) and have supported and monitored them for 4-10 years. Training and equipping CBEs constitutes around half of total SHA Uganda's CBE costs and one-quarter of that for TRAX Ghana and Rumphu FS project: the remainder being recurrent costs. These differences are partly due to differences in accounting across the programmes as well as TRAX's in-house training capability but may also reflect emphasis on specific CBE follow-up.

Recurrent costs are those which would need to be covered on a continuing basis, including after the withdrawal of project funds. The most obviously essential of these are relatively small sums: for bicycle maintenance, stationery, travel costs for CBEs to follow up on issues and problems with different organisations in District headquarters etc., which in theory could be met by communities. Some CBE groups have informal and formal structures in place to cover these costs, ranging from members loaning their own bicycles to CBEs to subscriptions levied by Community-based organisations, primarily for savings and marketing. These are signals of growing financial independence, though in practice CBEs and communities in Uganda, for example, have experienced difficulties in collecting subs and are looking at raising revenue through payment-in-kind at harvest etc. The type and frequency of back-up needed for CBEs to maintain their activities need to be considered.

Incentives and rewards to CBEs were discussed in Chapter 2. The nature and mode of funding these is clearly critical to sustainability. Where no support was provided by the project and where communities themselves are providing informal ad hoc support - whether encouraged by the project, initiated by group members/followers or following a traditional support culture – it appears that many CBEs are keeping up their activities after the project has phased-out. For example, in northern Ghana very few CTs are known to have dropped out despite having being weaned off 3 or more years ago. Similarly Lead Farmers under Mzuzu ADD were trained over 6 years ago and have received no financial support from the programme or the communities (but have received high professional recognition): none has dropped out. There is some evidence that in Uganda drop-out rates have been higher: around 25 percent in Kamuli RDP. One reason may be the small allowances paid for attending meetings during the active project phase which acted both as a disincentive to communities to support CDAs and for CDAs to continue in their role once the allowances were withdrawn.

Returns for the programmes have been measured in terms of increased production attained by members and followers. Maintaining this increase requires constant updating of technologies by CBEs and research and extension agents. In Uganda, for example, high incremental returns from cassava were achieved through the introduction of improved varieties and disease resistant cultivars, but maintaining this resistance requires continuous monitoring and collaboration with research stations to acquire new releases. Other, long-term benefits of sustainable agriculture such as composting and tree planting were not estimated but expected to be broadly positive.

Institutional sustainability

Institutional sustainability is a real challenge for SHA programmes in terms of structures and processes to support CBE activities on a medium to long-term basis. It appears to be getting increasing priority and is being addressed in a number of ways, some initiated by the programmes and others by communities and CBEs themselves. These range from initiatives aimed at supporting farmer extensionists to continue their existing functions to wider community structures in which CBEs play a pivotal role.

Maintaining links with parent organisation. Access to some kind of platform for professional and moral support appears to be one factor keeping CBEs active after projects phase out their direct support. In the short and medium term when projects are active in neighbouring areas, CBEs are able to meet programme staff in the field. In Ghana, TRAX Training Officers meet up with CTs in phased out areas periodically to discuss technical problems and issues with groups. As a local NGO, TRAX has a fairly stable presence with an office and resource centre in the regional capital and continues to assist CTs and CBOs in weaned off areas. In Uganda and Malawi CDAs and LFs are supposed to be linked in with local government bodies (see below).

CBE organisations. Opportunities for interaction with other CBEs to exchange ideas, get up-to-date information and receive peer support were perceived by CBEs in all countries as important in maintaining their knowledge and motivation. Lead Farmers in Mzuzu have

drawn up plans for a Lead Farmers Association and discussed these with the ADD. The main hurdle to operationalising it is transport for LFs from different parts of the district. Similar Associations are planned for CDAs in Uganda as partners for programme activities, to facilitate mutual support and potentially to become a strong voice to demand extension and other development services from government. Some CDAs work as a team locally when running meetings and visiting farmers, providing motivation and mutual support in recovering input loans etc. which appears a fairly successful strategy. In Ghana, TRAX CTs aim to meet monthly to share ideas and plan activities. In the absence of formal associations many CBEs in weaned off areas take advantage of other events such as field days to meet up, network and improve their skills.

Linkages with government. In terms of long-term sustainability SHA recognises the key role of Government in providing specialist advice and services to farmers. With decentralised systems of government now being followed in all 3 countries linkages are primarily at District level. Ideally linkages are built up during the project period which can be sustained when SHA is no longer active in the area. SHA Uganda has MoUs with the District Assemblies where their Rural Development Programmes are located and meet their District counterparts on a monthly basis. At the end of the programme period it is handed over to Community-Based Services (CBS) who are supposed to supervise SHA groups, working through CDAs. However, collaboration appears to have been hampered in places by frequent government staff transfers and lack of buy-in to the programme and this, combined with lack of transport by government staff, seems to have adversely affected follow-up on the ground (none of the groups or CTs interviewed had ever been visited by CBS). New projects (Kumi-Bukedea RDP) have been working in partnership with local government from the beginning using Field Officers from the Ministry of Agriculture. They continue to receive salaries from the Ministry with transport and field allowances from SHA. Rumphu FS project follows a similar model. Mzuzu ADD Lead Farmer project is a government initiated project with limited inputs from SHA for training and supervision. It is the brainchild of the Programme Manager and Lead Farmers have been generally well integrated within regular ADD extension activities, with monthly meetings at EPA level and periodically at District offices, depending on activities and availability of transport funds. TRAX Ghana has a less interactive relationship with the Ministry of Agriculture, having less need for support due its in-house training capacity, and facing challenges of District/Municipality bureaucracy and a focus on intensive agriculture. However, TRAX has provided training for some government staff (see below).

Frequency of meetings with and visits to farmers after the end of programme are indicators of programme sustainability. In Ghana all CTs are continuing meeting groups and visiting members in weaned off areas. In Malawi, both the programmes in northern region are on-going. The first group of Lead Farmers - trained in 2004 and now receiving limited support from the ADD - continue to give demonstrations and training on their farms, visiting farmers if requested. In Kasungu, many Community Agricultural Workers (CAWs) from Simlemba Rural Livelihoods Programme (FAIR/MALEZA), which end in 2008, are still visiting farmers and providing assistance when requested and attending MALEZA group meetings. Few of the weaned off CBEs is delivering any formal training. Some CAWs are now participating as community extension specialists or office bearers with other development initiatives in the

area, including research projects with the University of Malawi. In Uganda the picture in non-active programme areas is mixed. Some CDAs are involved in other development activities, including National Agricultural Advisory Service (NAADS) as lead farmers and NGOs (VIDCO, VISLA). Many of these NGOs are specialist credit or service delivery organisations without extension training capacity. Some CDAs are building on their capabilities developed under SHA-Uganda as farmer mobilisers and trainers and deepening or widening their reach within their communities. As in SHA, most programmes promote the election of community extensionists by group members. This has led to the interesting result that whilst some communities recognise the skills of CDAs and are keen to re-elect them, others believe “they have eaten already” and others should be given a chance.

Building capacity to access services. SHA has a two-pronged approach: to build community awareness and capacity to engage and address local government issues, and to develop functional systems. The aim is for community groups to be able to articulate demands for access to government, civil society and private sector services. Community Based Organisations are seen as the main vehicles for this and several programmes now have functioning CBOs and others are assisting communities to establish them. Community based extensionists play a key role as trainers, facilitators and board members in CBOs and other community groups. In northern Ghana five CBOs have been formed and several have already been successful in developing facilities for their communities, with funding from NGOs on top of their own contributions (see Box 5).

BOX 5: Community Based Organisations in Ghana

TRAX organised capacity building training for Community Trainers in Tankoo, Bongo, Upper East Region in 2006. This led to the formation of a CBO – Tankoo Noyine Development Association (TANDA), out of a number of TRAX groups to carry out wider community development activities. TANDA has a well organised and motivated Board and has been able to get funding from local NGOs for the construction of a primary school and from Ghana Aids Commission to support HIV AIDS affected families in the area. Requests have also been made to District Assemblies but no funding has yet been received. A number of the office bearers are CTs and although they still work on sustainable agricultural activities in the community (when requested) they are now involved in CBO management and funding raising.

In Uganda the majority of SHA group members are now producing a surplus and are being supported to become economically self-sufficient: accessing inputs, marketing their products and lobbying for services through Associations and Cooperatives. More than 20 parish Crop and 10 Credit Associations were formed from SHA groups in Kamuli RDP District: eight of these have formed cooperatives for value addition (BABUFACO and BUNAFACO) and two processing plants for cassava and maize have been constructed. Elected officials are for the most part very active and influential CDAs. Rumphi FS programme also has plans to support the establishment of Associations and train LFs to play key roles.

Exit strategy. Programmes are increasingly providing skills to enable groups to be financially and institutionally self-reliant and sustain improvements in livelihoods. CBEs play key roles as office bearers, trainers of trainers and resource people. In Uganda, Rural Development Programmes have developed a number of activities including: training and support to establish seed multiplication, microcredit, cooperatives, input supply shops,

processing plants etc. An exit strategy has been drawn up for Amuria RDP which draws these components together into a comprehensive approach (Box 6).

Box 6: Exit Management proposal for Amuria RDP, Uganda: Objectives and activities

1. Sustaining gains made in food security
 - Establish community based-seed multiplication and delivery systems (linking farmer cooperatives to research institutes, training and support for growers, supporting packaging etc.)
 - Input supply shops (linking farmer cooperatives to wholesalers, training cooperatives in input procurement and handling, store management, supervision)
 - Post-harvest handling and development of markets for different commodities
2. Supporting business development
 - Training in management/governance of cooperatives
 - Training in enterprise development
 - Supporting/facilitating contract farming
3. Sustaining gains in micro-credit
 - Formation of village banks
 - Training in management, governance, records, financial management
 - Linking SACCOs to financial institutions
4. Supporting local government, CBOs and NGOs in service delivery
 - Build capacity of credible CBOs, NGOs to implement exit process
 - Train CBOs, NGOs in governance etc.
 - Support Sub-County staff in report writing, logistics (fuel, stationery)
 - Support to District Commercial Office, District Production Office
 - Train CDAs in extension service delivery
 - Facilitate CDAs
 - Supervision by SHA

To be sustainable, SHA believe it is important that CBEs are able to develop viable services. CBEs need to keep their services sharp and relevant, continually up-dating their "offer" and looking for new ways to bring business benefits to their farmer clients. Linking CBEs in informal support networks where they can share ideas and knowledge and access services such as new information and products is part of this process. CBEs also need to feed back to the training facility on the particular services in demand and what further training they need. This in turn would help CBE training facilities to continually adapt and develop its training programme for existing CBEs and new entrants too (SHA, pers.comm.).

4.3 Scaling-up and policy influence

Taking successful 'light touch' development approaches to scale both within SHA and partner programmes (horizontal scaling-up or scaling-out) and through influencing stakeholders – grassroots organisations, development institutions and policy-makers (vertical scaling-up) – is a long-term objective for SHA. Best practice Community-based extension approaches are a potential candidate for such a programme. Evidence of scale-up

to date and potential scalability is looked at on several levels: community, project, district and national policy.

Community scaling out

Farmer to farmer 'spontaneous' scaling-out of technologies occurs when technologies gain a high level of acceptability within the community and enabling knowledge and inputs are available. This appears to be occurring with technologies in Ghana and Uganda (Table 20). Two-thirds of group members had passed on knowledge on soil conservation technologies, tree planting, composting, not burning, improved livestock management and HIV AIDS (plus improved seeds and hygiene in Uganda) to other farmers in their community, whilst around half had passed on similar information to farmers in a wider area. Group members typically passed on their knowledge to 2 or 3 farmers within their community and one outside it. Development skills such as group management appear less transferable. CBEs also give advice and assistance to non-group members (Table 3). A tracer study to identify pathways by which technologies are scaled out between Lead Farmers, follower farmers and non-followers and the extent of up-take is being conducted in Malawi (Bunda College).

Table 20: Project members passing on technologies to other farmers (% members and average number of farmers reached)

	Ghana		Reached in village No.	Reached outside No.	Uganda	
	Within village %	Outside village %			Within village %	Outside village %
Soil conservation	73.2	36.6	3	1	78.3	54.3
Tree planting	69.3	14.6	3	.2	75.6	46.7
Not burning	87.8	58.5	8	2	84.8	53.3
Composting	82.9	63.4	3	2	82.2	44.4
Storage	51.2	17.1	2	.2	80.0	48.9
Livestock	61.0	22.0	3	.4	77.8	55.6
Agronomy/seeds	14.6	0	.3	0	84.4	48.9
Stoves	51.2	31.7	3	1	46.7	40.0
Groups	29.3	2.4	1	0	66.7	46.7
HIV AIDS	80.5	24.4	2	.3	88.9	60.0
Business/IGA	17.1	0	.4	0	64.4	37.8
Nutrition/hygiene	-	-	-	-	88.9	62.2

Project and country level scaling-up

Programmes are pursuing a number of strategies to scale-up their activities to other organisations within their project areas and at national level. TRAX Ghana has a strong track record in training communities and development workers in sustainable agricultural technologies and has conducted around 20 training courses for NGOs and CBOs in northern Ghana and the region. It has also trained a number of government staff, including MOFA field extension officers from the three Northern Regions in 2001. Training has mainly focused on technologies but approaches to training, working with groups, gender and the roles of Community Trainers may also be covered. TRAX is also working with the Environment Protection Agency (EPA) providing technical support for an environmental

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education programme with school environmental clubs across the region, following a similar model to the CT approach with children as future educators and peer leaders.

In Uganda the National Agricultural Advisory Services (NAADS) is adopting a similar approach to CDAs to overcome staff shortages in the government extension system. It is difficult to determine how far SHA's experiences played a role in this but it is a positive development for the project. NAADS field staff are also recognising the strengths of CDAs in community mobilization and some are working with CDAs and SHA groups. There is some collaboration at Sub-county level between SHA and NAADS.

The Malawi programme has achieved considerable successes around institutionalising and scaling-up Lead Farmer approaches. FAIR (formerly HH/FYF) have supported Mzuzu Agricultural Development Division in training and providing follow up for LFs since 2004 and the concept is now being taken up by the Ministry of Agriculture and Food Security (MoAFS) and scaled up across all ADDs. However, there are notable differences in the scaled-up programme, including specialised technical LFs (with less emphasis on development concepts). FAIR has also supported the development of training materials for LFs which can be used on a wide scale. Within Rumphi District alone around ten organisations are using the Lead Farmer concept, including Rumphi Food Security programme.

Factors in the success of the Mzuzu LF programme include:

- Innovative and dynamic leadership
- Serious shortage of field extension workers on the ground
- Flexible, motivated staff
- Defined support for backstopping (fuel, stationery)
- Early successes with LFs well publicised
- Effective mechanisms for feedback and sharing experiences
- Materials developed for training
- Relatively low cost programme

A comprehensive framework for scaling-up CBE approaches in each country would ideally encompass demonstration of success, identification of stakeholders and entry points for dialogue, networking, awareness raising, capacity building and monitoring and evaluating progress (Box 7). Stakeholders include: government agricultural extension systems, private-sector firms (for high value crops/products), farmer organisations and NGOs. CBEs could maximize their effectiveness in transferring agricultural technologies, improving rural livelihoods and maintaining the natural resource base by tapping into these sets of players. SHA is currently developing a scaling up strategy and is well placed to build on its experiences and take such a framework forward.

BOX 7: Scaling-up framework (IIRR 2000)

Overarching objective of scaling-up: more quality benefits to more people over a wider geographical area, more quickly, more equitably and more lastingly IIRR (2000).

Framework components

- Engaging in policy dialogue on pro-poor development agendas during the project to demonstrate project successes in terms of pro-poor impact
- Identifying target groups and local, institutional and environmental enabling and constraining factors to scaling-up
- Identifying appropriate objectives and outputs within development processes to ensure widespread uptake
- Building networks and partnerships to increase local ownership and pathways to scaling-up
- Raising awareness of the merits of the approaches taken among different stakeholders, including the wider target group and policy-makers
- Building capacity and institutional systems to sustain and replicate
- Developing appropriate funding mechanisms to sustain capacity for expansion and replication
- Identifying indicators and planning, monitoring and evaluation methods to measure the scaling-up impact and process.

5. Conclusions

5.1 Good practice in CBE programmes

Selection of CBEs. Two models of selection were identified. Most CBEs are selected by their communities, either at the beginning of the programme when groups are formed, or after a period of training in community development (TRAX-Ghana). Only the original Mzuzu ADD Lead Farmers were selected by the programme on merit (and this has now phased out) and these farmers tended to be older, male and more educated. In Uganda programmes and Mzuzu ADD communities appear to give more weight to educational attainment and leadership experience, with a potential impact on profile of CBEs (difficult to quantify without a CBEs inventory).

Roles of CBEs: *Liaison and mobilisation* are important in all programmes, mobilising farmers for training and development activities and providing two-way communication between programmes and communities. Lead Farmers in Mzuzu are considered by many followers as quasi professionals and follow a more conventional top-down extension approach. *Training farmers* in improved technologies is the essence of CBE programmes. CBEs use a mix of approaches: mainly demonstrations and hands on training in farmers' fields. Experiences of communities and followers across the programmes are very positive: CBEs are successful in translating extension information into understandable messages. *Community development facilitation* is carried out by CBEs in most programmes in establishing and running of CBOs: many act as office bearers. Lead Farmers operating under Mzuzu ADD focus on agricultural activities but participate in community structures such as Village Development Committees (which are being strengthened under Rumphu FS programme).

Training: All CBEs are trained in sustainable agriculture and community capacity building. For most programmes agricultural skills are the focus, except in Ghana where the emphasis is on development skills (LEISA is taught to the whole group). In Uganda and Malawi programmes provide around a week's induction to CDAs and LFs with follow-up short training sessions. Most of the training is given by Ministry of Agriculture staff and other specialists. In Malawi Mzuzu ADD staff have developed training manuals for use with their own LFs and those under Rumphu FS programme (which provided funding). In Ghana CTs are trained over a 4-year period by TRAX staff.

Support: All programmes provide bicycles for CBEs to visit farmers, some provide gumboots and hand tools (for use by groups). SHA Uganda gives a very small quarterly meeting allowance for CDAs in on-going programmes: some community members perceive this as payment. Other programmes do not give cash. Community members in Ghana regularly give CTs support in-kind; in Uganda this happens occasionally, rarely in Malawi.

Coverage: Number of farmer followers ranges from around 35 to 55 per CBE, except Mzuzu ADD where Lead Farmers are currently supposed to cover up to 100 followers. 'Active' CBE followers are normally considerably less, around 10-30 farmers.

5.2 Impact of CBEs

Effectiveness: Lead Farmers in Malawi are reaching a high proportion (up to 100%) of target followers in Malawi through their training in sustainable agriculture. In Uganda and Ghana, where SHA and TRAX staff also give training to farmers, CDA and CT reach is considerably lower. Non-followers and non-project members generally receive significantly less training: except in Malawi, where Government extensionists (and some LFs) appear to have stepped in to the gap, and Uganda, where CDAs are training non-project members on hygiene and HIV AIDS support. Uptake of technologies is high at around 75-100% of project members in Uganda and Ghana for most sustainable agricultural technologies, somewhat lower for development technologies, and significantly higher than non-members. In Malawi, uptake is high amongst followers and non-followers alike, possibly due to the fluidity of the grouping (unlike formal group members). However, uptake of development technologies and skills is considerably higher by LF followers reflecting differences in emphasis and capacity by the programmes. Members and non-members in all countries rated most of the technologies highly, showing the benefits of training, regardless of source. Impact of the CBE programmes on smallholders' crop production is difficult to isolate but clearly positive. Group members and LF followers in Ghana, Malawi and Uganda saw significant increases in average millet, maize and cassava production respectively since the start of the programme compared to non-members. This translates into improved food security across the programmes. Over 50 percent of farmers under TRAX Ghana programmes now have sufficient food to last 6 months (none did before), though they remain chronically food insecure. Members and non-members (to a lesser extent) have increased their food security status in Uganda and Malawi (with relatively good rains and fertiliser subsidies in Malawi): around 80-100 percent of members/followers are now food secure. All households are more likely to own more assets than before the programmes started: in Ghana the difference between members and non-members is more marked. Farmer assessments of their assets and livelihood status shows significant improvements by both project and non-project households, but in all countries improvements have been greater for those participating in CBE programmes.

Equity: SHA aims to reach the poorest and most vulnerable members of the community, including women and food insecure households. It is estimated that women make up over 50 percent of membership in all three countries. The ratio of male to female CBEs is around 2:1 in TRAX-Ghana and Rumphu FS programmes. Women have received equal training to men and uptake of technologies is similar. They have achieved larger increases in staple crop production than men, though starting from a lower base. Female SHA group members in Uganda were initially more highly food insecure than males: in all countries women have increased their household food security by at least as much as men. Both men and women members have seen increases in their assets since they started participating in the programmes. In Ghana and Uganda women now own comparable assets to men; in Malawi they tend to own slightly fewer assets. Male and female members have experienced improvements in the participation of women in community affairs and in household decision-making. Membership of groups is open to all with no membership fees and limited hidden costs apart from the time of attending meetings (bi-weekly or monthly). Members and non-members alike tended to have been not doing well/meeting needs at the beginning of the

project, though in Ghana members appear to have been slightly worse off than non-members (not highly significant).

Efficiency: One of the perceived advantages of CBE approaches is their relatively low cost and large reach. Estimates of costs show that supervision by programme offices are the largest cost, followed by training for CBEs. Costs of bicycles and other inputs are quite low. Indicative benefits, measured as net changes in returns from staple food production of members over non-members, are quite high. Benefit-cost ratios are high at 7:1 for Ghana-TRAX and Mzuzu ADD LF Programme, 14:1 for Uganda-SHA and 12:1 for Rumphu FS programme. This suggests that investing in CBEs gives very good returns.

5.3 Sustainability

Environmental sustainability: SHA and partners' approach of promoting low (external) cost sustainable agriculture and fuel efficient stoves has been enthusiastically taken up by group members. Average crop production has increased with the use of compost and other soil fertility practices and women report using one-third less fuelwood. Small-scale irrigation schemes managed by farmer groups and CBEs are proving successful in supporting dry-season gardening (currently on a limited scale). Other initiatives promoted by CBEs to address climate variability such as tree-planting are being taken up slowly. Group members and followers in Uganda and Malawi perceive an increased ability to cope with drought, but in northern Ghana farmers have seen no significant improvement.

Economic/financial sustainability: Low running costs of CBE programmes once weaned-off mean that it is very plausible for communities to continue supporting them with bicycle spares and small incentives in kind, and this is already happening regularly in Ghana; only occasionally in Uganda. Supervision of Lead Farmers is integrated into Mzuzu ADD activities: support for inputs and spares is sporadic. Refresher training courses have not been factored in.

Institutional sustainability: Increasing attention is being given to structures and processes to support CBEs on a long-term basis. CBE organisations have been proposed in Malawi and Uganda for support and lobbying but have yet to take off, though CBEs do network informally. Linkages with local government built up by programmes to support CBE activities after phase-out have faced challenges of capacity and motivation in Ghana and Uganda. This is being addressed by new SHA and partner programmes in Uganda and Malawi which are working directly through Ministry of Agriculture field staff. Evidence of sustainability can be seen with CBEs continuing their activities in phased out areas especially in Ghana, where TRAX has a long-term presence and Field Officers meet them periodically; in some places in Uganda, where CDAs are working as a group; and in Malawi where Mzuzu Lead Farmers have been working for up to 7 years, meeting Extension staff monthly. Some CDAs have continued their roles as local extension experts and facilitators with other programmes; others are dropped in favour of new blood. All programmes are establishing CBOs as vehicles for community development - to voice demands for government and other services - and for input supply and produce markets. CBEs play important roles in establishing and running CBOs, and are usually office-bearers. Some have been quite successful in attracting funding for their communities, but there may have been some trade-off

with their agricultural activities. Programmes are now equipping groups and CBEs with skills to be financially and institutionally self-reliant, including training in seed multiplication, microcredit etc. SHA Uganda has recently developed a comprehensive exit strategy for Amuria RDP.

5.4 Scaling-up and policy influence

Community scaling-out: Spontaneous scaling-out of technologies is occurring amongst communities in Uganda and Ghana with CBEs and group members passing on their knowledge to typically 2-3 other farmers within and outside their own areas.

Project and country level: Scaling-up and policy influence is occurring at various levels. TRAX Ghana is training government and NGO staff in northern Ghana and the region in sustainable agriculture and community development approaches, and has recently embarked on an environmental education programme with the Environment Protection Agency. In Uganda NAADS has taken up a similar approach to CDAs and is working through SHA CDAs in some areas. In Malawi, the Lead Farmer concept, introduced in 2004 by Mzuzu ADD in collaboration with SHA (HH/FYF), is now being scaled up by the Ministry of Agriculture country-wide and has also been taken up by around 10 NGOs in Rumphu District alone. Factors behind the success include: innovative leadership, well-publicised successes, backstopping support, feedback mechanisms and a relatively low cost programme.

Regionally: SHA is well placed to lead on scaling-up CBE approaches and influencing policy-makers to provide a supportive environment. A comprehensive framework for scaling-up would encompass identification of stakeholders and entry points for dialogue, networking, awareness raising, capacity building and monitoring and evaluation.

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Appendix 1: Research framework

Main research questions	Detailed questions/Indicators	Data to be collected	Method/Sources
<p>1. What is good practice in community-based extension for agriculture</p>	<p>Identify and characterise different CBE approaches/ delivery mechanisms and document pros/cons, including impact on:</p> <ul style="list-style-type: none"> • reach (including women, vulnerable groups) • sustainability of services (economically, institutionally) • effectiveness of the approach (uptake of technologies) • efficiency (comparing costs of delivery of different approaches; cost-benefit analyses) 	<ul style="list-style-type: none"> • Selection process, criteria • Training and support provided • Number/profile of followers • Approaches: demonstration, training, working with existing groups • Activities: sustainable agriculture, dry season farming, post-harvest 	<ul style="list-style-type: none"> • Literature review: SHA project docs; Other NGO reports (Practical Action); academic studies (KIT) <p>NB: Limited literature available</p> <p>Qualitative study and quantitative surveys will enable benchmarking of SHA approaches</p>
<p>2. What is the impact of community extension on food security for smallholder farmers?</p>	<p>Capture qualitative (community perceptions) and quantitative indicators of change attributable to CBE, including:</p> <ul style="list-style-type: none"> • access to inputs and services • improvements in knowledge • uptake of technologies (new crops, management strategies) • impact on yields, areas cultivated, food production <p>For each indicator:</p> <ul style="list-style-type: none"> • What change was intended, what has occurred, how has it come about? • Who has been affected (socio-economic profile) and who not? 	<ul style="list-style-type: none"> • Number/profile, approaches, knowledge of LF • Number/profile of followers • Type of inputs, services provided: quantity, reach • Changes in knowledge of follower farmers on key technologies • New technologies tried by FF • Uptake of new technologies by FF, other farmers (pathway) • Impact on livelihood outcomes and assets (e.g. food security, incomes, NR base, social capital) • Time and other costs to LF, FF • Type, quantity of services received from other extension providers 	<p>Ghana/Uganda/Malawi</p> <ul style="list-style-type: none"> • Focus group discussions with lead farmers (LF); follower farmers (FF) • Key informant interviews/case studies of successful farmers (LF and FF) • Household interviews with 60-70 farmers: 30-35 follower farmers and 30-35 non-followers or non-group members • SHA, partner organisations, community groups, LF records • Ministry of Agriculture reports <p>Ethiopia/Zambia</p>

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	<ul style="list-style-type: none"> • Is change likely to be sustained? 	<ul style="list-style-type: none"> • Sustainability criteria: farmer contributions; participation in decision-making, organisational structures to deal with selection, reward of LF, resolving conflict • Strengths/challenges/opportunities 	<ul style="list-style-type: none"> • Review of evaluation reports and surveys
Main research questions	Detailed questions/Indicators	Data to be collected	Method/Sources
3. What is the potential for scale-up and policy influence?	<p>Identify ways in which good practice in CBE approaches can be shared and influence strategies to knowledge transfer in agriculture:</p> <p>a) National government strategies b) NGO country strategies c) Regional strategies (including NGOs, donors regional organisations)</p> <p>Assess feasibility of scaling-up CBE approaches:</p> <ul style="list-style-type: none"> • Cost comparison of different approaches; cost-benefit analysis (indicative only) 	<ul style="list-style-type: none"> • Characterise linkages between SHA/Country partners and other actors in country/regionally e.g. Ministries of Agriculture: District meetings • Identify opportunities/gaps/ entry points for sharing experiences, potential scaling-up • Costs and benefits (including qualitative) of different approaches 	<p>Ghana/Uganda/Malawi</p> <ul style="list-style-type: none"> • Key informant interviews with SHA/Country partners (TRAX, Mzuzu ADD), NGO umbrella body, Government departments: Ministries of Agriculture, Local Government <p>Ethiopia/Zambia</p> <ul style="list-style-type: none"> • Email with SHA/OPAD

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7. Costs of being a CDA
 - Time (per week/month)
 - Other expenses
8. Have any CDAs dropped out?
Reasons
9. Impact/benefits of the CDAs (to date)
 - Own farm/livelihood: knowledge gained, how used,
 - Group members: technologies being tried out/taken up/adapted
 - Impact on agricultural production, food security etc.
 - Other impact (community affairs, relations with other organisations; position of women)
 - Impact on non-group members /other villages
10. CDA interactions with other organisations – What kind of interaction?
Benefits/challenges?
 - Traditional institutions
 - Other organisations in the field (Govt, NGOs etc)
 - Institutions outside the village
 - CDA Group – what interaction? Benefits?
11. Challenges faced as a CDA (and how do you try to overcome these)
 - Knowledge/skills
 - Groups
 - Reaching all farmers incl. poorest
 - Resources
 - Being weaned off from TRAX
12. Do you keep any records?
 - Training
 - Visits
 - Meetings
13. Do you have any questions/comments?

THANK YOU VERY MUCH

Appendix 3: Household Questionnaire

We are carrying out a study for Self Help Africa which had a project in this area 2004-9. We want to learn more about project activities and impacts so we can improve our work. I would like to ask some questions about your farming and project activities. Please give frank/honest answers. All answers are confidential. The interview will take about 30 minutes.

1. Household ID

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 Name of interviewer.....
 2. Date

				1	0
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 Name of respondent.....
 3. Name of Project area.....

 4. Name of Subcounty
 5. SHA Group member (1 = yes 0 = no)
 6. Group name.....

A. Household information

7. Relationship of interviewee to HH head			1=head 2=spouse 3=child 4=other
8. Sex head HH			1 = male 2 = female
9. Marital status of head			1=married polygamy 2=married monog. 3=single 4=widow 5=divorced/separated
10. Age of head			
11. Education - head			0=none 1=primary(1-4yr) 2=primary(5-8) 3=secondary 4=tertiary 5=inform. 6=other
12. Main occupation – head			0=none 1=farming 2=petty trading
13. Secondary occupation - head			3=handicraft 4=employed/self employed 5=not working 6=other (specify)
14. Number of adults in house (18 years+)			
15. Number of children 6 – 17			
16. Number of children 0-5			

B. Group member

17. Are you a member of any groups? Which?			0=none 1=SHA 2=CBO 3=other NGO 4=govt 5=informal/trad 6=oth 7=SHA+oth
18. Sex of SHA group member			
19. Education - group member			0=none 1=primary(1-4yr) 2=primary(5-8y) 3=secondary 4=tertiary 5=inform. 6=other
20. Main occupation - group member			0=none 1=farming 2=petty trading
21. Secondary occupation - group member			3=handicraft 4=employed/self employed 5=not working 6=other (specify)
22. Are you/your spouse a CDA?			

Knowledge transfer: the role of community extension in increasing food security

C. Training/advice/assistance received from all sources and diffusion

Training/assistance received	Yes =1 No = 0	Who gave training/assisted 1=SHA staff 2=CDA 3=govt ext. staff 4=other NGO 5=family member 6=other farmer 7=other 8=SHA+CDA	Are you practicing /benefiting from it now? 1=yes 0=no 2=some	How useful is it to your HH? 0=not using 1=poor 2=not useful 3=so-so 4=useful 5=very useful	Did you pass it on to anyone in the village: if yes, number using? (No.)	Did you pass it on to anyone outside the village: number using? (No.)	Comments
Soil/water conservation							
Tree planting, nurseries							
Not burning							
Compost manure							
Crop storage/post-harvest							
Improved seed (revolving)							
Livestock health/management							
Agronomy (spacing, pests etc)							
Fuel efficient stoves							
Leadership/group mgt.							
HIV AIDS							
IGAs/business/marketing							
Home hygiene							
Literacy							
Credit							
Other (specify)							

Knowledge transfer: the role of community extension in increasing food security

D. Crops and trees

	Now (2009)				Before project (normal year)				
	Variety 1=local 2=improved	Management 1=traditional 2=sustainable 3=modern	Quantity harvested main crops (local measure)	Quantity (=Kg)		Variety 1=local 2=improved	Management 1=traditional 2=sustainable 3=modern	Quantity harvested main crops (local measure)	Quantity (=Kg)
Crop					Crop				
Millet					Millet				
Sorghum					Sorghum				
Maize					Maize				
Rice					Rice				
Beans					Beans				
Groundnuts					Groundnuts				
Soybean					Soybean				
Sweet potato					Sweet potato				
Onion					Onion				
Tomato					Tomato				
Vegetables					Vegetables				
Cassava					Cassava				
Passion fruit					Passion fruit				
Bananas					Bananas				
Other.....					Other.....				
Other					Other				
Trees									
Fruit trees					Fruit trees				
Other exotic					Other exotic				
Other local					Other local				

E. What changes have occurred in your household during project period?

	Improved =3	No change =2	Worse =1	Not/applic =0	Reason for change
Total crop production					
Soils quality/fertility					
Livestock health/prod.					
Food security					
Income					
Health status of family					
Fuel sufficiency					
Ability to cope with drought					
Community relations					
Women's participation in HH decision-making					
Women's participation in community affairs					
Other change (specify)					

F. Household assets (number)

	Asset	BEFORE project (no.)	NOW (no.)
House	Traditional house (thatch, mud)		
	Improved house (metal roof, mud)		
	Modern house (metal roof, bricks)		
Bedding	Mat - straw		
	Mattress		
Livestock	Cattle/oxen		
	Sheep		
	Goat		
	Donkey		
	Poultry/fowl		
	Other small livestock		
	Pigs		
Assets	Radio		
	Phone - incl. cell		
	Bicycle		
	Ox/donkey cart		
	Ox plough		
	Motor cycle/car		
Food security	Food security (No. months/year)		
Land	Land – rainfed (acres)		
	Land – swamp garden (acres)		

G. How do you rate your overall household status?

Household status		BEFORE project	NOW
Well-off (support HH + have good assets)	=5		
Doing well (able to meet HH needs + save/buy assets)	=4		
Doing ok/so-so (able to meet HH needs, nothing left over)	=3		
Not doing well (cannot meet all HH needs, sold assets, got some outside help)	=2		
Not meeting HH needs (depend on support from outside the HH)	=1		

H. Community development agents

Do you ever meet with the CDAs? Number of times per month

Number of times per year

Have you experienced any BENEFITS from CDAs? (describe)

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Have you experienced any CHALLENGES with CDAs? (describe)

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Do you have any other COMMENTS?

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- THANK YOU -