

Evaluation

of

**Supporting Conservation Agriculture for Sustainable
Agriculture and Rural Development (CA for SARD)
Phase II**

GCP/RAF/413/GER

Report of the Evaluation Mission

March 2011

Preface

This report presents the views of the evaluation mission on the performance and achievements of the project Supporting Conservation Agriculture for Sustainable Agriculture and rural Development (CA SARD) Phase II (GCP/RAF/413/GER), which has been operating in Kenya and Tanzania since July 2007 with a budget of US\$ 1,908,396 (increased to US\$ 2,459,342 in October 2009), and which is scheduled to end in March 2011.

The evaluation was initiated with a view to providing the donor, the Governments of Kenya and the United Republic of Tanzania, and FAO with an independent and objective assessment of the performance of the projects. The evaluation took place in Tanzania from 20 to 25 September 2010, and in Kenya from 26 September to 4 October; a final evaluation phase in Rome at FAO HQ followed from 11 to 14 October. The mission spent most of its time on visits to project locations; throughout their stay in Tanzania and Kenya the two core mission members (Bultemeier and Kotschi) were accompanied by counterparts (Mansoor and Njuki) from the Ministry of Agriculture, Food Security and Cooperatives (MAFC, Tanzania) and Ministry of Agriculture (MOA, Kenya), respectively. The mission gave a preliminary feedback presentation to stakeholders in Tanzania on 24 September, and prepared an aide-memoire for debriefing in Kenya on 4 October.

The mission's main views regarding the project are presented in the Executive Summary, followed by recommendations on the Way Forward. The main body of the report gives additional information on the project and assessments of its performance, while annexes provide mostly statistical information on the mission background and discussions of some specific features of the project.

The evaluation used the following methods: document analysis; group and individual meetings with beneficiaries, stakeholders and key informants (guided by an evaluation matrix and a list of evaluation questions by stakeholders); field visits¹; and brainstorming sessions with stakeholders. The field visits gave the mission a first-hand impression of the agricultural situation in general and the project field activities in particular; this was useful for a validation of existing information on the project. However, the relatively short duration of the field visits did not allow for an in-depth analysis of the performance of Conservation Agriculture at farmer level; this would need to be done through more intensive field studies.

The evaluation mission is most appreciative of the support provided by the FAO Representations in both countries, the Project Coordinators and Facilitators, the Government Counterparts, and all the other officials and key informants met in Tanzania and Kenya. All people interviewed provided information and discussed issues in a frank and constructive manner. Last, but not least, thanks are due to the villagers who always provided the team with a warm welcome.

The Evaluation Mission

Bernd Bultemeier (Team Leader)
Johannes Kotschi (Evaluation Team Member, Germany)
Hussein A Mansoor (Evaluation Team Member, Tanzania)
James G Njuki (Evaluation Team Member, Kenya)

¹ Itinerary in Annex Two.

List of Acronyms

ABACO	Agro-ecology based aggradation-conservation agriculture
ACIAR	Australian Centre for International Agricultural Research
ACT	African Conservation Tillage Network
ADP	Agricultural Development Programme
AGS	Rural Infrastructure and Agro-Industries Division
AGST	Agricultural and Food Engineering Technologies Service (FAO)
ASDP	Agricultural Sector Development Programme
BTOR	Back to Office Report
CA	Conservation Agriculture
CA SARD	Conservation Agriculture for Sustainable Agricultural Rural Development
CAMARTEC	Centre for Agricultural Mechanization and Rural Technology Development
CAWT	Conservation Agriculture with Trees
CBO	Community Based Organisation
CBO	Community Based Organisation
CIRAD	Centre de coopération internationale en recherche agronomique pour le développement
COMESA	Common Market for Eastern and Southern Africa
CPAR	Canadian Physician for Aid and Relief
CSO	Civil Society Organization
DADPs	District Agricultural Development Plans
DALDO	District Agriculture and Livestock Development Officer
DAP	Draught Animal Power
DED	District Executive Director
FAO	Food and Agriculture Organization (of the United Nations)
FFS	Farmer Field School
GDP	Gross Domestic Product
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
HH	Household(s)
ICRAF	International Centre for Research in Agroforestry (World Agroforestry Centre - Nairobi)
IFAD	International Fund for Agricultural Development
JKUAT	Jomo Kenyatta University of Agriculture and Technology
Logframe	Logical Framework
LTU	Lead Technical Unit (of FAO)
M&E	Monitoring and Evaluation
MAFSC	Ministry of Agriculture Food Security and Cooperatives (Tanzania)
MOA	Ministry of Agriculture
NGO	Non-Governmental Organization
NPC	National Project Coordinator
NPF	National Project Facilitator
NT	No Till (age)
RECODA	Research, Community and Organisational Development Associates (NGO)
SACCOS	Savings and Credit Cooperative Society
SARD	Sustainable Agriculture and Rural Development
SARI	Selian Agricultural Research Institute (United Republic of Tanzania)
SLM	Sustainable Land Management
SMART	Specific, Measurable, Achievable, Realistic and Timebound (Indicators)
SUA	Sokoine University of Agriculture
SUSTAINET	Sustainable Agricultural Information Initiative
SWOT	Strengths, Weaknesses, Opportunities, Threats
TCE	Division for Emergency Programmes (FAO)
UN	United Nations

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EXECUTIVE SUMMARY

Background

Conservation Agriculture (CA) is a technology of minimum tillage. It aims to address several key constraints challenging agriculture in Africa: to reduce labour requirements, to sustain the natural resource base (by reversing land degradation, re-building of soil health through build-up of soil organic matter through minimum soil disturbance and soil cover/cover crops), and to contribute to mitigating the effects of climate change.

The examples of CA in Argentina, Paraguay and Brazil, and also in North America and Australia have shown that CA can become the agricultural mainstream in a variety of farming systems: but it can also build on indigenous minimum tillage approaches found in parts of Africa².

Project Objectives

Against this backdrop, the development objective of the project was defined as:

- Improved socio-economic growth, food security and livelihoods in Eastern Africa through Conservation Agriculture based interventions

to be achieved through three Immediate Objectives:

- (1) Adoption of profitable conservation agriculture practices by smallholder farmers in Kenya and Tanzania expanded
- (2) Supply/availability of CA tools and equipment to farmers in target districts in East Africa enhanced in general and specifically through improved networking from Brazil to East Africa (by stimulating and facilitating private sector interest and capabilities in manufacture, retailing and hire of CA tools and other inputs – and through facilitating enhanced private sector interaction between East Africa and Brazil)
- (3) Strengthen institutional mechanisms (including consolidating ACT) to stimulate and sustain knowledge sharing and to foster active government support, farmer innovations and in general up-scaling of CA in the two project countries, in the Region and beyond

In defining these objectives, the project addresses prevalent needs and problems in the field of rural development and agriculture in both countries, Tanzania and Kenya, and also reflects policy priorities in both countries. It combines agricultural intensification with conservation of natural resources, can enhance food security and offers solutions for adaptation to climate change.

Project Design

The project promotes CA through the Farmer Field School (FFS) methodology, supplemented by support to local manufacturers for the testing and development of CA implements. In both countries, the project is implemented by national extension services under guidance and supervision of national agricultural research institutions (KARI and SARI)³. Project monitoring, evaluation and some training is done by a pan-African NGO, the African Conservation Tillage Network (ACT) with its headquarters in Nairobi. Accordingly, the project addresses quite a number of different target groups: farmers, manufacturers, agricultural advisors and the decision makers in the departments of agriculture.

CA technology is based on three key principles: i) minimum soil disturbance, ii) soil cover (with mulch or cover crops, preferably legumes) and iii) crop rotation or association. The CA technology is innovative, has proven feasible in various settings⁴, and is technically consistent

² There are currently some 117 million hectares (about 8 percent of global arable cropland) in CA systems worldwide, increasing by about 6 million hectares per year (www.fao.org/ag/ca).

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with smallholder agricultural systems. Controversial, however, remains the use of chemical herbicides. In most FFS groups established by the project, herbicides are used at least in the initial stages of CA adoption and adaptation. However, as other options do exist and are practiced in other projects in the region (Tanzania and Zambia), this aspect is in conflict with SARD⁵ principles and can be considered a weakness of the project approach.

The FFS methodology is based on sound experience of many years and reflects the latest state of the art in agricultural extension. FFS are well received by farmer groups; with the FFS approach, it is possible to explain a rather complex technology to large numbers of farmers with different levels of education. But the project period (maximum 3 years) has been too short to achieve a sustainable impact. (Especially when considering the droughts of recent years, which affected crop production in most project areas.)

The project's institutional arrangements involve many stakeholders. At district level, the project is implemented by the respective departments of agriculture; national coordinators from KARI and SARI coordinate and supervise the activities and training field staff. The African Conservation Tillage Network (ACT) is in charge of coordinating, monitoring and evaluating the field work, and also implements activities in the area of equipment and machinery. The FAO Regional Office in Accra is in charge of budgeting, and a desk officer in Rome provides overall coordination. Generally, there is good cooperation among all stakeholders involved; however, the structure is top-heavy, which has sometimes reduced efficiency and created delays.

Implementation

Budget and Expenditure

The original project budget (US\$ 1,908,396, later increased to US\$ 2,459,342), envisaged a fairly lean structure in terms of international expertise inputs, with roughly 5% earmarked for international consultants, and approximately 8% for FAO Technical Support Services. The biggest planned expenditure items were travel (16.5%), contracts (16.1% for ACT, institutions handling the Latin America/East Africa study tours, and NGOs in Kenya and Tanzania), and training (11%)⁶.

By the time had the project had reached Budget Revision "D" (May 2010), the actual expenditure pattern had changed: Contracts had become by far the biggest budget element (37.2%)⁷, followed by consultants (17.5% = international, regional and national), and travel (16%).

Timeline (Major Milestones)

Date	Activity
By December 2007	<ul style="list-style-type: none"> • Project launch in both countries with all stakeholders in July 2007 • Tanzania: 41 new FFS in 4 districts. • Kenya: 19 FFS in two districts. • Kenya: 30 extension facilitators trained on CA-FFS. • Tanzania: 24 extension facilitators trained. • Regional M&E workshop bringing together CA stakeholders.
By December 2008	<ul style="list-style-type: none"> • 134 FFS in both countries; estimated 25% of farmers practise CA in their individual farms. • Visit of 14 East African equipment manufacturers, dealers, researchers, and Government officials to Brazil. • Twenty private animal drawn and tractor hire service providers trained.
By December 2009	<ul style="list-style-type: none"> • 169 FFS established (92 graduated) • Budget increase: from US\$ 1,908,396 to US\$ 2,459,342; inclusion of some

⁵ Sustainable Agriculture and Rural Development: the principles are economic viability, cultural appropriateness, social justice, environmental soundness, and long-term productivity.

⁶ The original project budget (with the addition of percentages) is reproduced in Annex 3.

⁷ Most of the field work within the area of Immediate Objective 1, including FFS support and training has been handled through LOAs (Letters of Agreement).

	new activities <ul style="list-style-type: none"> • Nineteen farmers providing DAP hire services using ripper/direct seeders supplied to the FFS groups. • Training on CA equipment hiring systems and entrepreneurship to 63 DAP hire service providers.
By June 2010	<ul style="list-style-type: none"> • 227 FFS established (150 graduated) • Project extension to March 2011 • Study tour to Brazil and Paraguay for 4 technicians⁸ from Kenya and Tanzania to manufacturers in Brazil and Paraguay.

Generally, the project has been implemented according to plan. But serious droughts in 2008 and 2009 constrained the impact of the CA technology and successful work with FFS groups, and late provision of budgets from FAO-RAF has created some delays⁹. At farmer level, late delivery of inputs, limited supply of cover crop seeds and restricted availability of CA implements have sometimes affected implementation.

Achievements and Results

Against the targets established under the three Immediate Objectives, the following results have been achieved:

- A total of 237 FFS groups (137 in Tanzania, 100 in Kenya) with over 4,500 members have been formed to date, surpassing the project target by over 15%.
- About 50% of the FFS farmers have taken up elements of CA in their own farms, and an estimated 75% of FFS group members are aware of the benefits of CA.
- The active membership of FFS groups in FFS networks has been achieved in part¹⁰.
- Local manufacturers in Kenya and Tanzania have continued to produce CA implements and sometimes modified the design based on feedback from the field; several batch orders were placed by the project, ministries of agriculture and other institutions.
- The African Conservation Tillage Network (ACT) has become a key player in a number of CA initiatives in the region and beyond (e.g. CA2AFRICA project funded by EU; Smallholder Conservation Agriculture Programme implemented by ACT, CIRAD and ICRAF in West and Central Africa since July 2008).
- Ministries of Agriculture in both countries have acknowledged CA in their policy documents (Kenya's Strategic Plan 2008-12 to have 1.25 million farmers and 2,500 extension staff trained in CA by 2012; Tanzania Agriculture Minister's Budget Speech); some District Offices in both countries have incorporated CA in their workplans/budgets/performance contracts.
- Finally, there is also evidence of the project experience reinforcing and informing CA strategies for FAO as a whole; some re-orientation is taking place in the context of FAO's new Strategic Framework, and CA is likely to become one of the cornerstones in future FAO agricultural development strategies.

However, despite exceeding the project targets in several areas, there remain a number of challenges before the project's Expected-End-of-Project-Situation¹¹ could be achieved:

1. A generally high average age of members, and signs of neglect in some CA plots
2. Very limited follow-up of old (graduated) FFS groups
3. Competition for crop residues (livestock fodder vs. soil cover) remains a major problem, particularly in the drier districts
4. Use of cover crops is limited due to availability of seed¹² and/or (over-)reliance on herbicides¹³

⁸ Two additional members were from the MAFC in Tanzania.

⁹ The mission will have an opportunity to meet with the Budget Holder from FAO-RAF during the debriefing in Rome.

¹⁰ Two districts in Kenya, one in Tanzania; elsewhere, informal contacts exist, also with other farmers' associations.

¹¹ Among others, the prodoc expected a "critical mass of CA practitioners through the FFS system will create its own momentum and is expected to be sustainable into the near future and beyond. This is also expected to stimulate spontaneous interest and adoption of CA within the villages and the wider surrounding regions."

¹² Eighteen farmers were sub-contracted to produce cover crops seeds in May 2010.

¹³ According to the project implementers, while some 70% of farmers have used herbicides, there is a good 30% practicing CA successfully without herbicides.

5. Low (and often only partial) adoption of CA practices in FFS farmers own plots
6. Most CA implements manufactured locally were for institutional clients (project, ministry, NGO etc.); independent demand by farmers¹⁴ is low
7. The expected formal collaboration between Brazilian and local manufacturers has not materialized¹⁵
8. Ready availability of most CA implements is limited to major urban centres; bigger implements will only be produced against a firm order
9. Most District Agricultural Officers in the project areas are well versed with the principles of CA; however, among extensionists in CA-SARD districts, CA-compliant staff are a small minority
10. Ministries as well as District Departments of Agriculture in both countries continue to send out conflicting messages: programmes promoting ploughing (e.g. extension programme in KEN, Power Tiller programme in URT) co-exist with CA programmes, creating confusion.

Way Forward

1. After the termination of CA-SARD, FAO should systematically capitalize on the knowledge and experience with Conservation Agriculture that have been acquired in this project. Therefore, an in-depth assessment on new technology developments, on impact and adoption of CA should be undertaken. Main areas of work could be: a) an adoption study analysing long term adoption scenarios (considering for instance biological versus chemical methods of weed control), b) a study on soil productivity under CA (physical, chemical and biological changes in comparison to conventional agriculture), c) a scoping study to evaluate alternative methods of weed management, in addition to the use of herbicides d) a systematic economic assessment of CA as practiced in the SA-SARD FFS groups, e) an update of the IIRR-ACT user manual on Conservation Agriculture.
2. Secondly, FAO should explore a wider range of weed management options in Conservation Agriculture in a more systematic fashion. Non-herbicide solutions should be given priority (as feasible alternatives for farmers already do exist), and further research into non-herbicide solutions should be supported with the ultimate goal of de-linking CA from chemical inputs, which can have a significant negative environmental impact. Such a revision of the FAO strategy on Conservation Agriculture could possibly find internal consensus between different departments and should be documented in a code of conduct paper.
3. The ministries of agriculture in both countries have given encouraging signs that CA is becoming mainstreamed; however, efforts need to be made to address the issue of conflicting messages which continue to exist. While official policy positions cannot be expected to change drastically in the short term, ministries should spread CA expertise across departments (in particular those dealing with extension), and encourage agricultural colleges and universities to embrace more CA topics in research and teaching. Agricultural research institutes that have supported the CA SARD project so far, may need to identify new budgets (SARI e.g. by submitting research proposals at central as well as decentralized level) in order to continue field research and farmer adoption of CA.
4. Finally, the experience gained so far is already sufficient to support a large-scale investment effort, which appears to be needed in order to address the supply and demand situation for CA implements. The limited presence and resources of the current project even in the districts where it is operating has not proved sufficient to stimulate and guarantee a continuous availability of CA implements, and effective (paying) demand by farmers has remained very low¹⁶. An investment project could build up a critical mass of farmers using CA implements, who in turn would create a much larger demand for

¹⁴ Most CA equipment bought by farmers was through either the project or another provider (ministry, NGO) and on subsidized terms.

¹⁵ CA SARD tried to facilitate contacts between manufacturers, and recently (August/September 2010) arranged a study tour of mostly technicians from Kenya and Tanzania to Brazil and Paraguay.

¹⁶ This is partly a result of the project focus on technical assistance; the project was not intended – and did not have the means – to engage in large-scale equipment provision.

independent maintenance and repair services as well as for spare parts and replacements.

Lessons Learned

There is basically one lesson that can be learned from the project: widespread adoption of CA needs a holistic approach, encompassing technical advice, social mobilization, input supply and marketing. The CA SARD project has developed the technical approaches that can be used to promote CA in certain locations, and has also been able to create awareness among farmers as well as professionals. The mainstreaming of CA on a wider scale requires a larger, and better funded initiative that – based on the experience of the CA SARD project – can tackle the questions of input supply, CA equipment manufacturing and maintenance, and marketing.

1. INTRODUCTION, BACKGROUND AND JUSTIFICATION

The project document listed three main factors that favoured the promotion of Conservation Agriculture: pressure on the agricultural labour force due to the spread of HIV/Aids, increasing land degradation, and climate change.

Decreasing soil productivity, inadequate soil moisture and erratic rainfall, have resulted in rural poverty and lack of food security. These problems are prevalent in rural communities of Kenya and Tanzania, and concern a large part of the rural population in both countries. In order to survive, people tend to overuse natural resources, which form the basis of their livelihoods. Secondly, inappropriate tillage practices are applied. As a result soil fertility is declining and soil erosion increasing. Thirdly, due to climate change, which is quite pronounced in both countries, drought periods are occurring more often, last longer and rainy seasons are getting increasingly erratic.

2. ASSESSMENT OF PROJECT OBJECTIVES AND DESIGN

The project document referred to the three fundamental principles of CA: (i) minimum soil disturbance (ii) adequate soil cover at critical periods of the growing cycle, and (iii) diversified crop rotations, and asserted that CA was the appropriate technology a) to address rural poverty, b) to promote sustainable utilization of natural resources and c) to adapt to climate change. The concept had already been implemented in a first project phase of two years (GCP/RAF/390/GER, June 2004 – August 2006), which confirmed the potential of CA also for East Africa conditions.

2.1 Objectives

The project promotes Conservation Agriculture (CA) as an appropriate technology to address rural poverty, foster sustainable utilization of natural resources and to adapt to climate change. Generally, the CA technology promises to combine both: agricultural intensification with the conservation of natural resources.

In accordance with the problems identified above, the development objective of the project was therefore, to promote *improved socio-economic growth, food security, and livelihoods in Eastern Africa through Conservation Agriculture based interventions*. This objective corresponds with the major policies and strategies of Kenya and Tanzania and meets the priority needs of the rural population in both countries. It was to be achieved through three Intermediate Objectives:

- (1) *Adoption of profitable conservation agriculture (CA) practices by smallholder farmers in Kenya and Tanzania expanded,*
- (2) *Supply/availability of CA tools and equipment to farmers in target districts in East Africa enhanced in general and specifically through improved networking from Brazil to East Africa (by stimulating and facilitating private sector interest and capabilities in manufacture, retailing and hire of CA tools and other inputs – and through facilitating enhanced private sector interaction between East Africa and Brazil),*
- (3) *Strengthen institutional mechanisms (including consolidating ACT) to stimulate and sustain knowledge sharing and to foster active government support, farmer innovations and in general up-scaling of CA in the two project countries, in the Region and beyond.*

The project planning matrix followed a coherent cause-effect logic and provided a useful guide for project implementation and monitoring. The three Immediate Objectives reflect priority issues with respect to the extension of Conservation Agriculture and complement each other well. However, particularly in Kenya planning did not sufficiently consider experiences made during the first phase of the project (2004-2006); there were not enough outputs or activities dealing with older groups and their experiences, and although a possible need for follow-up was recognized (the project document said that "... already existing FFS will be supported to become independently sustainable ..." ¹⁷), no corresponding activities were identified.

The project design, both at objective and output level, was thus too ambitious and not achievable within the short time period (3 years only), and with the limited resources available: especially the potential influence of the project on the availability of CA equipment was overstated ¹⁸, as no massive promotion of equipment could be expected from a Technical Assistance project.

2.2 Project Design

The project strategy was to introduce Conservation Agriculture as a relatively new agricultural technology to smallholder farming systems in selected districts of Kenya and Tanzania with the aim of raising agricultural productivity and using scarce natural resources in a more sustainable and efficient way. Main elements of project design are:

- Promotion of Conservation Agriculture with the three key principles: i) minimum soil disturbance, ii) soil cover (with mulch, or cover crops, preferably legumes) and iii) crop rotation or association.
- Support to farmer groups via Farmer Field Schools (FFS). The CA technology is tested and compared with the traditional farming method on experimental plots; the groups are supported over a period of 1-3 years and given a subsidy for inputs (fertilizers, herbicides, seeds and machinery); in both countries, the field implementation is supported by national extension services under guidance and supervision of national agricultural research institutions (KARI and SARI).
- Encouragement and support of service providers such as local hire services for no-till farming operations and national manufacturers of machinery (sub-soilers, rippers, and direct seeders).
- Institutional support (advice, capacity building) to government institutions at national and at regional level as well as support to the Pan-African Conservation Tillage Network (ACT) with its headquarters in Nairobi ¹⁹.
- Project monitoring, evaluation and some training of field staff is done by African Conservation Tillage Network (ACT).

Accordingly, the project addresses various target groups and operates at local, regional and national levels. Given the various requirements that are necessary for the introduction of Conservation Agriculture: the awareness creation and training of

¹⁷ The project document also stated: "Suitable farmers both from existing graduated FFS from the 1st phase project and graduated farmers from the 1st year FFS of the project will be selected as facilitators". This seems to have happened to some extent in Tanzania; in Kenya – also because new districts were selected – contacts with "old" FFS and their members was very limited.

¹⁸ The project was expected to create "... a large critical mass for regional and national lobbying and advocacy", help create a situation where "... demand for CA tools (was) satisfied at affordable prices and in good quality by local private sector", and governments would be able to "... finance the (large scale) procurement of CA equipment for the participating communities".

¹⁹ This point could be regarded as a function of project management, and not as a project design element per se. However, it also documents the dual role of ACT in this project: on the one hand, ACT is a project implementer, on the other hand, it is also a project beneficiary.

farmers to change their tillage practice, the creation of a supply chain for no-till agricultural machinery and, and convincing decision makers and agricultural departments of the benefits of CA, the project strategy is very appropriate.

Conservation Agriculture as practiced by the CA-SARD project embraces a number of techniques that are applied in varying extent and composition. Its main items are:

- Breaking compacted subsoil-layers (hardpans or plough pans) with a sub-soiler in the first season to break hard pans and harvest rain water (mainly at the beginning of conversion)
- Ripping of the soil surface is done in case of compacted soil surface and to improve water harvesting (in varying frequency)
- Direct seeding of crops - mainly grains - is done with special implements (injection or punch planting); for hand planting, “jab planters” are used, for planting with oxen or tractors implements (direct seeders) are used that cut the mulch layer from legumes cover crops and from crop residues and deposit seeds into the soil
- Ground covering legumes (dolichos lablab and pigeon pea) are intercropped with food grains (mainly maize and sorghum); the legumes are planted either simultaneously or 2-4 weeks after the main crop
- Maize/Sorghum are harvested while the cover crop is left to continue covering the field, but seeds are harvested for food and as a cash crop.
- The cover crops and the maize/sorghum stalks are slashed and a herbicide is applied, where necessary, in preparation of the following season (in the first three years and later on in varying intensity).

The agricultural implements used for this technology are: a sub-soiler, a ripper, a planter and a device to apply herbicides (zawipe or sprayer). Each implement (except the Zawipe which is only manual) is offered in three types: for hand cultivation, with animal draught power and for tractor operation.

Conservation Agriculture can be considered as a successful technology to increase production and productivity in rainfed agriculture and is particularly suitable for low soil productivity situations and under difficult climatic conditions (drought and rainfall irregularity). As it focuses on maize and sorghum, it addresses dominant food crops in both countries. However, CA is not a cure-all solution. The positive impact with respect to gains in yield and gains in soil fertility are site specific. Soil texture is of dominant importance. It may be difficult – for instance – to practice CA successfully on heavy clay soils. Generally, there are high expectations concerning the impact of CA, but there is as yet a limited body of evidence. This concerns African sites in particular²⁰.

Controversial remains the use of the chemical herbicide Glyphosate, as there is increasing evidence of its negative impact. In most FFS groups, Glyphosate was presented as part of the input package, as a possible part of the technology. However, alternatives to herbicide weed control are practiced by some FFS groups (mainly in Tanzania) and in other projects in the region (mainly in Tanzania and Zambia). Maintaining the use of herbicides as an option under the standard CA approach is potentially in conflict with SARD principles and can be considered a weakness of project design.

²⁰ Having said this, there are research results from CIMMYT and CIRAD, and also results from other FAO-led CA projects as well as proven results from NGO activities (in Zambia, Zimbabwe and Lesotho, amongst others) – but in most conditions, transforming CA lessons would still require extensive on-site adaptation.

The Farmer Field School approach is a method of learning for farmer groups. It has developed over time and has come to represent a range of extension methods in working with farmer groups worldwide. Main elements of the FFS concept as practiced in the CA-SARD Project are:

- Agricultural extension workers receive a 3-week training in Conservation Agriculture;
- Farmer groups (up to 25 members of women and men) are guided by extension workers in experimentation and learning of Conservation agriculture until they graduate as CA-farmers (earliest after 1, latest after 3 years).
- Each farmer group conducts a field trial, in which various CA measures (sub-soiling, legume cover etc.) are compared with the traditional farming method with respect to plant development, yield etc. FFS groups use an experimental lay-out proposed by the project and receive a modest subsidy for an input package (fertilizer, herbicides and seed and shared machinery for the experiment)
- Farmer groups are supported to exchange experiences between each other and to join local CA networks for continued cooperation.

The farmer field school approach is a proven methodology, based on sound experience of many years of work, and reflecting the state-of-the-art in agricultural extension. The FFS methodology is well received by farmer groups; it manages to explain a rather complex technology to larger number of farmers with different levels of education. However, the training of extension workers is too short and too technical. Successful FFS work requires longer training of extension workers, in which not only technical knowledge is acquired but also facilitation skills for active learning of farmer groups are obtained.

2.3 Institutional Arrangements

The project's institutional arrangements involve many stakeholders in project implementation. At district level, the project is implemented by the respective departments of agriculture; national facilitators from KARI and SARI, respectively are responsible for the actual project operations, supervising the activities and training field staff. National project coordinators are located in the national Ministry of Agriculture (MAFC) in Tanzania, and in KARI in Kenya. Finally, ACT is in charge of coordinating, monitoring and evaluation of overall field work and supports activities in the area of equipment and machinery.

The FAO Regional Office in Accra is in charge of budget and administration, and a desk officer in Rome provides overall coordination. Generally, there is good cooperation among all stakeholders involved, but the structure is top-heavy. This has implications with respect to cost-efficiency and has sometimes created delays in project implementation²¹.

2.4 Beneficiaries

The project identified three principal groups of beneficiaries:

- Smallholder farm families (men, women and children) in poor communities, in rural areas in particular those exposed to food insecurity;

²¹ A Project Steering Committee was foreseen in the project document, but not implemented by the project. In hindsight, this may have been a fortuitous move, as there was enough communication between the major project protagonists – an additional layer might have made the project structure even more cumbersome.

- Agricultural implement manufacturers and retailers including artisans, whom the project targeted to ultimately enhance availability and accessibility of CA farm implements and after-sales service to farmers; and
- Local traditional and civic leaders, government policy makers and regional/international bodies with CA or Sustainable Land Management (SLM) initiatives in order to stimulate streamlining of CA elements into local, national and international programmes.

It could be argued that some of the farmer beneficiaries were among the better-off categories in their communities, but in the interest of mainstreaming CA, this was an appropriate choice.

The second and third beneficiary category could have more accurately been described as “target group”: the project did not offer too many benefits to these groups, but targeted them in order to achieve wider adoption of CA.

3. PROJECT IMPLEMENTATION STATUS

Approval date 9 May 2007			
Proposed EOD - NTE	15 May 2007 - 14 May 2010	Actual EOD - NTE ²²	16 Jul 2007 - 31 Mar 2011
Original Approved Budget	1,908,395	Latest Approved Budget	2,459,342

Table 1: Timeline (Major Milestones)

Date	Activity
By December 2007	Project launch in both countries with all stakeholders in July 2007 Tanzania: 41 new FFS in 4 districts. Kenya: 19 FFS in two districts. Kenya: 30 extension facilitators trained on CA-FFS. Tanzania: 24 extension facilitators trained. Regional M&E workshop bringing together CA stakeholders.
By December 2008	134 FFS in both countries; estimated 25% of farmers practise CA in their individual farms. Visit of 14 East African equipment manufacturers, dealers, researchers, and Government officials to Brazil. Twenty private animal drawn and tractor hire service providers trained.
By December 2009	169 FFS established (92 graduated) Budget increase: from US\$ 1,908,396 to US\$ 2,459,342; inclusion of some new activities Nineteen farmers providing DAP hire services using ripper/direct seeders supplied to the FFS groups. Training on CA equipment hiring systems and entrepreneurship to 63 DAP hire service providers.
By June 2010	227 FFS established (150 graduated) Project extension to March 2011 Study tour to Brazil and Paraguay for 4 technicians ²³ from Kenya and Tanzania to manufacturers in Brazil and Paraguay.

3.1 Project budget and expenditure

The original project budget envisaged a fairly lean structure in terms of international expertise inputs, with roughly 5% earmarked for international consultants, and

²² NTE = Not To Exceed. (End date of the project.)

²³ Two additional members were from the MAFC in Tanzania.

approximately 8% for FAO Technical Support Services. The biggest planned expenditure items were travel (16.5%), contracts (16.1% for ACT, institutions handling the Latin America/East Africa study tours, and NGOs in Kenya and Tanzania), and training (11%)²⁴.

By the time had the project had reached Budget Revision "D" (May 2010), the actual expenditure pattern had changed²⁵: Contracts had become by far the biggest budget element (37.2%), followed by consultants (17.5% = international, regional and national), and travel (16%).

Table 2: Budget and Expenditure (original budget vs. latest budget revision²⁶)

<i>Budget Line</i>	<i>Input</i>	<i>Original</i>	<i>Budget Revision D</i>	<i>Percentage</i>
5013	Consultants			
	<ul style="list-style-type: none"> International Consultants · FFS methodology · SARD / Knowledge Management · Agro-business and Supply chain expert 	60,000		
	<ul style="list-style-type: none"> International Consultants – Partnership Programme (TCDC) and Retired experts · Cover crop / agronomist expert · CA equipment operating expert · CA equipment manufacture expert 	41,400		
	<ul style="list-style-type: none"> National experts and consultants · Knowledge Management officer (regional) · Country project facilitators (Kenya/Tanzania) · IT consultant (regional) · National consultants for other specific inputs (Kenya, Tanzania, Brazil) 	269,000		
	Sub-total	370,400	429,631	17.5%
	<ul style="list-style-type: none"> Administrative support staff · Driver/field assistant Kenya · Driver/field assistant Tanzania · Overtime Kenya, Tanzania 			
	Sub-total	90,000		
5014	Contracts	307,000	914,487	37.2%
	<ul style="list-style-type: none"> Contracts · ACT Regional Unit · IAPAR Brazil · NGOs in Kenya/Tanzania for equipment support back-up and business management opportunities 			
5020	Locally Contracted Labour		30,917	1.3%
5021	Travel	314,000	392,302	16%
	<ul style="list-style-type: none"> Travel · ATS/STS travel · International travel 			

²⁴ The original project budget (with the addition of percentages) is reproduced in Annex 3.

²⁵ Also the available budget had gone up from originally US\$ 1,943,517 to US\$ 2,459,342 in October 2009.

²⁶ Note that the format of the original project budget and of the budget revisions is not strictly compatible.

	<ul style="list-style-type: none"> 2 Study tours (East Africa – Brazil, Brazil – East Africa) travel support In-country travels, workshops, meetings, Final workshop 			
5023	Training	208,000	99,586	4%
	<ul style="list-style-type: none"> In-country training, workshops/ meetings FFS support (see table page 27) Start-up workshops Brazil study tour follow-up workshop Final workshop 			
5024	Expendable supplies	50,500	31,704	1.3%
5025	Non expendable equipment	97,500	85,617	3.5%
5027	Technical Support Services	191,446	137,814	5.6%
	<ul style="list-style-type: none"> FAO staff – ATS SDAR (1.month); AGSF (0.5 months); AGPC (1.5 months) 	48,024		
	<ul style="list-style-type: none"> FAO staff – TSS for LTU functions AGST (9 months) 	108,000		
	External evaluation	35,422		
5028	General Operating Expenses	60,000	53,849	2.2%
	<ul style="list-style-type: none"> FAO Kenya GOE FAO Tanzania GOE Terminal report 			
5050	Chargeback		500	0%
	SUBTOTAL	1,688,846	2,176,409	88.5%
5029	Support cost 13%	219,550	282,933	11.5%
	Total [US \$]	1,908,396	2,459,342	100%
	TOTAL €	1,500,000		

The actual expenditure pattern over the last two years follows the pattern of Budget Revision “D”: contracts dominate the expenditure, followed by consultants and travel.

Table 3: Expenditure by Year

Budget Categories	Expenditure by Year					
	Dec-08		Dec-09		Oct-10	
5013 Consultants (Parent account)	191374	17.3%	312240	19.1%	425751	19.0%
5014 Contracts (Parent account)	343541	31.0%	509093	31.1%	816392	36.4%
5020 Locally Contracted Labour (Parent account)	5858	0.5%	11017	0.7%	15848	0.7%
5021 Travel (Parent account)	202553	18.3%	313717	19.1%	410623	18.3%
5023 Training (Parent account)	48232	4.4%	80086	4.9%	86086	3.8%
5024 Expendable Procurement (Parent account)	25283	2.3%	18404	1.1%	21646	1.0%
5025 Non Expendable Procurement (Parent account)	81117	7.3%	81117	4.9%	81117	3.6%
5027 Technical Support Services (Parent account)	49478	4.5%	77774	4.7%	92654	4.1%
5028 General Operating Expenses (Parent account)	31721	2.9%	46434	2.8%	46814	2.1%
5029 Support Costs (Parent account)	127364	11.5%	188550	11.5%	246181	11.0%
5050 Chargeback (Parent account)	562	0.1%	500	0.0%	500	0.0%
Total Expenses	1107085	100.0%	1638934	100.0%	2243613	100.0%

The expenditure appears appropriate for a regional project (with higher mobility requirements), confirms the pivotal role played by ACT, SARI and KARI (and training provided by these bodies) in the project set-up²⁷, and generally reflects the character of the project as technical assistance provider.

3.2 Implementation status

Project implementation was supposed to start in May, and actually began with a slight delay in July 2007. Initial emphasis was on training of extension workers as FFS Facilitators, and organization of FFS groups themselves. In addition, some training was given and equipment and other inputs (jab planter, ripper, sub soiler, and CAN fertilizer) were supplied.

By December 2008, the project reported an increase in area under CA for both countries to 320 ha²⁸; the number of farmers who were members of FFS and practicing CA technologies was given as 4020 (from 134 groups), and the number of farmers practising CA in their individual farms was given as 1000. (The main reason given for this relative under-achievement was consecutive drought in some districts.) Some FFS groups also joined existing farmer networks, and were trained on networking and savings and credit cooperative society management. The first visit of East African equipment manufacturers, dealers, researchers, and Government officials to Brazil took place in May 2008.

By late 2009, the area under CA for both countries increased to 600 ha, including a number of individual farmers. The number of farmers practising CA was given as 5070 in 169 FFS averaging 20 members. The increase was attributed apart from the project efforts, to the spill-over effect of the initiatives by other partners promoting CA namely the ministries of agriculture, NGOs, CBOs and private sector players. It was also stated that moisture stress in the 2009 main season resulted in zero or low yields for non-CA farmers while neighbours practising CA got better results. A budget increase from US\$ 1,908,396 to US\$ 2,459,342 allowed the inclusion of some new activities (the highest increase went to contracts – US\$ 317,000 – with FAPEAGRO, ACT and CAMARTEC).

By mid-2010, the area under CA for both countries was stated to have reached 1100ha, with the increase due partly to the increased number of established FFS groups, but also (it was stated) through adoption of non-FFS farmers “who have consistently observed CA as the better coping strategy”. According to project records, the number of farmers practising CA increased to 6810, and also the involvement of government extension agencies (especially through Tanzania’s ASDP) and that of the NGO and private sector were considered key contributing factors. New entrants promoting CA and supported by CA SARD included SUSTAINET EA (upscaling adoption of CA in Western Kenya); and RECODA, WADEC and CPAR in Northern Tanzania. An estimated 200 units of CA implements were produced during the reporting period bringing the cumulative unit production to 1185. (However, the unit definition does not offer much insight into CA equipment

²⁷ Most of the field work within the area of Immediate Objective 1, including FFS support and training has been handled through LOAs (Letters of Agreement). Hence, as a consequence the allocation for training is technically implemented under contracts. There is one LOA for the implementing agency in Tanzania (SARI) and one for the same in Kenya (KARI). Besides this there is the regional LOA for ACT that covers the regional coordination, M&E, knowledge management, networking and reporting among others issues.

²⁸ It should be stated that even among project collaborators, there were greatly differing figures given regarding the under CA, and the adoption rate among farmers. The project in its progress reporting apparently employed a very rigid interpretation of CA, while especially agricultural district administrators were quite happy to count even a partial application of CA as adoption. At the same time, the project calculated the adoption rate among farmers in their own plots according to a formula based on FFS farmers trained; the ground truthing of these calculations was not always evident.

production and adoption rates, as the “unit” does not differentiate between the various types of equipment.) Finally, a team of six technicians from selected Kenya and Tanzania workshops visited Brazil and Paraguay manufacturers in August/Sept 2010. In a drastic turnaround from the original project document, the objective of the visit was not to facilitate supply contracts but sharpen local manufacturing skills²⁹. (The project document actually foresaw a return visit by Brazilian manufacturers to East Africa.)

The regional knowledge sharing and networking for SARD and CA perhaps developed as the most successful project initiative: in collaboration with COMESA and national governments, ACT spearheaded a number of CA activities, among others: the CA2AFRICA project, funded by the European Union; the SUSTAINET EA supported CA programme in western Kenya; the Agro-ecology based aggradation-conservation agriculture (ABACO) project to be funded by the EU; the Smallholder Conservation Agriculture Programme (SCAP) being implemented by ACT, CIRAD and ICRAF in West and Central Africa since July 2008. Other promising projects/initiatives include COMESA supported CA programmes in the East African region where ACT is actively involved.

In terms of government support, CA has found its way into budget allocations at district level (Tanzania) as well as into performance agreements by agricultural district officers in Kenya. CA forms part of the Mechanization Strategy of the ministry of agriculture in Tanzania MAFSC, and also appeared in the minister’s budget speech; in Kenya, the Strategic Plan 2008-12 aims to have 1.25 million farmers trained in CA by 2012.

4. SUPPORT BY GOVERNMENTS, TECHNICAL AND OPERATIONAL BACKSTOPPING, PROJECT MANAGEMENT

The project has had intensive technical backstopping; there were some operational constraints, especially concerning budget allocations and disbursements earlier in the project; but support at all levels was generally good.

4.1 Support by government/national institutions

Support by government institutions was ensured through the inclusions of SARI/KARI as project facilitators/coordinators, and the intensive collaboration with district agricultural offices. Some bottlenecks could have been avoided by more decisive intervention or better foresight (the provision of cover crop seeds in Kenya is a case in point: KARI stopped being a provider, and supply constraints occurred³⁰). Also the co-existence of conventional cultivation techniques being promoted next to CA plots has tended to undermine the credibility of CA messages. However, regarding the latter point, conflicts between old and new ways probably will be inevitable when introducing a novel technology.

4.2 Technical and operational backstopping

There has been intensive technical backstopping for the project: apart from backstopping by FAO AGST (the Lead Technical Officer went on 12 project-related

²⁹ Project backstoppers argue that in 2008 it was felt, by both sides, that there was insufficient experience in East Africa at that time; however, they claim that in 2010 the technical staff from Africa took home strong messages of a willingness to collaborate further from Brazil (and to a lesser extent from Paraguay).

³⁰ The project document stated: “Among KARI’s NRM/SLM related projects has been the legume seed promotion project (ending in August 2006). It is expected that the CA SARD Project will greatly benefit from taking on the operations of the legume seed bank – essentially as a source of primary legume cover crop seed for the FFS groups.”

missions), also other relevant units in FAO were involved in the backstopping. FAO AGP (Plant Production and Protection Division) provide continuous support through backstopping missions as well as email correspondence (and contributed to furthering CA knowledge through publications), and also other officers from AGS dealing with business development. The technical approach to project backstopping was thus sound and transparent.

Operational backstopping suffered initially somewhat from a succession of operations officers in FAO's Regional Office, and in the early years some misunderstandings or differences of opinion about the budget allocations (and the establishment of "baby" projects as opposed to other allocation forms) caused some delays³¹.

4.3 Project management and oversight arrangements

Project management has proven complex. There are many layers: Rome/Accra/ACT/two FAO Representations/two National Coordinators/two Project Facilitators, through which the project has to operate until the field work gets done in the districts. There are some signs that e.g. reporting went through a number of iterations, as contributions had to come from various collaborators before it could be compiled by ACT. (The vast differences of opinion among various project stakeholders concerning areas under CA, is a case in point).

In view of the above, it may have been a blessing in disguise that the project did not formally establish a Project Steering Committee, as foreseen in the project document. This would have added another administrative/management level, and it is not evident that the project suffered from its absence (both National Coordinators and the Lead Technical Officer met regularly in the context of ACT Board meetings).

5. ASSESSMENT OF ACTUAL AND POTENTIAL RESULTS

The judgments in the following chapter are based on field observations and discussions with stakeholders, as well as document reviews.

5.1 CA FFS participating farmers experimenting with CA using the FFS approaches and applying adapted CA practices in their own plots

5.1.1 Group formation, experimentation and adoption on private plots

Group formation. In all 11 districts which were selected as intervention areas (5 in Kenya, 6 in Tanzania), there is significant interest by farmers to form CA groups and get support from the project. Accordingly, the number of Farmer Field Schools (FFS) formed and supported by the project could surpass the expected targets by more than 10%. Approximately 5000 farmers are organized in 227 Farmer Field School groups, out of which 49% are female. 78% of all farmer field schools are in Tanzania, 22% in Kenya.

Experimental fields. Undoubtedly, the experimental field of the FFS group is a focal point and has proven successful for learning, understanding and testing of the CA technology. On the other hand it was observed that the lay-out and management of the groups' experimental fields were mainly done according to the recommendations of the project and less according to farmers' own ideas. The same applied to the input package, provided by the project; its composition of fertilizers, herbicides, seeds etc. was largely determined by the project; farmers may have had the

³¹ There has also been some mistake in the charging of transactions against the project, but this has been rectified.

possibility to participate in decision making, but often a standard approach was promoted which was followed. As a result, the introduction of Conservation Agriculture followed more a transfer of technology approach and less a site-specific adaptation process guided by farmer experiments.

Adoption of CA on private plots. The monitoring data of ACT display an impressive number of FFS farmers, who have adopted CA on private fields. In Kenya it is 39%, in Tanzania 51%³². Adopters outside FFS do exist, but numbers are unknown. In most cases one or two fields have been converted and the average size under CA is in the range of 0.2 and 1.2 ha. It remains to be seen, how sustainable adoption of the new method will be. Nevertheless, there are constraints of adoption:

- Many groups lack seeds for legume cover crops and this concerns Kenya in particular,
- CA implements are still scarce, can barely be bought in local shops and there are only few service providers for no-till farming operations (subsoiling, ripping and direct seeding).

Often, not all elements of conservation agriculture are adopted. All adopters practice no-till and direct seeding – by hand with the jab planter or with an ox- or tractor drawn direct seeder. Only a few practice a crop rotation and weed control is dividing the farmers. The following strengths and weaknesses of Conservation Agriculture are the result of focus group discussions during the evaluation.

Text Box 1: Farmers' Perceptions of Conservation Agriculture

Strengths:

- Planting in time is easier, as there is no need to wait for ploughing
- Labour input is reduced
- No-till and legume crops control striga
- Cover crops stop soil erosion and reduce evaporation

Weaknesses:

- At some sites (Kenya), the cover crop technology is not sufficiently developed. Sometimes there is only one legume available; “we need more knowledge on cover crops”.
- At many sites (mainly Kenya), there is a shortage of cover crop seed and CA is therefore practiced without.
- Glyphosate does not sufficiently kill the weeds, which leads to using other herbicides and spending more on chemicals than planned
- Cover crops increase sometimes the incidence of rodents
- CA equipment is not sufficiently available; most of all, this concerns draught animal planters.
- The integration of livestock is still an unresolved problem in some areas.
- The technique of planting cassava, sweet potatoes and groundnuts in no-till systems is still unsolved.
- Jab planters do not work under wet soil conditions.
- Non-subsidized equipment is too costly

Conclusions / recommendations:

- The CA technology has to be developed further; for instance, there are

³² However, the actual adoption numbers and patterns, and reasons for adoption are still being established in impact studies.

scrapers that allow mechanical weeding and different types of cover crops are needed in order to optimize the soil coverage; both can reduce the requirement for chemical herbicides.

- The introduction of CA requires introduction of controlled grazing; this leads to more manure that can be applied in the field.
- Plant trees and shrubs along field borders to compensate for maize stalks that can no longer be given to animals. Fodder plots could be another solution to animal feed provision.

Following the project's philosophy, all farmers were to learn about the different options for weed management, one of them being the 'agronomy' recommendation that emphasises soil cover and the use of ground covering legumes for weed suppression and alternatively to use the herbicide Glyphosate for weed management, at least in the initial stages. It appears that almost all farmers use the herbicide Glyphosate for weed management in the initial years. A part of them (predominantly in Tanzanian sites) has replaced the herbicide by ground covering legumes, others (mostly in Kenyan sites) have tended to rely on chemical weed control. In the long term, there are mainly two adoption scenarios:

- a) The herbicides are used initially for weed management, until they are replaced after 2-3 years by ground covering legumes
- b) No-till farming is practiced with little or no legume cover crops and weeds are entirely controlled through herbicides. This scenario bears the possibility that weeds could potentially develop herbicide tolerance/resistance and subsequently dosage and number of herbicide applications could increase. However, this is a theoretical scenario as to date no herbicide resistance case is reported in the project area.

Both scenarios can be observed in the CA-SARD farmer groups.

Impact. Most farmer groups mentioned the positive impact of Conservation Agriculture. The main advantages in comparison to traditional farming were:

- Generally higher yields,
- Lower risk of production; at least a some yield in years with extreme drought (whereas traditional plots failed completely),
- Less labour due to minimum tillage and herbicides,
- Additional revenues from soil covering legumes that can be sold as a cash crop (seed of *Cajanus cajan* and of *Dolichos lablab*),
- Better nutrient supply through ground covering legumes.
- Rehabilitation of degraded land (mainly through sub-soiling and ground covering legumes).

The impact judgments as mentioned so far are mainly based on plausibility considerations, because quantitative assessments are largely missing. Some farmer groups have tried to quantify the physical and economic impact of Conservation Agriculture. Quite a number of figures on yield and gross margins describing specific situations do exist and could be used for modelling and comprehensive impact assessment. CA adopters may reduce the workload (due to no-till and to herbicides) and increase their crop yields (due to better soil-fertility management). A significant increase of net profit will be quite likely for scenario a), whereas for scenario b) the net profit will depend on the amount of herbicides applied; increasing costs for herbicides may eventually over-compensate savings due to less labour and soil tillage. Ecologically, there are many negative effects of Glyphosate; the increasing herbicide resistance of weeds, the suppression of soil micro organisms (notably

rhizobia) and the proliferation of the fungal disease *fusarium* are well known phenomena of Glyphosate if applied in the long term.

5.1.2 Support to groups and knowledge of farmers

Support to groups. Extension field worker of the respective 11 district departments of agriculture were trained on Conservation Agriculture. For both countries a total of 209 extension officers (154 in Tanzania, 55 in Kenya) have been trained. In addition, 71 CA facilitators could be recruited from the farmer groups. Over three weeks they received initial training by ACT in cooperation with the national research institutes (SARI and KARI), later on the job backstopping by researchers. A well designed training curriculum exists and comprehensive and well designed training material is available. However, the training topics are almost entirely technical; extension workers are not sufficiently qualified in the facilitation of group discussion and counselling, a basic pre-requisite of the farmer field school approach.

The district extension staff pays regular visits (in monthly intervals during the growing season) to the farmer groups until they are graduated. Main strengths and weaknesses of support to Farmer Field Schools as perceived by farmers are as follows.

Text Box 2: Farmers' Perceptions Regarding the Farmer Field School ' Methodology

Strengths:

- More farmers can be reached; even illiterate farmers can profit
- It brings farmers together
- FFS tends to foster better organized and more systematic learning;
- Sharing and exchange of knowledge; farmers can present own problems and opinions
- Learning in the field not in the class room
- Being able to access more knowledge and to understand even difficult issues
- The group is stronger than the individual

Weaknesses:

- The time frame is too short
- Passiveness of some members
- Extension workers are promoting different technologies; messages are conflicting
- Handouts and training materials were very limited
- Input delivery sometimes late
- CA equipment supplied to the groups is not sufficient by numbers and is not for sale at normal outlets

Knowledge of farmers. Most of the CA farmers (at least 75%) are able to articulate the importance of CA with regard to crop production, labour requirements and soil conservation. The regular meetings and group discussions in the Farmer Field Schools provide a learning platform. Exchange visits between Kenyan and Tanzanian farmer groups (24 from each country) helped to deepen the understanding and allowed to compare various CA related experiences such as the use of cover crops or the creation of Village Community Banks.

5.1.3 CA networks

Generally, there is significant interest of FFS groups in joining networks and the formation of networks is continuing. Out of the 227 FFS-groups, 150 have so far graduated. Many of them have joined networks, but the actual number is unknown. Apart from exchange of information, savings and credit are main network activities. In Tanzania, the graduated groups were trained on savings and credit and established Village Community Banks (VICOBA). VICOBA helps the farmers to get local informal banking services. Farmers in Kenya are testing mobile banking “MKESHO” a service which enable smallholders to save and access their funds through the mobile phones irrespective of where they are located.

5.2 Supply of CA tools and equipment

The project has made some progress regarding the availability of CA equipment: a growing number of manufacturers in both Kenya and Tanzania are producing a range of implements, sometimes adapted for local conditions. However, these are mostly small batches for order placed by the project, ministries of agriculture and other institutions³³. Local DAP hire service providers trained by the project have picked up some private orders, and are in the process of acquiring DAP implements. However, the DAP implements are still mostly supplied by the project at preferential rates.

Likewise, most farmers have received their CA implements from the project; local availability even of simple implements such as the jab planter is close to zero. (In one district town in Kenya, the mission could see a Chinese manufactured jab planter.) The low adoption rate of CA beyond the FFS is thus a remaining challenge, aggravated by the low purchasing power of farmers to access CA equipment and other inputs. The project provision of CA equipment to resource-poor farmers can lead to a higher adoption rate, but will be financially unsustainable for a TA project. (However, it could be argued that historical adoption patterns in South America also reveal the need for initial government subsidies.)

The linking of selected manufacturers and dealers with manufacturers of CA equipment in Brazil (local manufacture under license) has not yet happened, and may not happen; to date, overseas manufacturers seem to be more interested in direct sales contracts than joint ventures. (The mission heard some stories about the 2010 study tour by East African technicians especially to Brazil: some manufacturers there feared industrial espionage.) Contrary to the expectations of the project document, there has been only a one-way travel from East Africa to Latin America: a first visit in 2008 mainly by managers of implement manufacturers from Kenya and Tanzania was followed by a second visit in 2010 mainly of technicians to sharpen their manufacturing skills – the planned return visit by Brazilian manufacturers to East Africa has not taken place.

Also the supply constraints of other CA required inputs such as cover crop seeds, makes CA a risky proposition for farmers without connections to the project. Demand for cover crops seed (lablab and pigeon peas) is increasing beyond the locally available production. Most farmers use the two cover crops for food and cash and they don't spare enough good quality seeds for other farmers. This situation, coupled with below-normal rainfall amounts observed in semi-arid areas in 2007 and 2008 is a phenomenon that hinders farmers to move over to full CA cultivation. (So far, the

³³ Project progress reports mention a cumulative unit production during the project lifetime of 1,185 units, without, however, giving a definition of “unit”.

project has been able to offer CA grants to affected FFS groups – but this is not an option for larger adoption.)

However, by linking smallholder farmers to commercially viable arrangements (in line with the business training already offered), there may be a future opportunity to move to higher value crops. Similarly, the commercialization of equipment hire services – for animal traction, power tiller (2WTs) and tractor-mounted no till planting services – in connection with government mechanization campaigns may offer a way to offset machinery acquisition costs.

5.3 Strengthening of institutional mechanisms

ACT has become a key player in a number of CA initiatives in the region and beyond (e.g. in collaboration with COMESA and national governments, ACT spearheaded a number of CA activities, among others: the CA2AFRICA project, funded by the European Union; the SUSTAINET EA supported CA programme in western Kenya; the Agro-ecology based aggradation³⁴-conservation agriculture (ABACO) project to be funded by the EU; the Smallholder Conservation Agriculture Programme (SCAP) being implemented by ACT, CIRAD and ICRAF in West and Central Africa since July 2008. Other promising projects/initiatives include COMESA supported CA programmes in the East African region where ACT is actively involved.

Overall, the institutional networking capability on CA has been strengthened considerably: there is knowledge management expertise, more contacts and membership in region including at farmer level; active links to NEPAD, not only by ACT but also by government institutions in Kenya and Tanzania.

In terms of government support, CA has found its way into budget allocations at district level (Tanzania) as well as into performance agreements by agricultural district officer in Kenya. CA forms part of the Mechanization Strategy of the ministry of agriculture in Tanzania MAFSC, and also appeared in the minister's budget speech; in Kenya, the Strategic Plan 2008-12 aims to have 1.25 million farmers trained in CA by 2012.

6. CONCLUSIONS

Conservation Agriculture (CA) has gained wide interest among farmer groups, Development NGO and Government institutions in Kenya and Tanzania. The CA-SARD project has contributed significantly to this development. Adoption rates by farmers and diffusion of CA messages among extensionists appear to be higher in Tanzania as compared to Kenya.

The CA technology as defined by FAO is technologically consistent, innovative and promises a significant improvement in combining sustainability with productivity in agricultural production. The use of herbicides as promoted in several project locations remains a controversial topic: the standard approach taught to many FFS groups promotes the initial use of herbicides, to be gradually replaced by ground covering legumes. As alternatives to herbicides do exist and are applied in some parts of the project and in other CA projects in the region, this aspect is conflicting with the SARD principles and can be considered a weakness in the project approach.

The extension of CA in the 11 intervention areas of Kenya and Tanzania has been successful and most targets of the project have been achieved or even surpassed,

³⁴ Not sure whether this is the correct term (it comes from geology), but this was the explanation given.

such as the number of Farmer Field Schools experimenting with CA, the percentage of farmers testing this technology on their land, and the increased knowledge by farmers about this new technology.

At the same time, farmers face several constraints in applying CA: lack of seeds limits the application of ground covering legumes, one of the key elements of CA. This concerns Kenyan sites in particular. Secondly, the limited availability of CA equipment – notably animal drawn planters – restricts the extension of CA on larger acreages.

In the initial phase of Conservation Agriculture in Africa, CA-SARD contributed to: a) creating demand among farmers and local governments for support of CA, b) introducing CA to national agricultural policies, programmes and projects, c) developing the African Conservation Tillage Network (ACT) and making it an independent NGO, and d) enabling FAO to keep CA alive over a number of years in which CA faced lot of opposition both internally and externally.

Nevertheless, Conservation Agriculture is a complex technology and demands fundamental changes in agriculture. This requires a change in the mindset of farmers, advisors, scientists and politicians. It requires also thorough adaptation and site-specific development of a technology, which is still in evolution. Both take time and require a long-term development perspective. With the high interest of the two governments and various donors willing to invest in future CA projects, necessary continuity could be secured. CA-SARD has accumulated a store of knowledge and experience, from which future projects could profit. But only a small part of it is assessed and documented.

FAO has perhaps tolerated too much dependence on the use of herbicides in Conservation Agriculture (although the project also supports non-herbicide using farmers). Internationally, the reliance on herbicides is controversial, but non-herbicide alternatives for weed management are a part of the CA concept as promoted by FAO and are practised in parts of the CA-SARD project. They are also practiced by other FAO projects and various other organizations. The ecological and economical impact of herbicides is still under international assessment and discussion.

Specific Topics and Issues

Environmental and Socio-economic Impact and Sustainability of Impact

The effects of climate change have become quite pronounced in both countries: drought periods are occurring more frequently, last longer and rainy seasons are getting increasingly erratic. The CA concept offers an appropriate technology not only to adapt to climate change (according to records, CA plots performed better under drought conditions than neighbouring conventional plots) – it also fosters sustainable utilization of natural resources and, through agricultural intensification, also offers better economic prospects to small farmers. Especially the labour reduction aspect makes it suitable also for female farmers. The critical issue for a sustained success of CA remains the availability of seeds and equipment as well as maintenance and repair services.

Gender Equity in Project Implementation and Results

The project has fostered gender mainstreaming in two ways: in project management, two women are in responsible positions (the Deputy Project Facilitator in Tanzania, and the Project Coordinator in Kenya). In project implementation, the project has achieved near gender parity in many FFS groups (women are actually a majority in several groups); the reduced labour requirements have enabled some women farmers to increase their production and also take over parts of the cultivation cycle (land preparation) which used to be a male domain. Time savings are also reportedly used by women to engage in petty businesses and thus improving their income. The project has been less successful to document these experiences systematically; an analysis of the gender dimension in possible changes in access to, and control over, resources has not been conducted.

Cost-effectiveness

CA is potentially more profitable than conventional agriculture, and there is evidence to the effect that this applies also to the CA-SARD project. However, model calculations (even those done by the project) vary, and there are some caveats when it comes to incomplete application of CA principles; in one (not uncommon) interpretation, CA may actually increase dependence on external inputs (especially herbicides).

Major Factors Affecting the Project Results

Apart from the factors listed above, major intervening factors were recurring droughts in the region since 2007, and also relative ignorance about CA in large parts of the extension services in both countries (which transmitted conflicting messages to farmers).

Annex 1: Mission Terms of Reference

**Terms of Reference for Joint Project Evaluation Mission by
The Federal Republic of Germany and FAO
Supported by the Governments of Kenya and the United Republic of Tanzania
Project GCP/RAF/413/GER “Conservation Agriculture for Sustainable Agriculture
and Rural Development (CA for SARD) Phase II in Eastern Africa”**

1. Background

Conservation agriculture (CA) has evolved as a term which represents an inter-acting and complementary set of agricultural practices and concepts. Despite regional differences in the mix and emphasis of the different specific components making up CA practices and which depend on agro climatic zones, availability of farm power options, farming systems types, inputs, skills, etc., the three basic principles which are always present are:

- minimal soil disturbance (no-tillage/reduced tillage)
- permanent soil cover (crop residues, cover crops and associated crops)
- suitable and diversified crop rotations/associations

While these three individual concepts are well known, it is their combination and the management of the combination that leads to new synergetic effects resulting in CA becoming more than just the sum of the individual practices.

Why conservation agriculture for SARD?

In addition to fostering environmental sustainability through soil and water conservation, conservation agriculture can contribute to the social and economic pillars of SARD through:

- reducing the workload and time spent for agricultural production thereby enabling livelihood diversification, business development and freeing time for other activities such as education, family care, community development and political empowerment.
- stabilizing crop yields, especially through reducing drought sensitivity and dependence upon price-fluctuating purchased fertilizer inputs.
- increasing production and agricultural earnings.
- enhancing crop biodiversity and diversifying diets.
- Fostering the development of secure livelihoods for other rural actors such as artisans and other entrepreneurs.

In recent years, climate change effects have led to additional reasons for promoting CA as it is a tool that helps farmers and rural communities to better adapt to increasingly changing weather patterns caused by climate change. CA has potential to facilitate adaptation climate change whilst at the same time having strong mitigation potential through increased carbon sequestration in soil organic matter.

The project history, objectives, and major concepts and outputs

In the East African region there have been many soil and water conservation initiatives in the last 10-20 years. These include the Swedish international Development Agency (SIDA) supported Regional Land Management Unit (RELMA), the Land Management Projects (LAMP) and Soil Conservation and Agroforestry Project (SCAPA) projects in northern Tanzania. In Kenya they have included the joint KENDAT - ACT programme in Kenya's Machakos district. Among the marked impacts of these projects are an increased awareness of the problems of land degradation and a growing desire to find solutions.

Both the governments of Kenya and the United Republic of Tanzania have also increasingly placed the issue of sustainable land management firmly among their priority action pillars for the revitalisation of agriculture and their rural economies.

Through FAO TCP support, FAO has in the last four to five years been actively involved in supporting CA development in the region. More specific has been the CA-SARD project (GCP/RAF/390/GER) implemented in the period 2004-2006 that involved Kenya and the United Republic of Tanzania. This project went through an independent tri-partite evaluation in November 2005 and the recommendations were discussed in donor meetings in FAO Rome in January 2006. A second specific donor meeting followed in April 2006 in Rome. As a result of several communications between April and September 2006, the project evolved to its present shape. The recommendations from the independent evaluation have been fully taken into account especially the one to 'continue to encourage private sector involvement'. The private sector link between Brazil and East Africa is crucial in this respect as it promotes linkages between Brazilian and East African entrepreneurs with the aim of establishing a viable CA equipment input industry in East Africa well adapted to local conditions.

The CA SARD II design acknowledges and builds on the gains made during the first phase. This is with regard to both the CA technology development aspects and to the dissemination methodologies and approaches. CA SARD II specifically aims to relate and consolidate the following aspects:

- achievements in aspects of cover crops for soil cover (both in terms of the awareness raised on the subject and the promising cover crops already identified and being grown)
- the CA equipment thrust with a number of CA equipments introduced and a promising emerging local equipment manufacturing and supply industry
- the FFS approach that has recorded great success in farmer mobilisation, organisation and as a farmer self-learning system

The implementation of CA-SARD II used the same on-the-ground set-up established in the original CA-SARD project, including the facilitators who are now fully competent in both CA and FFS approaches. In consolidating this aspect, CA-SARD II also recognises and brings on board the active and crucial role of farmers from the old FFS groups coming in as facilitators to support new groups. Through the national and regional implementing organisations, CA-SARD II has forged close linkages to both national and international (including NEPAD) initiatives on SLM/CA.

The German Ministry of Agriculture and Consumer Protection (BMVEL) has provided the funds in order to implement a field oriented programme that should contribute to the SARD initiative.

The originally approved project budget was **US \$ 1,908,395** (equivalent to €1 500 000) for three years for two countries. In June 2009 an additional budget allocation was approved together with a set of additional activities and an additional project lifetime of six months to December 2010 and with an approved additional no-cost project extension to **31 March 2011**. The total project budget is **\$ 2 459 342**. The project operating unit and budget holder is FAORAF (Accra) which manages/operates the regional component of the project through the child budget. Two (2) baby projects have been issued to the FAO representatives in Kenya and Tanzania, respectively, to cover the component of field activities in both countries. The National Coordinator and National Facilitator in Kenya as well as the national facilitator and assistant facilitator in Tanzania all receive a salary top-up from the project. The services of regional management, monitoring, evaluation, reporting as well as technical training of CA are contracted through Letters of Agreement (LOA) with the African Conservation Tillage Network (ACT).

The project is operational in five districts in Tanzania (Karatu, Arumeru, Babati, Hanang and Moshi) and five districts in Kenya (Siaya, Bungoma, Mbere, Nakuru and Laikipia). In each of the districts there are field teams. In total there are approximately 150 operational CA farmer field schools.

Within FAO, the Rural Infrastructure and Agro-industries Division (AGS), Agricultural Department is Lead Technical Unit of the CA-SARD project. The FAO Regional Office for Africa has been nominated to be operating unit and the budget holder of this project. The ownership and

responsibility for the national project activities rests ultimately with the implementing countries Kenya and Tanzania.

The **development objective** of the “Conservation Agriculture for Sustainable Agriculture and Rural Development (CA for SARD)” project is to promote:

Improved socio-economic growth, food security and livelihoods in Eastern Africa through Conservation Agriculture based interventions

The **immediate project objectives** are:

1. Adoption of profitable conservation agriculture practices by smallholder farmers in Kenya and Tanzania expanded
2. Supply/availability of CA tools and equipment to farmers in target districts in East Africa enhanced in general and specifically through improved networking from Brazil to East Africa (by stimulating and facilitating private sector interest and capabilities in manufacture, retailing and hire of CA tools and other inputs – and through facilitating enhanced private sector interaction between East Africa and Brazil)
3. Strengthen institutional mechanisms (including consolidating ACT) to stimulate and sustain knowledge sharing and to foster active government support, farmer innovations and in general up-scaling of CA in the two project countries, in the Region and beyond

The project has nine **major outputs** with activities. Those outputs were updated by the stakeholder – launch workshop in Nairobi in October 2008. The project outputs are as following:

- 1.1 CA FFS participating farmers experimenting with CA using the FFS approaches and applying adapted CA practices in their own plots
- 1.2 Farmers more knowledgeable on CA and learning and applying CA practices into viable farming enterprises
- 1.3 CA FFS graduate farmers organised in CA-SLM innovation networks stimulating collective SLM/CA responsibilities, enhanced social learning and widespread CA adoption (scaling out)
- 2.1 Local artisans and farm implement manufacturers are willing and able to fabricate CA tools and equipment
- 2.2 Service providers, including local traders and suppliers, support CA adoption through the supply of CA required inputs (seed and equipment)
- 2.3 More farmers accessing CA equipment through local hire-services
- 3.1 ACT's institutional networking capability strengthened (knowledge management expertise, more contacts and membership in region including at farmer level; active links to NEPAD, focal persons in Ke/Tz governments, etc...) as a framework for enhanced CA knowledge generation and sharing
- 3.2 CA-SARD II lessons and evolving knowledge on CA adaptation/innovation processes and technological best practices including impact/effects on livelihoods and environment captured and shared
- 3.3 Governments of Kenya and Tanzania expressing active support for, and commitment to, CA/SLM promotion

Major problems identified by project management

- Farmers in Arid and Semi-Arid areas are frequently affected by **long dry spells** which recur at a regular frequency of one in three years. When starting FFS group sites in such areas without adequate soil cover, crops dry as soon as they germinate due to moisture stress while in others, crops (mainly maize) dried at tassling stage. In spite

of these problems, CA farmers were able to appreciate the resilience of the crops planted under CA compared to conventionally planted crops. The former were able to withstand drought much longer than the latter, resulting in some harvest albeit not the maximum, due to in situ water harvesting and the water-conserving attributes of minimal soil disturbance.

- **CA implement supply is sub-optimal for farmers** due to a number of factors which include: an inability to afford the purchase price, poor access to suitable farm power and unavailability of CA implements in local shops. The project has however made a lot of progress in this regard by training artisans who are now locally fabricating CA implements and training hire service providers to offer services to neighbouring farmers at affordable cost (and sometimes with equipment loaned by the project). The project has also started to facilitate the imports of CA equipment from Brazil for distribution to CA equipment service supply entrepreneurs.
- **Competition for crop residues** between livestock and for soil cover is a major problem in the drier districts. Migrating herds of domestic cattle from other communities pose the biggest threat. It is currently being addressed by the formation of more FFS groups and also by involving entire village communities in CA meetings and field days. However, some benefits are being derived from CA even with partial soil cover.
- **Low adoption of CA beyond the FFS** is a challenge accelerated by low purchasing power of farmers to access CA equipment and other inputs. The project has started availing CA equipment services to resource poor farmers by building capacity of private/commercial equipment hire service providers. Equipment is provided at risk shared (subsidized) prices to the service providers.
- **Demand for cover crops seed** (lablab and pigeon peas) is increasing beyond the locally available production. Most farmers use the two cover crops for food and cash and they don't produce or sell enough good quality seeds for other farmers. Some selected farmers will be contracted to produce in bulk better quality seeds for sale.

2. Purpose of the Evaluation

The evaluation is intended to determine the extent to which anticipated outcomes were produced, assess the probability of continued long-term benefits, identify the factors of success or failure, assess the sustainability of results and impacts, and draw conclusions that may inform other interventions. If possible and warranted by the findings of the evaluation team, the evaluation is intended to make recommendations regarding a future project phase including project objectives and major outputs and a possible increase in the number of participating countries. In particular will the evaluation raise the question of how the approach developed by the Project could be further mainstreamed within various FAO internal Programmes and related Divisions as well as how it could be fed into other lead initiatives such as the Comprehensive Agriculture Development Programme (CAADP) of NEPAD and others.

3. Scope of the Evaluation

The mission will assess the:

- a) Relevance of the project to development priorities and needs of the partner countries.
- b) Clarity, and realism of the project's development and immediate objectives, including specification of targets and identification of beneficiaries and prospects for sustainability.
- c) Quality, clarity and adequacy of project design including:
 - clarity and logical consistency between, inputs, activities, outputs and progress towards achievement of objectives (quality, quantity and time-frame);

- realism and clarity in the specification of prior obligations and prerequisites (assumptions and risks);
 - realism and clarity of external institutional relationships, and in the managerial and institutional framework for implementation and the work plan;
 - likely cost-effectiveness of the project design.
- d) Efficiency and adequacy of project implementation including: availability of funds as compared with budget for both the donor and national component; the quality and timeliness of input delivery by both FAO and the Government; managerial and work efficiency; implementation difficulties; adequacy of monitoring and reporting; the extent of national support and commitment and the quality and quantity of administrative and technical support by FAO.
- e) Project results, including an assessment of outputs produced to date (quantity and quality as compared with workplan and progress towards achieving the immediate objectives). The mission will especially review, the status and quality of work on:
- The degree of learning about CA practices among participating FFS/farmers;
 - The degree of farmer services for implement and farm power hiring;
 - The role of extension staff;
 - The private sector involvement especially its potential for CA equipment manufacture;
 - The extent of knowledge management around CA;
 - Gender-related aspects of the project.
 - The prospects for sustaining the project's results by the beneficiaries and the host institutions after the termination of the project.
- f) The cost-effectiveness of the project

Based on the above analysis the mission will draw specific conclusions and make proposals for any necessary further action by the Governments of Kenya and the United Republic of Tanzania, FAO or GTZ to ensure sustainable development, including any need for additional assistance and activities of the project prior to its completion. The mission will draw attention to any lessons of general interest.

4- Composition of the Mission

The mission will comprise:

- FAO Team leader, Specialist in evaluation from the FAO Evaluation Office (OED);
- Specialist in agronomy and conservation agriculture, farmer extension methodologies (FFS), M&E, with experience in private/public partnership issues, project management and implementation (recruited from BMELV/Germany)
- Representative from donor/BMELV
- Representatives of the Governments of Kenya and the United Republic of Tanzania, who will participate in the mission while in their respective countries and contribute to the final report.

All mission members should have no previous direct involvement with the project either with regard to its formulation, implementation or backstopping. They should preferably have experience of project evaluation.

5. Timetable and Itinerary of the Mission

The tentative mission schedule as agreed with the donor will be: 19 September – 13 October 2010 with a break from 5 to 7 October.

The following is a suggested itinerary for the evaluation mission (draft as of 4 June 2010):

	Activity

Sunday 19.09	Arrival in Dar Es Salaam
Monday 20.09	A.M Meetings in Dar Es Salaam (FAO, MAFC) P.M Departure to Arusha ; (over night in Arusha)
Tue 21.09	Departure to field trip: Babati (over night in Karatu)
Wed 22. 09	Field trip: Karatu and travel to Arusha (over night in Arusha)
Thu 23.09	Field trip: Moshi District (incl. Nandra)
Friday 24.09	Field trip Arumeru and wrap-up meeting Arusha (MAFC, SARI, FAO, ACT)
Saturday 25.09	report writing
Sunday 26.09	Travel to Nairobi
Monday 27.09	Meetings in Nairobi (FAO, KARI, ACT, ICRAF, KENDAT?)
Tuesday 28.09	Field trip in Kenya (Western Kenya, Bungoma, Siaya)
Wed 29.09	Field trip Kenya (Western Kenya finalized and travel to Central Kenya)
Thu 30.09	Field trip Kenya (Central Kenya Laikipia)
Fri 01.10	Field trip Kenya (Mbere and travel to Nairobi)
Sat. 02.10	ACT, Nairobi (presentation and discussion on the history and present role of ACT within CA-SARD Project and beyond)
Sunday 03.10	Preparation of mission aide-memoire, preliminary findings and recommendations
Monday 04.10	A.M Wrap-up meeting with FAO and MOA/KARI P.M Travel to Rome (over night)
Tue 05.10 to Thu 07.10	<i>Mission Break</i>
Fri 08. 10	Mission leader meets AGP/Theodor Friedrich
09/10. 10.	<i>Weekend</i>
Mon 11.10	Meetings with technical resource persons in FAO Rome (Issues related to CA-SARD in different programmes and Divisions (AGS, AGP, NRL, NRC, ESW) plus operational aspects (TCS/FAORAF)
Tue 12.10	A.M Seminar / wrap-up discussion with management of technical divisions concerned (AGS, AGP, NRL, NRC, ESW) ³⁵
Wed 13.10	Preparation of mission aide-memoire, findings and recommendations distribution to project partners The final evaluation report will be prepared taking into account comments received during the debriefing sessions. ³⁶

6. Consultations

The mission will maintain close liaison with the Representatives of the donor and FAO and the concerned national agencies, as well as with national and international project staff. Although the mission should feel free to discuss with the authorities concerned anything relevant to its assignment, it is not authorized to make any commitments on behalf of the Government, the donor, or FAO.

7. Reporting

The mission is fully responsible for its independent report, which may not necessarily reflect the views of the Government, the donor or FAO. The report will be written in conformity with the headings shown below:

³⁵ It is suggested that Budget Holder in RAF Mr Joachim Laubhouet-Akadié

³⁶ At least three extra days should be budgeted for the core team members (FAO Team leader, Specialist in agronomy and conservation agriculture) for report writing.

The mission's aide-memoire will be drafted, to the extent possible, in the country and the findings and recommendations fully discussed with all concerned parties and wherever possible consensus achieved. The final evaluation report will take into account (but not necessarily accept) comments made during the debriefing sessions.

The mission will also complete the FAO Project Evaluation Questionnaire.

The mission leader bears responsibility for finalization of the report, which will be submitted to FAO within four weeks of mission completion. FAO will submit the report to the Governments of Kenya and the United Republic of Tanzania and GTZ, together with its comments.

Annex 2: List of People Met/Itinerary

Sunday 19/09/2010

Saidi Mkomwa ACT Executive Secretary
Dr Hussein Mansoor Team Member from Gvt of Tanzania, Assistant Director, Crops Division, Ministry of Agriculture and Cooperatives

Monday 20/09/2010

Louise Setshwaelo FAOREP, Dar es salaam Tanzania
Gerald Runyoro Programme Officer, FAO Dar es salaam

Mrs. Sophia Kaduma, Deputy Permanent Secretary, Ministry of Agriculture Food Security and Cooperatives
Eng Mark Lyimo, Ag Director, Mechanization; Assistant Director Farm Machinery and Implements
Mrs. Marry Lutkham, Assistant Director, Special Research Programme, MAFSC

Dr. Zakaria Mkoga, ACT Consultant, CA SARD Tanzania Impact study

Tuesday 21/09/2010

Wilfred Mariki, National CA SARD Facilitator and Researcher at Northern Zone Agric Research Institute (SARI)
Marietha Owenya, Assistant CA SARD Facilitator
Charles Lyamchai, Ag Director, SARI

Ibrahim Nyigo, Ag District Agriculture and Extension Officer (DALDO)
Hoise Baida, Karatu District CA SARD Facilitator
Clement Berege, District Executive Director (DED)

Swalehe Shaaban Swalehe, CA Farmer and FFS facilitator, Mwangaza FFS, Marera village
Vitalis Bosso, Deputy Chair, Mwangaza FFS, Marera Village
Other 22 members (12 women) of Mwangaza FFS, Marera Village

Damian Neema, Chair person, Tumaini CA FFS, Tloma village, Karatu District
Other 10 (8 women), Tumaini CA FFS, Tloma village

Fatuma - cover crops (Lablab and Pigeon pea) adopter farmer, but under conventional tillage

Wednesday 22/09/2010

Paulus Kessy, Arusha District CA SARD Coordinator
Charles Leseyo, Arusha CA SARD District Facilitator
Lucy Mvungi, FFS facilitator, Arusha district
Marko Mwairwa, Ag District Executive Director

Richard Kipara, host farmer and treasurer, Tuamke Tuamke FFS, Ekenywa Village, Arusha District
Lembris Pinniel, Chair person, Tuamke Tuamke FFS
Other 14 Tuamke Tuamke FFS group members (7 women)
Flora Elifas, Vice Chair, Merkinoi FFS, Arusha District
Marota Loi, Secretary, Merkino FFS
Other 4 Merkinoi FFS group members (all women)
Three members (2 women) of Kilimapunda FFS group, Arusha district

Godwin Sanare, CA service provider (hirer); from Merkinoi FFS group
Simon Kutingala, CA service provider (hirer); from Kilimapunda FFS group, Ekenywa village

Caroline Kimaryo, Malula village, Matonyok CA FFS
Zadeck Maturo Village Executive Secretary, Malula village
Moses Nasari Village Chair person, Malula village
Malula FFS group members composed of 7 men and 6 women

Thursday 23/09/2010

Uraru Lyatuu, Moshi District Council CA SARD facilitator and Ag DALDO
Allen Ngowi, Officer Incharge, Makuyuni Ox Training Centre
Wilson Mchomvu, Makuyuni Ward Extension Officer

LeahStella Mgoa, CA SARD Facilitator, Lotima village Makuyuni
Zainabu Magambo, CA SARD Facilitator, Makuyuni village
32 farmers (15 women) from 8 FFS of Jitegemee, Lotima, Kikilo, Ujamaa, Upendo and Lukundo.

Frank Lesiriam, Managing Director, Nandra Engineering Works
John Frank Lesiriam, Nandra Engineering Works

Friday 24/09/2010

See list of participants below

Saturday 25/09/2010 (at Equator Hotel)

Eng Richard Shetto, Director, Department of Mechanization, MOA and National CA SARD Coordinator
Marietha Owenya, Assistant National CA SARD Facilitator
Wilfred Mariki, National CA SARD Facilitator

Sunday 26/09/2010 – Travel from Arusha to Nairobi

Monday 27/09/2010

Mr Mungai, Assistant FAO Rep – Admin, Kenya
Hamisi Dulla, Knowledge and Information Officer, ACT and CA SARD Liaison person at FAO
Tom Apina, Monitoring and Information Officer, ACT
Barrack Okoba, CA SARD National Facilitator, Kenya

Castro Camarada, FAO Country Rep, Kenya
James Njuki, Directorate of Engineering Services, MOA, Evaluation Team Member

Tuesday 28/09/2010

Alice A Kafwa, District Agricultural officer, Bungoma East
Pius Koko, Deputy District Agric Officer
Frederick Wotia, District Agricultural Officer (DAO), Bungoma West
Emuria Morris, Bahati and Jasho FFS facilitator

Japhet Wekesa, Pioneer CA Farmers and CA equipment services provider, Webuye village

Mrs. Helen Masibo, Chair of former Jasho FFS, CA adopter, Kuywa village.
Mr Masibo, CA service provider and CA adopter

Rose Sikangulule, Chair, Bahati FFS
Isaiah Muchuma, secretary, Bahati FFS
Fridah Wanyama, Treasurer, Bahati FFS
Other 8 Bahati FFS members comprised of 4 men and 6 being women, Chwele village.

Participating CA stakeholders' meeting, Mabanga FTC, Bungoma District. See list of participants below

Wednesday 29/09/2010

Anne Kimaitha, DAO Laikipia East
James Githonga, CA SARD District Coordinator
Moses Kijage, CA SARD Facilitator, Laikipia Central
Mushangi Njagi, FFS facilitator

Laurie Session, CA commercial farmer, Laikipia.

Thursday 30/09/ 2010

Mazingira FFS group, 12 members (8 women)

CA adopter farmer Ritho
Henry Mwiti – commercial CA service provider

Josef Maina Karanja, CA adopter farmer
Stanley Muriuki, commercial CA service provider

Laikipia CA stakeholders meeting – see list of participants below

Friday 01/10/2010

At the World Agroforestry Centre (ICRAF)
Dr Jeremias G Mowo, Regional Coordinator, Eastern Africa
Dr Dennis Garrity, DG, ICRAF

At KARI HQ
Dr Ephraim Mukisira, Director, Kenya Agricultural Research Institute
Dr Joseph Mureithi, Deputy Director, Research and Technology
Dr Jane W Wamuongo, Assistant Director,

At KARI NARL
Simon Ngeru, Managing Director, Femo Works, Kiambu
Dr Patrick Gicheru, Centre Director, KARI NARL

Saturday 2/10/2010

Meeting at African Conservation Tillage Network (ACT)
Saidi Mkomwa, Executive Secretary, ACT
Hamisi Dulla, Knowledge and Information Manager (KIM), ACT
Phillip Wanjohi, Accounting Manager, ACT
Alfred Namu, IT Manager, ACT
Ms Monica Buyu, Administrative Assistant, ACT

Dr Welling Mulinge, Consultant for mini CA SARD Impact Study

Mr Maina Kariuki, Grains Division Manager, BrazAfric Ltd, Nairobi

LIST OF PARTICIPANTS STAKEHOLDERS WORKSHOP, CA SARD END OF PROJECT EVALUATION 24 September 2010

Nr.	Name	Institution	Position	Email
1	Marry Lutkham	Department of	Assistant Director,	

		Research and Training, MOA	Special Research Programme	
2	Eng Mark Lyimo	Department of Mechanization, MOA	Assistant Director, Farm Machinery and Implements	mark.lyimo@gmail.com
3	Elley Mbise	Babati District Council	District CA SARD Facilitator	elleymbise@yahoo.com
4	Uraru Lyatuu	Moshi CA SARD District Facilitator		
5	Hellen B Bradburn	Women in Agriculture Development and Environmental Conservation		
6	Boniface Mwanga	Hanang District Council	District CA SARD Facilitator	
7	Paul Lukumay	Hanang District Council	District Crops Officer	
8	Wilson Baitani	Centre for Agric Mechanization and Rural Technology Development	Director of Production and Testing	camartec@yahoo.com ; wmbaitani@yahoo.com
9	Charles Lymchai	SARI	Ag Zonal Research Coordinator	
10	Kitenge	SARI	Crops Research Officer	
11	Marietha Owenya	SARI	Assistant National Facilitator	mariethaowenya@yahoo.co.uk
12	Dr Lucas M Mugendi	SARI	Ag Zonal Director	lmugendi@yahoo.com
13	Wilfred Mariki	SARI	National CA SARD Facilitator	wlmiliki@yahoo.com
14	Ibrahim Nyigo	Karatu District Council	District Extension Officer	
15	Emerson Njumbo	Karatu District Council	Representing Canadian Physicians for Aid and Relief (CPAR)	
16	Dominic Ringo	Research, Community and Organisational Development Associates (RECODA)	Managing Director	recodatz@yahoo.co.uk
17	Saidi Mkomwa	ACT	Executive Secretary	saidi.mkomwa@act-africa.org
18	Gerald Runyoro	FAO Dar es salaam	Programme Officer	
19	Josef Kienzle	FAO, Rome	CA SARD LTU	
20	Hussein Mansoor	MOA, Tanzania	Assist Director, Crops Research	
21	Johannes Kotschi	Germany	Donor representative	
22	Bernd Bultemeier	FAO Rome	Evaluation Team Leader	

CA SARD TERMINAL EVALUATION WORKSHOP HELD AT MABANGA ATC 28TH
SEPTEMBER 2010
LIST OF PARTICIPANTS

	NAME	DISTRICT	CONTACT
1.	SAIDI MKOMWA	ACT NAIROBI	
2.	HAMISI DULLA	FAO/ACT NAIROBI	0735-473806
3.	JOSEF KIENZEL	FAO	
4.	JOHANNES KOTSCHI	GERMANY	
5.	BARRACK OKOBA	CASARD NAIROBI	
6.	SILVESTUS MANDILA	BUNGOMA	
7.	JAMES NJUKI	AES/MOA	0722-767611
8.	SALOME A. OGUTU	UGENYA	0723-723634
9.	THOMAS OKELO OPONDO	UGENYA	okello.opondo@yahoo.com
10.	SAMSON O. GERSON	GEM	0713-684169
11.	KENNEDY O. OKELO	SIAYA	0725-752325
12.	MAURICE MIYAYI OCHIENG	GEM	0724-492912
13.	VINCENT S. MAKHANU	BUNGOMA	0712-953415
14.	LEVI WAFULA	BUNGOMA	0728-422971
15.	JANE N. WASILWA	BUNGOMA EAST	
16.	PAUL N. BARASA	BUNGOMA EAST	0700725210
17.	SELINA KWANZWI	BUNGOMA EAST	0729-948420
18.	MERCY W. ADEMA	BUNGOMA EAST	0729-780746
19.	FELIX WAMUKOTA	BUNGOMA WEST	0725-941248
20.	JOSEPH W. MUSAMALI	BUNGOMA CENTRAL	0714-687618
21.	PETER W. WABOYA	BUNGOMA CENTRAL	0726-759578
22.	MALMAGIO	SIAYA	0721-900122
23.	JOHN A. ONDAGO	UGUNJA	0724-692686
24.	COSMAS KHAEMBA	BUNGOMA EAST	0710-290983
25.	JAPHERTHER W. WEKESA	BUNGOMA EAST	0712-398613
26.	RICHARD A. SITUMA	BUNGOMA EAST	0710-727088
27.	HELLEN MASIBO	BUNGOMA CENTRAL	0712314533
28.	ROSE SYANGOLOLE	BUNGOMA CENTRAL	0716-300895
29.	EMURIA M.S.	BUNGOMA WEST	0723-411059
30.	NDEKA O. WILLIAM	BUNGOMA CENTRAL	0722-212235
31.	ALICE A. KASWA	BUNGOMA EAST	0722447292
32.	FREDRIK WOTIA	BUNGOMA WEST	0720-695751
33.	TIMOTHY CHOLE	PANNAR SEED	0721-985571
34.	MOSES WEPUKHULU	SYNGENTA E.A LTD	0721-825559
35.	DAVID SEME	BUNGOMA EAST	0728-765248

CA SARD TERMINAL EVALUATION WORKSHOP HELD AT SIMBA HOTEL, LAIKIPIA,
30TH SEPTEMBER 2010
LIST OF PARTICIPANTS

No.	NAME	ORGANIZATION/CONTACTS
1	John Kimathi Mbae	0736509062
2	Lucy Muriuki	Sunrise Farm Supplies 0723057972
3	Janice M. Ndirangu	Mazingira FFS 0726137814
4	Charles Wanjohi	Mazingira FFS
5	Josphant M. Kiama	Olpejeta/Lengitia 0722345080
6	Stanley Muriuki Samson	Service Provider 0724301019
7	Kennedy W. Makudih	DC Mbeere 0722827425
8	Hussein A. Misango	FFS Facilitator – Ngundu 0722104
9	Benson K. Njoroge	A & L 072351827
10	Nahashon Kindigi	Box 82 Siakago 0720912297

11	Newton Maina	Box 1451 Embu 0714327696
12	K. Kiruri	MOA-Laikipia East 0722783121
13	Gerald M. Mwangi	MOA - Kiriani 0723217982
14	Henry Mwit Rukunga	Hirer 0725524744, Box 205 Nanyuki
15	David M. Kirimi	Hirer -0721299359
16	Peter Njoroge Mwariri	0721729022
17	Joseph Mwangi Wairagu	0721712338 Box 160 NRM
18	Anne Wambui Waweru	0723935406
19	Daniel Mathenge	Magutu Bidii FFS 0721172521
20	Johnson Kahuho	Mwiyetheri FFS 072430239
21	Wathu Martha Wanjiru	Nganoini FFS 0713322927
22	Joseph Maina Karanja	Farmer 0722931912
23	William Rotich	Facilitator & Farmer 0725305180
24	Danson Kamau	Box 16177 NKR 0722224266
25	Lucy Wangui Kimani	Facilitator (FFS)0711413233
26	Charles Njeru Nyaga	Service Provider 071306231
27	Joseph Mungai	FFS Network 0721282211
28	D.M. Kinyomo	Dpt/DAO AEP Central 0726726638
29	Benjamin Munga	0726006930
30	Virginia Kagundu	0724598391
31	Mercy Karimi Gitau	0715262314
32	Jemimah W. Gichira	0729051464
34	Gitonga J.	072125809
35	Anne Kimaita	0725210160
36	Philip Mwangi	CASARD
37	Leonard	
38	Michael Kimeu	0720320443
39	Muchangi M. Njagi	0720409031
40	Hamisi Dulla	0735473806
41	Barrack Okoba	KARI
42	Josef Kienzle	FAO Rome
43	J. Kotschi	Germany
44	Saidi Mkomwa	ACT, Nairobi
45	James Njuki	MOA, 0722767611

List of participants – FAO Nairobi Wrap up Meeting; 4th October 2010

No.	NAME	INSTITUTION	CONTACTS
1	Hamisi D Mzoba	FAO/ACT - Kenya	hamisi.mzoba@act-africa.org
2	Tom Apina	ACT Nairobi	tom.apina@act-africa.org
3	Saidi Mkomwa	ACT Nairobi	saidi.mkomwa@act-africa.org
4	Eng Japser Nkanya	MOA	nkanya2000@yahoo.com
5	J K. Maina	MOA	mainajkm@yahoo.com
6	A. N. Abate	FAO	Augusta.Abate@fao.org
7	Barrack Okoba	KARI Kabete	okoba2000@yahoo.com
8	Jane Wamuongo	KARI	jwwamuongo@kari.org
9	Josef Kienzle	FAO – AGS Rome	Josef.Kienzle@fao.org
10	Castro Camarada	FAO – Kenya	FAO-Kenya@fao.org
11	Bernd Bultemeir	FAO Evaluation Officer	Bernd.bultemeir@fao.org
12	Johannes Kotschi		kotschi@t-online.de
13	J. G. Njuki	MOA, Evaluation Team Member	ignjuki@gmail.com

Programme for Rome part (Monday 11 to Wednesday 13 October 2010)

Core team: Bernd Bultemeier (FAO, team leader), Johannes Kotschi (donor, agronomist)

Monday 11 October		
Time	appointment	additional attendees
0845 – 0915	Meeting in Office of Josef B614 to prepare for the meetings	Brian Sims
0915 – 1000	Meeting with Parviz Koohafkan (B 732) Director Land and Water Division (NRL)	Brian Sims
1000 – 1100	Meeting with Geoffrey C. Mrema Director, Rural Infrastructure and Agro-industries Division (AGS); Project LTU	Brian Sims Alexandra Roettger
1100 – 1130	Meeting with Shivaji Pandey Director Plant Production and Protection Division (AGS), room B738	Theo Friedrich Brian Sims
lunch		
1430 – 1500	Meeting with Alemneh Dejene, Team Leader, Environmental Sustainability and Climate Change Adaptation; Climate, Energy and Tenure Division – venue to be confirmed; (in Fisheries meeting room, F313)	Theo Friedrich
1500 – 1600	Presentation/focus: Brazil activities of the project with Brian Sims – Fisheries Meeting Room, F313)	

Tuesday 12 October		
		additional attendees
0930 – 1030	Meeting with Theodor Friedrich, Crop Intensification Officer and main Project backstopper; (room C782)	Brian Sims
1045 – 1145	Meeting with Eve Crowley Principle Officer, Women and Development Division (ESW); room B560	
lunch		
1330 – 1500	Meeting with Peter Kenmore Principle Officer, AGP – (room B735)	Theodor Friedrich Ghehounou Gualbert Brian Sims

Wednesday 13 October

0830 - 1300	report writing	
	<i>lunch</i>	
	departure	

Annex 3: Original Project Budget

Budget Line	Input	Year 1 [US \$]	Year 2 [US \$]	Year 3 [US \$]	Total [US \$]	Percent
5013	Consultants					
	International Consultants · FFS methodology · SARD / Knowledge Management · Agro-business and Supply chain expert	10,000	30,000	20,000		
					60,000	3.1%
	International Consultants – Partnership Programme (TCDC) and Retired experts · Cover crop / agronomist expert · CA equipment operating expert · CA equipment manufacture expert	9,000	23,400	9,000		
					41,400	2.2%
	National experts and consultants · Knowledge Management officer (regional) · Country project facilitators (Kenya/Tanzania) · IT consultant (regional) · National consultants for other specific inputs (Kenya, Tanzania, Brazil)	90,000	90,000	89,000		
					269,000	14.1%
	Administrative support staff · Driver/field assistant Kenya · Driver/field assistant Tanzania · Overtime Kenya, Tanzania	30,000	30,000	30,000		
					90,000	4.7%
5014	Contracts					
	Contracts · ACT Regional Unit · IAPAR Brazil · NGOs in Kenya/Tanzania for equipment support back-up and business management opportunities	115,000	115,000	77,000		
					307,000	16.1%
5021	Travel					
	Travel · ATS/STS travel · International travel · 2 Study tours (East Africa – Brazil, Brazil – East Africa) travel support · In-country travels, workshops, meetings, · Final workshop	110,000	110,000	94,000		
					314,000	16.5%
5023	Training					
	In-country training, workshops/ meetings · FFS support (see table page 27)	65,000	88,500	54,500		

	<ul style="list-style-type: none"> Start-up workshops Brazil study tour follow-up workshop Final workshop 					
					208,000	10.9%
5024	Expendable supplies					
	See detailed list under (g)	26 500	12 000	12 000	50,500	2.6%
5025	Non expendable equipment					
	See detailed list under (f)	68,500	18 000	11 000	97500	5.1%
5027	Technical Support Services					
	FAO staff – ATS	12,000	18,000	18,024		
	<ul style="list-style-type: none"> SDAR (1.month); AGSF (0.5 months); AGPC (1.5 months) 					
					48,024	2.5%
	FAO staff – TSS for LTU functions	36,000	36,000	36,000		
	AGST (9 months)					
					108,000	5.7%
	External evaluation			35,422	35,422	1.9%
5028	General Operating Expenses					
	<ul style="list-style-type: none"> FAO Kenya GOE FAO Tanzania GOE Terminal report 	20,000	20,000	20,000		
					60,000	3.1%
	SUBTOTAL	592,000	590,900	505,946	1,688,846	88.5%
5029	Support cost 13%	76,960	76,817	65,772	219,550	11.5%
		668,960	667,717	571,718	1,908,396	100%

Annex 4: Stakeholder Workshop Transcripts

Transcript (slightly edited) of flipcharts produced by

STAKEHOLDERS WORKSHOP, CA SARD END-OF-PROJECT EVALUATION

24 September 2010
SARI Board Room (Tanzania)

CA - EQUIPMENT MANUFACTURING OR IMPORTATION OR SERVICES

Strength

- Local manufacture of ca implements has started
- Demand for CA equipment is rising (but still low level)
- Small scale (hand job; ADP) And tractor implements are demand
- Large scale seeders are imported by TFSC; Tamasco

Weaknesses

- Technical know how on detailed mechanism of CA implements is limited
- Manufacturing techniques are weak
- To date the majority of direct seeders are imported
- Feed back system to manufactures
- Direct farmer feed back to be improved
- Formal testing by CAMARTEC but how to be taken up by practitioners is to be improved.

LIST OF MANUFACTURERS OF CA

- CAMARTEC – 150 Rippers but also R + D + testing
- NANDRA – 3000 Rippers Moshi – (high potential)
- Intermech. – 50 Ripper Morogoro (Specialized in Power tiller seeder)
- SEAZ - 800 Rippers Mbeya (Weak capacity)

All suppliers produce on demand

List of importers

TFSC: Only large scale but also hire services

Brazil Afrique: Imports small CA equipment

ACT: facilitates and consolidates demand and has been importing

General Comment: Private sector is responding to demand. Has **no or little** special interest to promote CA approach

- Incentives or subsidies on CA approach and Equipment could be helpful

Extend of Reliance on Importation

- Large direct seeders : 100% importation
- Animal drawn direct planter: 70% importation
- Hand job planters: 50% importation
- Ripper – producers locally

Future Plans:

CAMARTEC: Promote local manufacture and support private sector.

- Collaboration with Brazil Private sector to be improved
- Role of CA-SARD **as facilitator** has to be taken over by ACT
- Role of CAMARTEC. In addition to promoting manufacturers of CA, the evaluation and testing of CA for suitability to local conditions, advice on modification to suit local conditions

RESEARCH:

Q 1. Priority issues to research in future

1. Adding value to products from cover crops of CA.
2. Research of type of cover crops that are not eaten by livestock
3. Evaluation of covers crops to combat climatic changes
4. Survey to see why farmers do not like crop rotation
5. Pest control in CA (weeds + insect pest) where crop rotation is not practiced
6. Which cover crops to be included in crop rotation
7. Sequential cropping
8. Maintaining CA Demo plot on-station

Q. 2. What strategies do you have to solicit funding beyond CA SARD

1. Proposals to NZARDEF fund
2. COSTECH funding
3. District Councils
4. International organizations (CIMMYT, ACIAR)

Q. Research Cooperation (CA)

1. SUA, Northern Zone Districts
2. NGO - e.g. RECODA, WADEC, CPAR
 - Care International, GSC etc.
3. ACIAR, CIMMYT.
4. ACT
5. FAO

Strengths

1. Source of CA information office is available
2. Transport is available
3. Potential collaborators available
4. Strong linkages to government Ministry of Agric. Food and Cooperatives

Weakness

1. Lack of funding
2. Limited transport occasional
3. Few CA Researchers
4. Inadequate policy support to CA

NATIONAL GOVERNMENT (Tanzania)

There is high level of commitment in the **Division of Mechanization**.

CA is one of the eight pillars of mechanization strategy in the Division of Mechanization.

Div of Research & Development

There is an Integrated Soil Fertility Management project (ISFM)

One of the options being tested is cover crops seeds testing and validation trials

The Mechanization Action Plan 2010/11 intends to support CA in 10 LGAs

1. What are the policy issues?

- The current policy is very old (TA & L. Policy 1997) of which some policies are outdated
- Policies for expanding agricultural lands without considering environmental issues.
- Policies that favour use of conventional tillage methods in agric. production and expanding the area under cultivation.
- Conflicting policies from other sectors (uncoordinated policy formulation implementations e.g. Agric. & Live4stock Policy 1997, Livestock Policy 2003 Natural Resource Policy, etc.

2. Budget allocation

- Through ASDP there are Zonal Agricultural Research Funds – where researchers can access funds by developing research proposals for CA Researchable agenda (DRD).
- Funds are provided in Development budget for implementing CP interventions e.g. in 2010/11 LGAs (Dept Mech) there is an activity support CA
- However, the funds are inadequate to meet requirements e.g. for purchasing implements for demonstration *and* training (create demand), supporting FFS Facilitators, and promotion of hire service providers.

3. Future strategies

1. Implementation of TAMS (where CA is one of pillars of strategy to reach more LGAs.
2. An upscaling proposal has been made and we are seeking funding

- For ensuring implements are available to farmers
- Private sector involvement to actively participate in implement importation, manufacturing and distribution, as well as cover crop seed production.
- 3. Sensitization District Councils to assist farmers to develop CA intervention for funding through ASDP
- 4. Training of FFS facilitators

Strengths:

1. Trained CA facilitators
2. Farmers willingness to adopt CA technology e.g. CA implements, Cover crops through FFS
3. Farmers are aware of the importance or benefits of CA
4. Presence of farmer field Schools in pilot districts

Weak points:

1. Inadequate cover crop seeds
2. Inadequate funding for research and promotion of CA technologies
3. Weak participation of private sector in manufacture of implements and production of cover seeds
4. Change of mindset from conventional agriculture to CA

LOCAL GOVERNMENT

Strength

- Availability of Qualified staff
- Availability of enough land
- Availability of drought animals
- Availability of fund sources

(DADPs³⁷)

Weaknesses

- Unstable/Unpredictable Weather conditions
- Lack of enough CA – Implements
- Unavailability of Inputs (Seeds)
- Farmers are reluctant to change

PLANS:

- Budget allocation through DADPs on
 - Implements Procurement,

³⁷ DADP – District Agricultural Development Plan

- Inputs
- Training

ii) Staff allocation:

PLAN:

- Each village to have an extension worker for CA
- Qualified FFS farmers to train others.

LIMITATIONS:

- Lack of CA – Implements drawn by Motorized Engines (power tillers)

AREAS WHERE SUPPORT IS NEEDED

- Provide CA Implements for ox-drawn implements, jab planters.

STRONG POINTS OF CA

- Increased crop production per unit area
- Reduced cost of production
- Qualified FFS farmers become facilitators to the others
- Reduced time.

WEAK POINTS

- CA increase demand for chemical (and also oxen)
- CA implements are not readily available
- Grazing by-Laws are not enforced (not properly working)
- Initial cost of CA is expensive

Annex 5: Documents Consulted

A. Project Documents

- Project Document
- Letters of Agreement
- Project Progress Reports
- Regional Monitoring and Evaluation Reports
- Report of Joint Evaluation Mission 2005
- Reports of Backstopping Missions
- Workshop Reports
- Study Tour Reports
- Various Government Planning Documents, Speeches, Performance Agreements

B. Literature about Conservation Agriculture and related aspects

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