Mid-term evaluation of the Conservation Agriculture Scaling-up (CASU) project

June 2016
Contents

Acknowledgements ....................................................................................................................................... vi
Acronyms and abbreviations .................................................................................................................... vii

Executive summary........................................................................................................................................ 1

1. Introduction .............................................................................................................................................. 7
   1.1 Background and purpose of the evaluation ......................................................................................... 7
   1.2 Evaluation scope and objectives ....................................................................................................... 7
   1.3 Methodology of the evaluation ......................................................................................................... 8
   1.4 Limitations ......................................................................................................................................... 10

2. Context of the project ............................................................................................................................... 11
   2.1 Description of the project ................................................................................................................. 11
   2.2 The geographic context and boundaries .......................................................................................... 11
   2.3 Total resources required for the project from all sources ............................................................... 12
   2.4 Financial and in-kind contributions by other partners and the beneficiaries ...................................... 12
   2.5 Key partners involved in the project ................................................................................................. 12
   2.6 How CASU fits into the national priorities and FAO Country Programme Framework ......................... 13
   2.7 Background of CASU ....................................................................................................................... 14
   2.8 Description of how this evaluation fits within the context of other ongoing and previous evaluations ........................................................................................................... 14

3. Evaluation findings ...................................................................................................................................... 15
   3.1 Assessment of project concept and design ......................................................................................... 15
      3.1.1 The relevance of stated development goals and outcomes (immediate objectives) and the context ............................................................................................................................................... 15
      3.1.2 The adequacy of the approach and methodology of implementation to achieve the intended results ............................................................................................................................................... 15
      3.1.3 The adequacy of the time-frame and total resources, including human and financial, allocated for implementation .............................................................................................................................. 17
      3.1.4 The quality of the stakeholders’ and beneficiaries’ identification .............................................. 17
   3.2 Clarity and coherence of the logical framework of the project .......................................................... 18
   3.3 Analysis of project implementation .................................................................................................. 19
      3.3.1 Project management .................................................................................................................. 19
      3.3.2 Financial resources management .............................................................................................. 21
      3.3.3 Institutional arrangements including the government’s participation ............................................... 24
   3.4 Assessment of the project’s contribution to results .......................................................................... 26
      3.4.1 Knowledge on CA among LFs and FFs ...................................................................................... 26
3.4.2 Outcomes of adoption/practice of CA based on the CASU data and findings from MTE field visits ................................................................. 27
3.5 Assessment of cross-cutting issues and sustainability ..................... 41
  3.5.1 Gender and equity dimensions ...................................................... 41
  3.5.2 Environmental protection and climate change adaptation – perceptions from the CASU LFs and FFs ...................................................... 44
  3.5.3 Capacity development ................................................................. 45
  3.5.4 Sustainability and ownership of results ....................................... 47

4. Conclusions .......................................................................................... 51

5. Recommendations .................................................................................. 55

6. Lessons learned ...................................................................................... 59
Tables and figures

Tables

Table 1. Stakeholders met or consulted during the evaluation.................................8
Table 2: Distribution of the 31 CASU districts across the main three natural agro-ecological regions in Zambia (and those visited by the MTE team marked in yellow) .................................................................9
Table 3: Original and adjusted budgets for CASU for the period June 2013 to June 2017 ..........................................................................................................................12
Table 4. Comments on budget components and adequacy of funds (based on full financial report dated May 2015 that was provided to the MTE team) ....... 22
Table 5: Budget components with over-expenditure (as observed by the MTE team from the latest financial report in May 2015).................................23
Table 6: Indicative ranges of farm and CA hectares reported by some LFs & FFs in Monze District during MTE visits ...............................................................29
Table 7: Gender of lead and follower farmers by province, according to the data provided by CASU.................................................................................42
Table 8: FFs by gender among some men and women LFs interviewed during FGDs in Pemba and Monze Districts .................................................................43

Figures

Figure 1: Districts visited by the evaluation team.......................................................9
Figure 2. Current and proposed logframe.................................................................19
Acknowledgements

The Office of Evaluation (OED) would like to extend their thanks to the staff of FAO Office in Zambia for their support, in particular the leadership and staff of CASU and the staff of the National Project Coordinating Unit from the Ministry of Agriculture. We would also like to thank the participating Government staff at national, provincial, district, block and camp levels, who supported the evaluation team in building an understanding of the project, in informing their assessments and in developing recommendations for the future. Particular thanks to the busy men and women lead and follower farmers who took the time to talk with the evaluation team. OED also expresses its appreciation to the EU, NGOs and embassies, who gave their time to provide information to support the evaluation. A special thanks to the FAO Project Task Force for their advice and guidance.

Composition of the evaluation team
Ms Pamela White, Team Leader
Dr (Ms) Irene Kadzere
Mr Jeston Lunda
Dr (Ms) Yuen Ching Ho, FAO Office of Evaluation
### Acronyms and abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEO</td>
<td>Block Extension Officer</td>
</tr>
<tr>
<td>CA</td>
<td>Conservation Agriculture</td>
</tr>
<tr>
<td>CASU</td>
<td>Conservation Agriculture Scaling Up Project</td>
</tr>
<tr>
<td>CEO</td>
<td>Camp Extension Officer</td>
</tr>
<tr>
<td>CPF</td>
<td>Country Programming Framework</td>
</tr>
<tr>
<td>CFU</td>
<td>Conservation Farming Unit</td>
</tr>
<tr>
<td>DACO</td>
<td>District Agricultural Coordination Officer</td>
</tr>
<tr>
<td>EDF</td>
<td>European Development Fund</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
</tr>
<tr>
<td>FFS</td>
<td>Farmer Field Schools</td>
</tr>
<tr>
<td>FFs</td>
<td>Follower Farmers</td>
</tr>
<tr>
<td>FGD</td>
<td>Focus Group Discussion</td>
</tr>
<tr>
<td>FISP</td>
<td>Farmer Input Support Programme</td>
</tr>
<tr>
<td>FISRI</td>
<td>Farmer Input Support Response Initiative</td>
</tr>
<tr>
<td>GIS</td>
<td>Geographical information systems</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome</td>
</tr>
<tr>
<td>IAPRI</td>
<td>Indaba Agricultural Policy Research Institute</td>
</tr>
<tr>
<td>KRA</td>
<td>Key Result Area</td>
</tr>
<tr>
<td>LFs</td>
<td>Lead Farmers</td>
</tr>
<tr>
<td>LoA</td>
<td>Letter of Agreement</td>
</tr>
<tr>
<td>M&amp;E</td>
<td>Monitoring and Evaluation</td>
</tr>
<tr>
<td>MoA/MAL</td>
<td>Ministry of Agriculture (previously the Ministry of Agriculture and Livestock)</td>
</tr>
<tr>
<td>MTE</td>
<td>Mid-term Evaluation</td>
</tr>
<tr>
<td>NAIS</td>
<td>National Agricultural Information Service</td>
</tr>
<tr>
<td>NAO</td>
<td>National Authorising Office</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-governmental Organization</td>
</tr>
<tr>
<td>NPCU</td>
<td>National Project Coordination Unit</td>
</tr>
<tr>
<td>OED</td>
<td>FAO Office of Evaluation</td>
</tr>
<tr>
<td>PROFIT</td>
<td>Production, Finance and Improved Technologies (USAID)</td>
</tr>
<tr>
<td>PSC</td>
<td>Project Steering Committee</td>
</tr>
<tr>
<td>P4P</td>
<td>Purchase for Progress</td>
</tr>
<tr>
<td>RAF</td>
<td>Regional Office for Africa (FAO)</td>
</tr>
<tr>
<td>ToC</td>
<td>Theory of Change</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
</tbody>
</table>
Executive summary

Background of the project

ES1 The Conservation Agriculture Scaling-up Project (CASU) is being implemented by the Food and Agriculture Organization of the United Nations (FAO) and financed by the European Union (EU), via the 10th European Development Fund (EDF). It began in June 2013 and is programmed to last until June 2017. The overall objective of the project is to contribute to reduced hunger and improved food security, nutrition and income in Zambia, while promoting the sustainable use of natural resources. The purpose of the project is to increase crop productivity and production for the targeted farmers, of which at least 40% should be women.

ES2 At least 21,000 new or existing conservation agriculture (CA) lead farmers (LFs) and at least 315,000 small-scale follower farmers (FFs) are targeted under the project. In addition to these farmers, Ministry of Agriculture (MoA) staff, agro-dealers, financial institutions, research institutions, agro-entrepreneurs and other CA stakeholders are among the direct and indirect beneficiaries of the project activities. CASU is being implemented in 31 ‘old’ districts and 17 ‘new’ districts in nine provinces of Zambia, across the four agro-ecological regions (I, IIa, IIb and III).

Evaluation purpose and methodology

ES3 This Mid-term Evaluation (MTE) of the project covers the period from June 2013 to the start of the evaluation process in February 2016. The evaluation reviewed the theory of change (ToC) of the project and its logframe, assessed progress made towards the five result areas, and identified design and implementation issues that need to be addressed in order to strengthen the project’s implementation and ensure the achievement of stated project results. The evaluation also presents proposals for changes to the logical framework.

ES4 A mixed method approach was used, combining qualitative and quantitative data. The MTE collected primary qualitative data supported by secondary quantitative data, which was collected from the project as well as other data providers. Most of the qualitative data came from focus groups and individual interviews, using open-ended question sets developed based on the evaluation questions and matrix, and the project document. The team met with 792 persons (436 men and 356 women) across 11 districts of Zambia, including project stakeholders in Lusaka and elsewhere. A limitation of the MTE is the challenge of identifying counterfactual project sites, considering that CA has been introduced and promoted for many years in Zambia by many organizations. CASU has sampled from control sites as part of the baseline study, and the MTE team visited three of those sites to get an impression of a ‘without CASU’ scenario. However, this was not a statistically significant sample.

Main findings

Overall progress on results

ES5 The project monitoring system and the interviews and observations from the MTE field visits confirm that CASU is making good progress towards its objectives. The MTE finds that nutrition and food security are improving for CASU farmers. Some households report that while their production and food security have improved, income improvements will be tied to markets for legumes that are still being developed. The FAO/World Food Programme (WFP) partnership agreement under the CASU and Purchase for Progress (P4P) programmes, respectively, include a plan to establish 10 main aggregation centres, and to link 46 agro-dealers to purchase legumes (especially beans and cowpeas) from farmers under the CASU project. Linkages have also been established between cooperatives and traders under the partnership with WFP. In the 2014/15 season, some forward contracts were established with cooperatives, and this was continued with 33 cooperatives in the 2015/2016 season.
An increased percentage of CASU farmers are practicing all three principles of CA. At the time of the MTE, there were 227,621 CASU farmers practicing CA, which represents approximately 16% of the total smallholder agriculture farmers in Zambia. District staff and CASU farmers informed the MTE that generally they have seen large increases in production under CA.

The project monitoring data shows that the area under CA on CASU farmers’ land has approximately doubled from the baseline status. Similarly, findings from MTE interviews with farmers suggested that the CA area was gradually expanding, although seasonal variability exists partly due to climatic factors such as prolonged drought. Farmers were more likely to increase the area under CA, particularly where rippers were available.

The baseline findings on soils showed the potential comparative advantage of CA in improving soil organic matter content, increasing soil nitrogen, reducing soil bulk density and improving water holding capacity and infiltration. During the focus group discussions (FGDs), the CASU farmers alluded to the qualitative improvements in soil quality under CA as compared with conventional farming.

Relevance and appropriateness of design and activities

The relevance of the project is clear, as government policy is very supportive of CA. The Zambia National Agriculture Policy (2004) places an emphasis on the promotion of environment-friendly farming systems such as CA, while the National Agriculture Investment Plan for 2014-18 has set a target for 25% of small-scale farmers to adopt CA by 2018 (from a baseline in 2013 of 10%).

The method of using LFs as vehicles to reach out to FFs has good potential for sustainability, as it is focused on local capacity development and building ownership at local level. The strength of the approach varies depending on each LF’s interest and commitment, and ability to facilitate and share knowledge with others. Where the link between the LF and FF is weak, this affects adoption by the FFs.

The logic and ToC of the project was not very clear in the original project document. There are issues with the logic and duplication of indicators, as some indicators are vague and difficult to measure, while some indicators and results were more about tools than indicators of success.

Project implementation

Effectiveness of project management

The CASU monitoring system is very detailed, and was developed based on a thorough analysis of the indicators, harmonisation with national systems, further definition of what the indicators mean, and how to gather information for the baseline and follow-up. District staff said that they appreciate having an electronic system, which also enables senior MoA staff to access monitoring data regularly. However, despite the development of a good system, the delay in analysing results limits opportunities for using the data in planning.

The MTE team found that the CASU reports were too focused on activities and processes, with inadequate reporting of disaggregated results. This is a missed communication opportunity: in addition to the wealth of information from the management information system (MIS) (which complements reporting against the logframe indicators), the MTE learned that the CASU team has achieved many things that it does not report on, as they fall outside the narrow constraints of the logical framework.

Problems with the Farmer Input Support Response Initiative (FISRI) implementation have had a negative impact on the start-up of CASU (for instance, the first agricultural season was missed), but have also led to a very well-managed project implementation.
The development of the innovative e-voucher for distribution of inputs is functioning well, and mitigates the risk of misallocated resources. Lessons learned have been applied to the Zambian government’s Farmer Input Support Programme (FISP) e-voucher development.

Institutional setup and coordination

The MTE team observed that the current institutional set-up (including close coordination with the MoA) is sound, and direct project coordination structures are effective. In particular: (i) the composition of the Project Steering Committee (PSC) has changed to become more focused in terms of its composition and scope; (ii) a Project Technical Committee has been established to deal with operational issues of compliance, reporting and payments; and (iii) a National Program Coordinating Unit (NPCU) within MoA supports CASU’s work in monitoring, training and coordination, both within the Ministry and in the field. The MTE team found, however, that although a FAO Project Task Force is available to provide technical support, after an active period during the project inception they have acted mainly in an approval role. This defeats the purpose of the Task Force, which is normally the means by which FAO can provide oversight and technical inputs.

The full Insaka, or National Task Force, has met only once in 2015 and the results were limited. However, the key members (CASU, conservation farming units (CFU) and MoA) are meeting on an ad hoc basis on specific issues. While the Insakas have met only intermittently at national, provincial and district level, they have great potential for learning and sharing, harmonization, scaling up and policy influence. Some districts (e.g. Monze and Mpongwe) and provinces have held local level Insakas, which were reported as being useful for sharing experiences and training materials, as well as networking (e.g. mechanisation providers and agro-dealers have provided training to Camp Extension Officers (CEOs) as a result of the Insakas).

Financial resources and financial management

MoA, the CASU project team and the districts report that transparency and good financial management have improved significantly compared to previous projects. Strict protocols are in place, including funds tied to outputs such as specific inputs sold, identifiable farmers and reports submitted. Budget allocations to provinces and districts via letters of agreement (LoAs) are minimal compared to the amount of work planned, partly due to budget restrictions and partly on the assumption that the government also contributes resources as laid out in the LoAs. With only one year of project implementation remaining, there is still a lack of clarity and agreement as to how to use some budget lines.

Contribution to gender empowerment

CASU and field staff have given attention to gender and are actively pursuing gender equality goals in the implementation of CASU activities. This is despite the fact that Result 5 of the original project logframe on gender mainstreaming was not well thought out, and there is only minimal consideration of gender elsewhere in the logframe. Similarly, a Gender Mainstreaming Strategy has been prepared but has not been endorsed or distributed, and CASU training materials seem to reflect gender stereotypes. While gender disaggregated data is collected, data analysis does not appear to be gender disaggregated.

Nonetheless, the CASU team analysed the constraints facing women and found considerable attention paid to gender in practice (e.g. selecting bikes with lower crossbars, or herbicide spray packs that are lighter). Quotas of at least 40% women LFs and FFs have been reached in most districts, and district/extension staff appear to be providing good support to women. On average there are 40% women LFs and 50% women FFs. CASU farmers noted that they had discussed gender issues in meetings with the CEOs, and there has been a clear message that men and women can do all tasks interchangeably. All farmers interviewed reported that over the last few years, attitudes have changed regarding traditional gender roles – women have been trained to do ripping, men are working with weeding and digging basins, and some are even assisting with domestic tasks.
Capacity development

ES21 The MTE team found that the greatest incentive for farmers to participate in CASU has been the improved knowledge and experiences they gained. The LF-FF extension approach is functioning well, however training needs to be strengthened with additional materials developed for FFs, and further support for transport to the extension services to allow consolidation of training. An opportunity for scaling up to non-CASU farmers has been missed, but there is still a possibility of implementing this during the coming season. In addition, agro-dealers have not received training on CA from CASU. This would be a good way to enable agro-dealers to serve as an outreach service, spreading the word of CA to other farmers who visit their shops, beyond the CASU farmers.

ES22 At the institutional level, CASU has worked with CFU and MoA to try to define common CA modalities and training materials. Ownership of the CA training materials developed under CASU needs to be mainstreamed within the MoA, which has the national mandate on agriculture-related training and capacity building.

ES23 With regard to the enabling environment, Insakas are held at national, provincial and district level (though varying by region and restricted by funding). Insakas have improved the relationships among actors and, to some extent, the dissemination of common information and ideas.

Prospects for sustainability and scaling up

ES24 As an implementing partner of CASU, the Zambian Ministry of Agriculture supported coordination of the project at national level, and facilitated mainstreaming into MoA programmes, plans and policies. At camp level, MoA works with CASU to provide farmers with the necessary information, tools and market linkages, and to solicit feedback for use at national level. The MoA district monitoring and evaluation (M&E) staff in CASU provide technical and extension support to district staff, lead farmers and participating farmers. They also monitor, coordinate and report the operations of the CASU activities at district level. All parties interviewed by the MTE team commented that this has been valuable to improving capacities, as well as communication and information sharing.

ES25 The literature on CA adoption shows great variation in the results of different studies regarding adoption and dis-adoption of CA. The MTE team observes that CASU’s design has already sought to address some of the issues concerning dis-adoption. For instance, rather than focusing only on technical issues such as tillage, crop covers and weed control, the project also focuses attention on non-technical issues such as rural finance and markets.

Conclusions and recommendations

Conclusion 1: Positive outcomes from CASU are evident, although access to legume seeds, mechanical implements and markets require continued improvement to incentivize CA adoption.

ES26 This CASU MTE finds that despite delays in starting up, the results in the field are positive. CASU is currently working with 20,277 active LFs (97% of the target of 21,000) and 207,593 FFs (67% of the target of 315,000). Rather than an average of 15 FFs per LFs, the average is only around 10. It will be important to make a big push to recruit more LFs and FFs before the next season starts.

ES27 The definition of CA has generally been considered to include minimum tillage (basins and ripping), maintaining crop residues on the field, and crop rotation with legumes. In the field, it was clear that most farmers were applying all three principles, though usually not on large areas of land. CASU has succeeded in increasing the area under CA, particularly among the LFs, partly by intervening with input packages containing inputs such as legume seed and herbicides. For FFs, the area under minimum soil disturbance is increasing, yet optimal legume production is still constrained by insufficient seed quantities among the FFs. The use of herbicides and rippers have also helped to increase land area under CA.
Compatibility of the land with CA practices and principles is a factor influencing its uptake; it is the MTE team’s assessment that CA solutions in CASU may need to be tailored more precisely for each area and group of farmers in order to achieve the set targets.

**ES28** CASU farmers informed the evaluation team that they have generally seen large increases in production under CA, but it is unclear which factors are responsible for the increases. For example, the increases could relate to the application of CA principles, or to other factors which are also applicable to conventional production (e.g. use of better seeds or increased fertilizer use, especially where inputs distribution are practiced).

**ES29** Most farmers increased the diversity of their production due to CASU activities, and reported improved food security and nutrition. Incomes have increased for some, but greater increases can be expected once markets for legumes are established for everyone. The involvement of WFP is an important way to resolve the marketing challenge for farmers, particularly regarding legumes. There is a question as to whether the partnership with WFP will continue in the long-term, but hopefully the market linkages will remain.

**ES30** The supply of inputs to agribusinesses has been a weak link. There were serious delays in getting inputs into the stores to be redeemed by farmers, and in many cases the inputs arrived too late to be of use. This affects one of the key messages of CA, which normally emphasises early planting. While the MTE team observed that the decision to support input market linkages was a more sustainable solution, a pragmatic solution is still needed.

**ES31** The design and implementation of the e-voucher scheme is a good practice developed by the project, which has been applied throughout the region. It is an excellent tool for promoting good governance, and has helped to inform development of the FISP voucher system.

**Conclusion 2:** CASU has contributed to capacity development on CA at the individual level and, to some extent, at the institutional level. Additional work is needed at the enabling environment level, which can be accomplished through the Insakas.

**ES32** The LF-FF extension approach is functioning well, meeting gender targets of more than 40% women, and has the advantage of greater potential sustainability than other systems, as the LFs remain in the community. However, training of FFs is dependent on the CEOs and the LFs, as well as each individual’s commitment and effectiveness as a trainer. Better training materials would contribute to more focused messaging. At the institutional level, ownership of the CA training materials developed under CASU needs to be mainstreamed within the MoA. With regard to the enabling environment, Insakas have improved the relationships among actors, as well as the dissemination of common information and ideas (although this varies by Insaka). This area still requires improvement through CASU.

**Recommendation 1:** Promote the safe use of herbicides and place greater emphasis on mechanization, including through: (i) operationalization of the CASU mechanization strategy; and (ii) establishing targets for improved access to mechanization implements for female CASU farmers. These activities will be critical for expanding the area under CA through the CASU project. The CASU project team should also strengthen the focus on legume seed and legume market access by both LFs and FFs (including via local seed multiplication) alongside market linkages (CASU project team).

**Recommendation 2:** Capacity development actions towards meeting planned objectives require the CASU project team to: (i) recruit more follower farmers; (ii) produce an increased number of training materials that are also gender sensitive; (iii) enable more contact between farmers and CEOs, through the MoA; and (iv) extend training to agribusinesses, in order to support replication (CASU project team, MoA).

**Conclusion 3:** Female farmers under CASU demonstrated increased confidence and skills, and gender issues were actively considered in the implementation of the project, even though a gender mainstreaming strategy has not been formally applied.
On average, women represent 40% of LFs and 50% of FFs. Women LFs are participating actively in CA demonstration, training and activities, and are exhibiting greater confidence. Although gender training is happening in the field through knowledge and skills gained from other programmes, the MTE team did not find a clear link to CASU. Overall, gender is not very visible in the project planning, but gender issues are being considered and disaggregated data is collected (but not analysed or presented). More attention is needed to ensure that training materials promote gender. For instance, the draft CA training manual and the flipcharts usually reflect gender stereotypes regarding farming roles, such as men doing ripping or driving tractors.

**Recommendation 3:** CASU should continue to actively pursue gender equality and equity goals in the implementation of and reporting on the project (CASU project team).

**Conclusion 4:** The project’s logical framework does not support good project monitoring and reporting.

The MTE team determined that the logical framework is not particularly clear and is not easy to monitor. A revised logframe could better support project monitoring.

**Conclusion 5:** Project monitoring and technical support structures are sound, but could be optimised to better support project management and reporting.

A very detailed monitoring system has been developed with promising potential; however, there are long delays in the analysis of the data. This is a missed opportunity for using the extensive data collected to both improve the project implementation and better communicate the results of the project to stakeholders.

**Recommendation 4:** Strengthen project management and monitoring through adoption of a revised logical framework and timely analysis of monitoring data, the results of which inform regular reports and feedback to CASU stakeholders and implementing partners (CASU project team, EU).

**Conclusion 6:** As an implementing partner of CASU, the project has contributed to developing the capacity of the MoA to promote CA, which could help to increase CASU’s sustainability. However, the period for implementing the rest of the project activities is insufficient to fully integrate the practices, systems and results.

The MTE team observed that the involvement of the MoA in CASU provides an opportunity to influence national policies and practices based on what is working. Taking into consideration the role of MoA in driving the national CA agenda, and the potential for the success of the project beyond its life span, there is a need to further strengthen the MoA’s participation in technical decision-making processes at all levels.

Although much work has gone into establishing the supporting guidelines, tool and systems for CASU, only two agricultural seasons have taken place under the project, with one remaining. Thus, there has not been sufficient time to test whether the system is sustainable. The actual adoption of CA can best be measured after the project has ended, in order to determine whether the LFs and FFs will continue to practice CA without support from the project. One confounding factor with such an approach is that other programmes may continue to promote CA with the same farmers, which could artificially result in continued participation.

**Recommendation 5:** An extension or new phase of the project is recommended. Although a number of positive outcomes from the project are already evident, the time remaining is likely insufficient to sustain these results (EU).

**Recommendation 6:** In order to achieve the expected results by the end of project, the CASU team should undertake actions related to: (i) increased recruitment of LFs and FFs; (ii) the mechanisation e-voucher; (iii) better use of existing disaggregated data to inform planning; (iv) development of input and output markets for legumes; and (v) improved training materials and training of agribusiness.
1. Introduction

1.1 Background and purpose of the evaluation

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Conservation Agriculture Scaling-up Project (CASU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Symbol</td>
<td>GCP/ZAM/074/EC</td>
</tr>
<tr>
<td>Country</td>
<td>Zambia</td>
</tr>
<tr>
<td>Region</td>
<td>Southern Africa</td>
</tr>
<tr>
<td>Donor</td>
<td>European Union</td>
</tr>
<tr>
<td>Partner Agencies</td>
<td>Food and Agriculture Organization of the UN (FAO)</td>
</tr>
<tr>
<td>Duration</td>
<td>48 months</td>
</tr>
<tr>
<td>Implementation Dates</td>
<td>June 2013–June 2017</td>
</tr>
<tr>
<td>Budget</td>
<td>EUR 10,963,393</td>
</tr>
</tbody>
</table>

1 The mid-term evaluation (MTE) of the Conservation Agriculture Scaling-up Project (CASU) aims to provide accountability on the outputs and outcomes achieved to date, and to share learning for the second half of the project. The evaluation also provides recommendations on changes to be made to the intervention logic.

2 The main audiences of the evaluation to which the findings and recommendations will be presented are the Food and Agriculture Organization of the United Nations (FAO) Project Management Team, the Ministry of Agriculture (MoA) of Zambia, the European Union and other relevant stakeholders.

1.2 Evaluation scope and objectives

3 The time frame covered by this MTE is from the beginning of the project in June 2013 to the start of the evaluation process in February 2016.

4 The CASU MTE had the following specific objectives: (i) assess progress made towards achieving project results; and (ii) identify design and implementation issues that need to be addressed in order to strengthen the project’s implementation and ensure the achievement of stated project results at the conclusion of the project.

5 The evaluation addressed the following questions in particular:
   • What quantitative and qualitative outcomes are evident following two years of project implementation? In particular, to what extent is the project strengthening capacities for and contributing towards the adoption of conservation agriculture?
   • How relevant and appropriate are the project design and activities to address the needs of the Ministry of Agriculture and the target beneficiaries of this project? To what extent are the project outputs and activities contributing towards the stated objectives of the project?
   • Effectiveness of project management, including adequacy, quality and use of the CASU monitoring and evaluation system in informing project implementation.
   • Efficiency of project implementation, including:
     - Institutional set-up and efficiency and effectiveness of project coordination and steering mechanisms;
     - Implementation gaps and delays, if any, and their causes and consequences on planned and implemented outputs and outcomes; and assessment of any remedial measures taken.
   • Project financial resources and financial management, including:
     - rate of delivery vis-à-vis budget allocations;
     - relevance and adequacy of budget allocations in the project document and subsequent budget revisions;
• To what extent are the project outputs contributing to women’s empowerment within the targeted districts? To what extent is the gender mainstreaming strategy understood and applied in the project?

• To what extent is the capacity development dimension integrated into the design, implementation and results of the project, at individual, organizational and enabling environment levels?

• What are the prospects for sustaining and scaling-up the project’s results by the MAL after the termination of the project?

6 Based on the above analysis, the evaluation team has drawn conclusions and formulated recommendations for any necessary further action by FAO, the Government of Zambia, the European Union and other parties to ensure sustainability of project results, including any need for follow-up actions. In particular, based on its review of the project’s theory of change and logframe, the evaluation team also included a proposal for a revised logframe (Annex 6). The evaluation also drew attention to specific good practices and lessons learned from the project at different levels.

1.3 Methodology of the evaluation

7 Data sources. The MTE team reviewed a large selection of project documents and reports, as well as reports and studies of other organizations, related to CA and general agriculture issues in Zambia (see Annex 3). Interviews were held with stakeholders and project beneficiaries (see Annex 4 for a full list and itemized schedule of the evaluation), permitting triangulation.

8 In the absence of hard data on production for the specific fields, the evaluation team asked the farmers to recall their production of maize in the previous season on conventional and CA farming plots. Although some farmers found it difficult to estimate how much land they had planted, a standard point of comparison could usually be achieved based on the amount of seed used and the type of crop.

9 Sample and sampling frame. The team met with 792 persons (436 men and 356 women) across 11 districts of Zambia (out of the 31 covered by the project), and including project stakeholders in Lusaka, FAO sub-regional and regional offices as well as Rome headquarters (see Annex 4 for details of all stakeholders met or consulted during the mission).

Table 1. Stakeholders met or consulted during the evaluation

<table>
<thead>
<tr>
<th>Details of institutions or stakeholder category</th>
<th>Females</th>
<th>Males</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAO project task team based in Africa and also at FAO HQ in Rome</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>FAO CASU team</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>European Union</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Ministry of Agriculture and Zambia Agriculture Research Institute leadership (SVB)</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>National Project Coordinating Unit (NPCU) staff</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>National Agricultural Information Service (NAIS) staff (excl. NPCU member)</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Donor agencies/embassies/other UN Organizations</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>NGOs, research organizations (CFU/IAPRI)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Provincial agriculture staff</td>
<td>0</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>District agriculture staff</td>
<td>12</td>
<td>44</td>
<td>56</td>
</tr>
<tr>
<td>Block officers</td>
<td>4</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>Camp officers</td>
<td>16</td>
<td>30</td>
<td>46</td>
</tr>
<tr>
<td>Leader farmers</td>
<td>112</td>
<td>153</td>
<td>265</td>
</tr>
<tr>
<td>Follower farmers</td>
<td>179</td>
<td>113</td>
<td>292</td>
</tr>
<tr>
<td>Other farmers (non CASU)</td>
<td>18</td>
<td>23</td>
<td>41</td>
</tr>
<tr>
<td>Agro-suppliers</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Agro-dealers</td>
<td>1</td>
<td>21</td>
<td>22</td>
</tr>
<tr>
<td>Other consultants with links to CA in Zambia</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>356</td>
<td>436</td>
<td>792</td>
</tr>
</tbody>
</table>
The districts visited were selected based on the number of participating CASU farmers; distance and road access (grouping together to save time); and agro-ecological regions. The majority of the CASU farmers are in Southern and Eastern Province – in Kalomo, Monze and Petauke. In addition, the team met with district staff from the ‘new’ districts of Pemba and Zimba. Pemba was also included in the visits since this is the pilot district for the World Food Programme’s (WFP’s) R4 Rural Resilience Initiative (R4), in which access to microfinance through the Vision Fund programme is also being implemented among CASU farmers. Table 1 below shows the distribution of the 31 CASU districts across the main three natural agro-ecological regions in Zambia, and those visited by the MTE team (marked in yellow highlight).

Within each district, the team randomly selected a camp that is doing well and one that is doing less well (in line with the management information system (MIS) reports). The team then asked CASU and the Camp Extension Officers (CEOs) to select farmers from those camps to participate in the meetings by taking every third person from the list of participating lead and follower farmers. In practice, it appears that the selection of farmers did not necessarily follow this pattern as it also depended on the availability of the selected individuals. The MTE team also selected three control camps from the original baseline control sample to visit, to give some idea of the ‘without CASU’ progress (in Sinazongwe, Choma and Petauke). These are camps within the same districts where CASU is operating, but that either do not practice CA, or that do practice CA but under another programme. The team also met with government staff in the following three categories: provincial team (where present); district team; and Camp Extension Officer and Block Extension Officer.

Table 2: Distribution of the 31 CASU districts across the main three natural agro-ecological regions in Zambia (and those visited by the MTE team marked in yellow)

<table>
<thead>
<tr>
<th>Agro-ecological region</th>
<th>Region I (low rainfall, &lt; 800 mm/year)</th>
<th>Region II (Medium rainfall, 800 – 1000 mm/year)</th>
<th>Region III (high rainfall, &gt;1000 mm/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Kalahari sandy region</td>
<td>Valleys and escarpment</td>
<td>(Kalahari sands region)</td>
</tr>
<tr>
<td></td>
<td>II B (Kalahari sands region)</td>
<td>II A (Central Plateau)</td>
<td>(Kalahari sands)</td>
</tr>
<tr>
<td>Targeted Districts</td>
<td>Sinazongwe, Mambwe</td>
<td>Kaoma</td>
<td>Zambezi</td>
</tr>
<tr>
<td></td>
<td>Sesheke, Kazungula</td>
<td>Mumbwa, Chibombo, Chongwe, Nyimba, Petauke, Katete, Chadiza, Chipata, Lundazi, Mazabuka, Monze, Choma, Kalomo, Kapiri Mposhi</td>
<td>Kawambwa, Mansa, Samfya, Solwezi, Mpongwe, Isoka, Mafinga, Mkushi Serenje, Chiengi, Mwense</td>
</tr>
</tbody>
</table>

Figure 1: Districts visited by the evaluation team
Data collection procedures and instruments. A mixed method approach was used combining qualitative and quantitative data. The MTE team collected primary qualitative data supported by secondary quantitative data collected from the project as well as other data providers. Most of the data collected came from focus groups and individual interviews, using open-ended question sets, developed based on the evaluation questions and matrix, and the project document (see Annex 7). The team encouraged all stakeholders to speak openly. In the field, the MTE team held some women-only meetings, in order to encourage women to speak up. Farmers were encouraged to not only be the objects of the activity, but to give their opinions as to how the project could best support them to achieve better production. A self-evaluation session was held with the CASU team at the end of the fieldwork, to develop a shared understanding of the situation and possible improvements. While the evaluation was largely based on this qualitative data collection, the large number of persons interviewed enabled data saturation to be reached, which indicates robustness of the findings.

Performance standards. The MTE team has considered some external studies of CA in Zambia, including recent reports by Indaba Agricultural Policy Research Institute (IAPRI) and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), as well as a review of conservation farming units (CFU) commissioned by the Norwegian Embassy. Published research on CA in Southern Africa was also reviewed.

Stakeholder engagement. The farmers and government staff interviewed were very open and engaged in the evaluation. The team were able to achieve active participation of women in most of the meetings, even during mixed group discussions.

1.4 Limitations

• Data. The team had hoped to have monitoring data from the MIS for some of the camps in order to compare findings while in the field. However, this data could not be made available in advance of the field visits of the MTE team, as CASU’s M&E system does not usually include monitoring of every farmer, or even of every camp. In addition, due to the timing of the MTE, the only production data available was from the previous season (2014/15). Turnover of M&E and data analyst staff from the CASU team made it difficult for the MTE team to verify all of the results, as there were several versions of farmer data and problems with analysis of the yield data. Nonetheless, the MTE team spent considerable time in the field asking both LFs and FFs about their land under CA, yields for the 2015/2016 season, and the changes they had experienced. The large number of farmers the team met with contributed to confidence in the figures presented in this report.

• Benchmarks. It was problematic to identify counterfactual project sites, given that conservation agriculture has been promoted for many years in Zambia by many organizations, starting as early as the 1990s. CASU sampled from control sites as part of the baseline study, and the MTE team visited three of those sites (in Sinazongwe, Choma and Petauke) to get an impression of a ‘without CASU’ scenario. However, this was not a statistically significant sample.
2. Context of the project

2.1 Description of the project

The Conservation Agriculture Scaling-Up (CASU) project is funded by the European Union (GCP/ZAM/074/EC) through the 10th European Development Fund (EDF).

The Ministry of Agriculture intends for CA to be the official means of increasing farm productivity among small-scale and emergent producers in the country. CASU aims to provide solutions to declining crop production among small- and medium-scale farmers, and to strengthen partnership and networking between the Zambian government and cooperating partners, non-governmental organizations (NGOs) and the private sector. The overall objective of the project is to contribute to reduced hunger and improved food security, nutrition and income, while promoting sustainable use of natural resources. The purpose of the project is to increase crop productivity and production for the targeted farmers, of which at least 40% should be women.

The project has five result areas:

- Result 1: Conservation agriculture expanded and consolidated
- Result 2: Conservation agriculture skills improved
- Result 3: Conservation agriculture farmer input and output supply chains improved
- Result 4: Land management improved
- Result 5: Gender issues mainstreamed

At least 21,000 new or existing (from the Farmer Input Support Response Initiative (FISRI)) conservation agriculture lead farmers and at least 315,000 small-scale follower farmers are targeted under the project, which will run for four years under current plans. In addition to these farmers, MoA staff, agro-dealers, financial institutions, research institutions, agro-entrepreneurs and other conservation agriculture stakeholders are among the direct and indirect beneficiaries of the project activities. CASU is being implemented in 48 districts in nine provinces of Zambia, across the four agro-ecological regions (I, IIA, IIB and III).

2.2 The geographic context and boundaries

CASU is working in each agro-ecological zones of the country, although the greatest concentration of CASU farmers are found in Eastern and Southern Province, in Zone IIA, where CA has been practiced for many years, following its promotion by various organizations.

CA is considered to be most effective in Zone II, which does not receive heavy rainfall. This is partly due to one of CA’s major advantages: the ability to support water conservation in dry areas, and to support basins in areas with high rainfall that may become waterlogged. However, this is still not proven; Thierfelder et al (2015) found that “Maize yields under conventional cropping systems were more affected by the variability of rainfalls than conservation agriculture systems, highlighting greater resilience of CA cropping systems to a variable climate, especially rainfall”.

Farmers with very sandy soils (e.g. Kazungula and Kaoma) told the MTE team that it was problematic to dig basins or rip early (a typical advantage of CA), as the soil structure meant it was more likely to collapse. Districts in the south of the country have higher livestock populations, and therefore greater risk of animals eating crop residues from the soil – though they do bring the advantage of manure production for fertilizer, and providing animal draught for rippers. Against this background, CASU’s comprehensive agronomy and land management strategy recommends specific CA technologies, practices and crops for each agro-ecological region, in order to maximise the benefits.
2.3 Total resources required for the project from all sources

22 The summary budget is presented in Table 3 below. The total of EUR 10 963 393 was equivalent to USD 14 349 991 according to the exchange rate at the time of project signature (the exact exchange rate prevailing at the time when funds are received is used). For final reporting, a composite exchange rate (averaged over time) is used. A few adjustments were noted in the budget, and both versions have been presented in the Table below. The budget line “Lead Farmer inputs and other costs” constitutes the largest proportion of the total budget.

<table>
<thead>
<tr>
<th>Budget line</th>
<th>Original amount (EUR)</th>
<th>Adjusted amount (EUR)**</th>
<th>Proportion of original (%)</th>
<th>Proportion of adjusted (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human resources</td>
<td>1 960 402</td>
<td>1 973 382</td>
<td>17.9</td>
<td>18.0</td>
</tr>
<tr>
<td>Travel</td>
<td>45 792</td>
<td>45 792</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>Equipment and supplies</td>
<td>1 332 992</td>
<td>1 332 992</td>
<td>12.2</td>
<td>12.2</td>
</tr>
<tr>
<td>Local office</td>
<td>163 200</td>
<td>163 200</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Other costs and services</td>
<td>935 995</td>
<td>922 995</td>
<td>8.5</td>
<td>8.4</td>
</tr>
<tr>
<td>Lead Farmer inputs and other costs</td>
<td>5 807 781</td>
<td>5 807 801</td>
<td>53.0</td>
<td>53.0</td>
</tr>
<tr>
<td>Eligible direct costs</td>
<td>10 246 162</td>
<td>10 246 162</td>
<td>93.5</td>
<td>93.5</td>
</tr>
<tr>
<td>Administrative costs</td>
<td>717 231</td>
<td>717 231</td>
<td>6.5</td>
<td>6.5</td>
</tr>
<tr>
<td>Provision of contingency</td>
<td>45 792</td>
<td>45 792</td>
<td>0.0</td>
<td>0.4</td>
</tr>
<tr>
<td>Total</td>
<td>10 963 393</td>
<td>10 963 393</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

* Refer to the Final Revised Financial Report of 05.02.2016 covering the period up to May 2016
**Adjustment made and agreed once a calculation error in the Excel was noticed.

23 In addition and in line with Financial and Administrative Framework Agreement, FAO has contributed staff time and resources, as the budget did not include enough funds to cover aspects such as rent, electricity and cleaning services. FAO also provides some staff secondments at no cost to the programme. Apart from the FAO CASU team in Zambia, only the time of the FAO Task Force Team Leader (who is also the CASU Lead Technical Officer) is budgeted for under the project.

24 The MoA is expected to cover many of the costs at provincial, district and camp level, as noted in the Letters of Agreement (LoAs) signed with the provinces and districts. However, in practice, the MoA does not have adequate running funds for the items listed (particularly for transport and daily subsistence allowances, nor is the project specific expenditure included in the government’s budgetary provisions. As a result, most of the district and extension staff complained of inadequate transport and allowances.

2.4 Financial and in-kind contributions by other partners and the beneficiaries

25 CASU farmer beneficiaries contribute their own labour, land and time, which is not costed. The LFs use their personal mobile phones for communicating with CASU and the LFs. The agri-businesses working with the LF input scheme provide internet access and their own time. CASU has paid for the point-of-sale machines to use with the e-vouchers so far, but any additional agri-businesses joining in the future will need to pay for the machines.

2.5 Key partners involved in the project

26 The key partners to the project, and their main roles and responsibilities, are described in the following sections (their roles are also clearly defined in the project document, reports and related annexes).

- European Union: Financial support, technical guidance and accountability (provided via inputs to the Technical Committee and general project oversight, in accordance with the project document). CASU is aligned to the European Union Country Strategy Paper and
National Indicative Programme (2008). The 10th EDF Country Strategy Paper provides a framework for EC assistance programmes under the Cotonou Partnership Agreement for the years 2008 to 2013, providing the funding envelope during which period CASU was prepared. Any further funding would need to come from EDF 11.

- Ministry of Agriculture (national, provincial, district, Block and Camp levels): Implementing partner; provide staff and hands-on guidance to farmers.
- MoA/MAL National Project Coordination Unit (NPCU): Coordinates the project at national level and facilitates mainstreaming into MoA programmes, plans and policies. Ensures the structure of MoA down to farm level is working with CASU, with information, tools and market linkages passed on to farmers, and feedback carried up to national level.
- District MoA/MAL M&E Focal Points: The MoA district Monitoring & Evaluation (M&E) staff in CASU provide technical and extension support to district staff, lead farmers and participating farmers. They also monitor, coordinate and report the operations of the CASU activities at district level. The M&E focal points also contribute to periodic reports to the EU on the progress of the project, and submit district reports to the District Agricultural Coordination Officer (DACO) and NPCU on a monthly basis (or as and when needed). They also conduct field visits to CASU implementation sites.
- FAO Country Office: CASU is based in the FAO Zambia office. CASU is a part of the overall FAO programme in Zambia, which offers the potential to link to other FAO projects or themes (e.g. climate change adaptation, or trialling credit).
- Project Steering Committee: Project accountability and technical guidance.
- FAO Project Taskforce: Members of the FAO project taskforce provide guidance to the CASU team and ensure that the project is technically sound and well aligned to FAO systems and quality assurance requirements.
- WFP: Acts as a partner to link up farmers, traders and markets (P4P and R4 projects). In Pemba, together with other partners, they are also trialling farmer finance and index-based crop insurance with CASU farmers.
- Lead farmers: Demonstrate CA practices to selected FFs; train the FFs and provide a link between the project and FFs. Based at village level, therefore the most sustainable method to get CA knowledge into a community.
- Follower farmers: Implement and expand CA practices as trained and demonstrated by LFs.
- Service providers: These include agro-businesses, academic institutions, farmer unions, research institutions, CFU, Insaka and the private sector.

2.6 How CASU fits into the national priorities and FAO Country Programme Framework

27 The Seventh National Development Plan of the government identifies the following main problem areas in the economic sector: poor infrastructure, and low productivity and value addition. Low productivity is an area that CASU should contribute to. The national development priority for crops is “to increase sustainable crop production, productivity and value addition for a diversified range of competitive crops apart from maize”. This should take place via increased crop production and productivity; improved access to inputs (seed and fertilizer); promotion of Good Agricultural Practices; and promotion of mechanization of crop production systems (e.g. animal draught). The concept of CASU fits very well with these national priorities.

28 CASU is also well aligned to the draft FAO Country Programming Framework (CPF) 2016 to 2020 (8 Feb 2016). The CPF outlines four priority areas for support, and CASU clearly fits well in each:

- Priority 1: Production and productivity improvement in crops, livestock, fisheries and forestry;
- Priority 2: Mainstream climate change into crops, livestock, fisheries and forestry;
- Priority 3: Food and nutrition security improvement; and
- Priority 4: Improved market access and sanitary measures.

29 The FAO Country Gender Assessment (2015) noted that it would be beneficial to “Use the CASU project as an entry point to document the evidence and the case for the gendered benefits, impacts, disadvantages and advantages of conservation agriculture”.
2.7 Background of CASU

CASU was designed to follow on from the earlier FISRI project (2009-2012). The purpose of FISRI was to increase food production through improved access to agricultural inputs and the promotion of CA principles in order to help mitigate the effects of soaring food and input prices. FISRI was funded with EUR 16 850 956 by the European Union (EU) and implemented by FAO and the Ministry of Agriculture and Livestock (MAL).

According to the June 2013 final evaluation of FISRI, the project was successful in increasing crop yields, expanding the adoption of CA, and in building the capacity of MAL staff in CA project implementation (CASU project document, 2013). However, shortcomings in the implementation of FISRI affected the start-up of CASU. For instance: Although most LFs from FISRI were known, comprehensive farmer lists and LF characterization were not available; there were also inconsistencies or missing information where these lists were available. This called for a comprehensive and systematic registration process of the LFs for CASU with clear criteria. This registration was key to the establishment of subsequent activities, especially the e-voucher system; monitoring and evaluation activities; management of beneficiary farmers and accountability and transparency. This process contributed to higher costs and delays in starting CASU field activities.

Other key lessons learned from FISRI by CASU:

- Need for increased and expanded training approaches – the CASU seasons are divided into three focal training periods (Land Preparation, Crop Management, and Post-harvest and Marketing) to ensure that key issues are addressed. In addition, materials to guide farmers on different aspects of CA have been developed and distributed.
- Need for developing a comprehensive agronomic and land management strategy – CASU developed such a strategy to provide targeted guidance for each agro-ecological zone.
- Need to assess demand for CA mechanization – this was deemed necessary by CASU in order to assess the potential quantities of CA equipment to be supplied, and to enable potential suppliers and financiers to make informed decisions.
- Need for minimizing financial risks associated with procurement (e.g. the e-voucher system) – this was deemed necessary by CASU to enable assessment of the potential quantities of CA equipment to be supplied and enable potential suppliers and financiers to make informed decisions.
- Need for good record keeping at all levels to enable tracking, accountability and attribution.

This issue is discussed further in 3.2.1.

2.8 Description of how this evaluation fits within the context of other ongoing and previous evaluations

The EU funded a Results Oriented Monitoring mission in September 2015. It was generally positive, though it did not go into great depth. An audit will be held in 2016. A final evaluation is to be conducted at the end of project implementation.

It is not appropriate to think of or to evaluate CASU as an entirely new project that started with a clean slate in June 2013. While there are certainly elements of the project that are new, there was also considerable continuity with earlier projects such as CASIP and FISRI, so the interplay of this continuity with the new elements introduced through CASU is, by necessity, an important focus of the evaluation.
3. Evaluation findings

3.1 Assessment of project concept and design

3.1.1 The relevance of stated development goals and outcomes (immediate objectives) and the context

The Zambian agricultural sector has good potential, but also faces many challenges such as low productivity, poor input and output market access and limited market size, relatively low investment by private sector, high costs of production (input prices) stemming from the broader economy, high cost of finance, very low investment in research, and environmental degradation and climate change. Only 9% of the GDP in 2014 came from agriculture (Rasmussen 2015). At the local level, considerable farmer effort is devoted to producing food for household consumption rather than focusing on income generating agricultural activities. Considering that more than 60% of the population is still reliant on agriculture for their livelihoods, it is logical that conservation agriculture might be one way to improve production in a sustainable manner. In the Zambia National Agriculture Policy, there is emphasis on the promotion of Sustainable and Environmentally Sound Agricultural Practices, focusing on the promotion of environment-friendly farming systems such as conservation farming, afforestation, and the use of green manure (NAP, 2004). The government has also made ministerial pronouncements, such as in the 2014 Budget Speech to parliament, stressing its commitment to addressing the growing threats of climate change. Zambia launched its National Agriculture Investment Plan for 2014-18 in 2013. It has set a target of 25% of small-scale farmers to have adopted conservation agriculture by 2018 (from a baseline in 2013 of 10%).

As noted in section 2.6, the project is well aligned with national and FAO priorities. It is also highly relevant for the beneficiary farmers, and the activities are expected to strengthen the activities of the MoA.

Against this background, the overall objective (“To contribute to reduced hunger, improved food security and improved income and promote sustainable use of natural resources in Zambia”) and purpose (“To increase crop productivity and production for target farmers, of which at least 40 percent will be women”) are relevant. The MTE team proposes however that the wording of the project purpose could be adjusted to include reference to CA, the focus of the project.

The assumptions are problematic at the upper levels. “Normal rainfall prevails” and “Climatic conditions do not diverge from average by more than 20 percent” are hardly reasonable assumptions in light of the globally changing climate. The MTE team also observed that, although the overall objective mentions ‘sustainable use of natural resources’, there appears to be no assessments planned in the project to assess sustainability in a holistic manner. Several methodologies for on-farm assessments of sustainability of farming practices exist, which could be supported through the Adaptive Research component of the project and provide both quantitative and qualitative data on sustainability based on key thematic areas of sustainability, (i.e. social, economic, environmental and governance). Soil health has been assessed at baseline level and demonstrated some positive impacts from CA, such as higher soil organic matter and lower soil bulk densities; however, there are other key components that also need to be assessed to determine if CA is a sustainable approach for the project beneficiaries.

3.1.2 The adequacy of the approach and methodology of implementation to achieve the intended results

The project document outlines a clear path of extension adapted from the MoA extension approach. This is a good starting point for beginning with sustainability in mind. The project document acknowledges that government-employed extension staff face challenges in undertaking their role due to erratic funding. These funding issues therefore justify the rationale for using LFs as vehicles to reach out to FFs, who are the ultimate beneficiaries.
This methodology, if well supported, has great potential for sustainability as it is focused more on local capacity development and building ownership at local level. However, some observations were made during the field visits that the link between the LFs and FFs is sometimes weak, which influences the adoption of CA. There is also minimal intervention by the CEO or the district at FF level to monitor and reinforce skill development on CA under the CASU arrangement (partly due to inadequate funding for transport from either the CASU or MoA budget).

A number of donors and NGOs have worked or are working on promoting CA in Zambia, including the Norwegian Embassy (support to CFU), and the Finnish and Swedish embassies (with ZNFU and bilateral agricultural projects). These efforts have been complementary to the CASU methods, with very little overlap or conflict in implementation. However, some of the NGOs, such as World Vision, Cooperative for Assistance and Relief Everywhere (CARE) and Profit Plus, have been providing inputs on a larger scale to farmers, which often created donor dependency. This was found in research, such as Andersson and D’Souza (2014), and to some extent could be seen in the field, particularly in camps where there had been a long history of donor projects. There is also a risk that farmers do not want to work with CASU, based on farmer perceptions of insufficient benefits (inputs) in comparison to the other programmes. Some CEOs also complained that with NGO projects they received greater allowances and transport, as compared with CASU’s support of extension work.

There were also observations on the use of LF’s fields for field days as one of the main vehicles of extension; while this is understood to be a very effective tool for learning and sharing, the MTE observes that it is inadequate in terms of disseminating CA messages, as very few field days are held each season. To broaden the learning opportunities, there is scope to invest more in the use of community radio programmes and working with the National Agricultural Information Service (NAIS) to produce bulletins with key messages on CA, which can be adapted to local conditions. There are also media messages, including radio programmes (though there is very little receptivity of national radio and TV signals among CASU farmers), and CASU’s SMS messages with CA advice.

The MTE team also observed that there is scope for strengthening farmer-to-farmer learning through promoting exchange visits across farmers, camps and districts. Such visits can act as a motivational tool for farmers, and expose them to different situations to appreciate how others are adapting. Suitable mechanisms, including transport provisions, ought to be developed to facilitate such exchanges at different levels. The establishment of Farmer Field Schools (FFS) as outlined in the project document is another proven strategy of reaching out to farmers. Demonstration plots and training are elements of the FFS already employed by CASU, and full implementation of the FFS approach should be considered.

The CASU project team undertook consultations on the selection of LFs and agro-suppliers/agro-dealers, as well as for the capacity needs assessments conducted for MoA field staff, which contributed to designing the trainings. However, the MTE team observed that CASU implementation has been largely top-down, with only limited involvement of the district staff or the farmers at local level to identify emerging gaps and specific areas for improvements in capacity building activities (which could be a way of adapting the trainings better to their needs based on lessons learned). While it can be argued that CA as a technological package is predetermined and that technical people are better placed to assess what needs to be done, the element of adapting CA to local conditions informed by indigenous knowledge is critical to the success of the project. Further, to build ownership, no speciality can substitute community involvement in design and implementation, including learning. At present, the district extension staff have the option to modify the training in line with local needs, but the findings of the field visits were that they mainly followed the set plan.

The CASU Agronomic and Land Management Strategy guides the CA work. It selects crops that are not only suitable for the agro-ecological regions but are also major crops in the prevailing farming systems of the project areas. Possible crop rotations are also suggested and some guidelines to establish demonstration plots are provided to make it easier for the extension staff to implement CA in their areas. The strategy recognizes that site specificity is crucial for the successful implementation of CA versus blanket approaches. Major production factors such as climate, soils and socio-economic conditions were taken
into consideration. This is an important step by CASU, as the strategy helps the project to practically operationalize CA and other land management approaches in the target districts.

Regarding the CA technologies, CASU recommends only planting basins in agro-ecological region I, but it is important to recognize that farmers in the region already use ripping and make their own choices. The MTE team proposes that this should be encouraged, as livestock are more prevalent in this region and ripping by animal or tractor-drawn implements can facilitate greater CA expansion as compared with planting basins, which tend to be associated with higher labour demands.

The timing of land preparation through ripping and basins also needs to be refined through innovation, including scheduling (together with farmers) for the Kalahari sands where advance land preparation faces challenges related to basins/rip-line collapse due to poor soil structure. The MTE team noted that liming is recommended for agro-ecological regions IIa and III, in line with the higher rainfall and leached acidic soils; however, the strategy does not mention soil analysis to inform the quantities of lime application by the farmers. The MTE team also noted that some of the recommendations from the strategy had not yet been implemented (e.g. distribution of *Sesbania sesban*, *Tephrosia vogelli*, and *Gliriciadia sepium* (seed not available), contour making, terracing, vetiver grass planting, live fencing and green manuring). The strategy needs to be reviewed and adjusted, taking into consideration the actual situation on the ground, lessons learned, and feasibility/practicality of some of the proposed strategic approaches.

### 3.1.3 The adequacy of the time-frame and total resources, including human and financial, allocated for implementation

Given the delays at the start of the project, it was impossible for the CASU team to work in the field during the first agricultural season (2013/4). Thus, at the time of the evaluation there had been only one full season, with one more underway and a third season remaining. This is an inadequate amount of time to assess the long-term sustainability, and probably not enough time to change attitudes and behaviours (given that farmers are by nature conservative and slow to take on new practices).

In terms of human resources, the approach of using MoA established structures provided the project with adequate capacity for implementation. A CEO theoretically staffs all the CASU camps, though there are often inadequate resources to effectively monitor field activities.

### 3.1.4 The quality of the stakeholders’ and beneficiaries’ identification

The choice of beneficiaries was based on the FISRI farmers. However, at the start of CASU, it was found that the lists were not accurate. Therefore, all farmers on the lists that CASU inherited were checked and additional farmers were recruited. The identification of the farmers under CASU has been extremely meticulous, and the lists of farmers now also include national ID numbers and phone numbers, among other information. The CASU and MoA team also met each LF in person to hand out the e-vouchers.

Under CASU, the selection criteria for both LFs and FFs were as follows: LFs were chosen mainly based on past experience in CA work; interest and commitment; good standing in the community; and the ability to spare land and time to support the learning of other farmers (and also aiming for at least 40% women). The selection of the FFs is mainly based on interest, proximity to the LF’s farm, and gender consideration in line with the project’s aim to target 40% women.

There has also been a robust process to identify agro-business service providers, who are regarded as stakeholders as well as indirect beneficiaries. A systematic technical evaluation of their suitability in handling inputs (such as agro-chemicals and seeds) was carried out. Administratively, their legal registration, VAT and licences were verified. Additionally, their records from working with FISRI were checked and those exhibiting problematic
behaviours were removed from the list; then they were crosschecked with agro-suppliers (who would need to supply to them on credit).

### 3.2 Clarity and coherence of the logical framework of the project

Based on its assessments, the MTE team proposes that adjustments are needed to the logical framework of the project in order to improve its clarity and coherence. Result 1 is a duplication of the purpose. Achievement of Results 2, 3 and 4 were likely to support the achievement of Result 1, rather than being on the same level. There is also an overlap in some of the Purpose and Result 1 indicators – on land area under CA. For that reason, it seems logical to merge Result 1 and the Purpose. This overlap means there is not a clear theory of change (ToC). The ToC should provide an explanation of the activities and pathway required to achieve the desired impact. Result 5 is vague, and focuses mostly on tools, both in the original formulation and in the new formulation proposed by the project team.

There are also issues with the logic and duplication of indicators. For instance:

- **Result 1** – “30 percent of CA farmers have at least 20 *Faidherbia albida* and any other agro-forestry trees growing on their plots” would fit better under Result 4. This OVI also needs to be rephrased and should refer to the adequacy of such trees based on current recommendations on *F. albida* planting densities in CA systems, as well as taking into consideration the types of crops grown and the prevailing growing environment.
- **Result 1** – “No. of farmers accessing financing from relevant institutions for agro-entrepreneurial projects” – would fit better under Result 3.

Some indicators are vague and hard to measure, for instance:

- **Purpose** – “At least 70 percent of women in designated project CA areas consider they have equal opportunities to CA resources over project period” is difficult to measure, as it is not clear if it refers to equal access to inputs, markets, information, or participation in project activities.
- **Result 2** – “Functional CA global information system (GIS) by start of year 2; No. of staff trained” – there is not really a clear link between this indicator and the result.
- **Result 3** – “Type and quantity of inputs traded through agro-dealers increased by 50 percent and number of agro-dealers increased by 70” – This is difficult to measure; should it refer only to the inputs that CASU provides, or everything they trade? How is CASU going to lead to an increase in the number of agro-dealers? There is not a clear, attributable link to CASU activities.
- **Result 3** – “No. of farmers with access to input and output markets.” Everyone has access to inputs and output markets to some degree, but do they access them is more to the point.

**Result 5** – The gender issues mentioned in the original project document are not clearly defined or measurable. The indicators are quite general, with the first two referring mainly to outputs:

- Gender and women’s empowerment strategy developed and in use;
- Number of beneficiaries and MAL staff trained in gender and women’s empowerment;
- Gender is mainstreamed and disaggregated data exists for all relevant issues and challenges.

In the Year 1 annual report, the CASU team proposed changing Result 5 to “Project Management and Coordination Strengthened”, and making it a general indicator for the development of a number of project tools and strategies. Suggestions were provided for the new activities under the proposed new Result 5, which included gender mainstreaming and many others. However, in the logical framework included with the M&E strategy there does not appear to be any gender activities under Result 5. This proposal was not accepted by the EU, which proposed that the decision on the logframe changes would be left to after the MTE.
57 The MTE team proposes that it would be more logical to remove this result altogether and instead to genuinely mainstream gender throughout the rest of the logframe. It seems also that the volume/quantity of food produced under CA is not captured and could be a potential new indicator for consideration at Purpose level (the project MIS has monitoring data dealing with this). Farm Species Diversity Scores/Richness seems to be missing, as well as a productivity indicators at Purpose level. The MTE team also proposes that Result 1 is merged into the Purpose. As the baseline and monitoring were already completed for the existing logframe, large changes are not proposed, only making it clearer and easier to measure.

58 In Annex 6, the MTE team presents a proposed adjusted logframe and ToC, including further explanations of the issues with each indicator. The broad changes are shown in the following diagram:

![Diagram of Current and Proposed Logframe]

3.3 Analysis of project implementation

3.3.1 Project management

59 The project suffered from a slow start for many reasons. The CASU project document and description of action was prepared based on FISRI. However, subsequently it was found that there were several problems with FISRI, necessitating changes to the CASU project supervision structures, management, monitoring, procedures, etc. It was also expected that the list of leader farmers from FISRI could be used, however due to accuracy concerns the CASU team had to start again with identification and verification of LFs and FFs. From the time that FISRI ended and CASU started, some LFs had already joined other programmes; thus they would not qualify for CASU and needed to be replaced.

60 Important first steps included defining the appropriate membership, roles and meeting frequency of the different project teams (e.g. PSC/NPCU task team and Technical Coordination Team). In addition, an emphasis was placed on establishing LoAs with the MoA at all levels to ensure good governance. Gathering information regarding issues such as transport availability in each district, as well as planning the baseline study, took time. The electronic voucher for inputs (alluded to in the project documents) took time to design, with stringent controls to avoid misuse, and with transparent accountability. Finally, staffing and recruitment issues also made a quick start impossible. As a result, the project missed its first agricultural season (2013/4). However, the MTE team observed that this delay allowed CASU to establish firm project foundations that prevented financial risks and confusion of the farmers.
Based on lessons learned from the implementation of FISRI, there is much stronger and centralised control now in all areas (e.g. proper registration of LFIs, contracting for service provision, input voucher redeeming and data collection); however, this may be to the detriment of rapid implementation progress, as there were delays, for example, in operationalizing the mechanization strategy. The Project Coordinator monitors and manages all aspects of the project. This is positive, though it may slow progress of project implementation. There have also been some problems with turnover of project staff (e.g. the M&E officer and Data Analyst), which has affected the timely analysis of monitoring data.

The project team has sequenced some of the activities over the life of the project, reasoning that not everything could be started at once. However, some activities were delayed considerably. For instance, in the 2014 annual report (dated 31 May 2015), it was noted that six possible action research topics had been chosen, yet there has been no progress on this since that time. Mechanisation activities are only being implemented now; ideally, these should have come at the beginning of the project to facilitate CA area expansion.

The project is also discussing a possible way forward with the credit activities, yet starting now with only one year remaining does not seem feasible, for farmers or for CASU. One year is insufficient time to have even one cycle of credit, as the farmers would not be able to repay the loan in time for the project closure (see a further explanation of credit under Key Result Area 1).

Adequacy, quality and use of the CASU monitoring and evaluation system

It was a pragmatic decision by CASU to work directly with the MoA district structures, as this has resulted in less bureaucracy and better functioning. CASU gives feedback directly on the reports submitted by the districts. On the downside, provincial teams sometimes raise concerns and feel excluded from accessing information on the project, as districts report directly to the project and NPCU, but with copies sent to the POAs. This issue arose in those districts that have not been proactively communicating with their province. One area where the provinces could serve a useful role is in facilitating experience sharing sessions among the CASU districts, and between the CASU and non-CASU districts. Some districts mentioned to the MTE team that they had had the chance to compare progress and share experiences with others (e.g. Kapiri Mposhi), but other districts noted this as a gap (e.g. some of the districts in Southern Province).

The CASU monitoring system is very detailed, and was developed based on a thorough analysis of the indicators, further definition of what they mean, and how to gather the information for the baseline and follow-up. District agriculture staff said that they appreciate having an electronic system (though they also complained of inadequate computer and internet access). Senior MoA staff can also access monitoring data regularly. However, despite the development of a good system, the delay in analysing results limits opportunities for using the data in planning. For instance, as the next annual report is due in May, the project only began to analyse the production data from last season in order to respond to the requests of the MTE team. In addition, the MIS has not been used to provide yield data in the project reports.

This is a wasted opportunity, as the data could have been provided to the district staff prior to planting for the next season. Moreover, due to issues with data handling and cleaning, there were some initial errors, which tends to lower confidence in the results. As the data analysis and reporting is not gender disaggregated, this was a lost opportunity to feed information back to the field and make adjustments if needed (e.g. if women farmers are getting very different yields in a district it might be a structural problem of having poor land, equipment or inputs; or it might mean that they haven’t understood a critical issue in the training). In addition, the MTE team was told by the district staff that data entry has to be done while online, which requires both access to a computer (in short supply) and more time for internet connection, which adds to costs often beyond what the project covers. If feasible within the remaining period, an off-line application/interphase
could be developed for use during data entry, and only connected for submission of the completed monitoring sheets.

67 The MTE team found that the CASU project progress reports were too focused on activities and processes, with inadequate reporting of disaggregated results in line with the logframe. This is a missed communication opportunity, as in addition to the wealth of information from the MIS system to complement reporting against the logframe indicators, the team learned that the CASU team has achieved many things that it does not report (as they fall outside the narrow constraints of the logical framework). The MTE team considers that while this is in line with the contract, the opportunities for information sharing are now too limited, and brief quarterly information bulletins would be useful.

68 Some good practices have emerged with regard to the monitoring and MIS system, which are described in the final chapter (Lessons Learned).

3.3.2 Financial resources management

69 Following the lessons learned from FISRI, CASU has implemented good financial controls – both internally and externally – with implementing partners or service providers. These measures help to ensure the faithful application of FAO guidelines for contracting service providers and vendors.

70 Districts are given LoAs with predetermined activities and a budget ceiling, though there is some room for districts to adapt as needed. Each MoA district processes and accounts for CASU funds using the MoA system and channels. They then report to CASU according to stipulations in the LOA. Until April 2016, all districts received their payment tranches at the same time – after all the financial reports had been received from each district. Therefore, all districts were penalised for the few who were delivering their reports late. This was unfair to those who complied, and there is now a plan to change and process the payments as and when each district’s financial report has been approved. District representatives reported that the late payments have impeded their work, as planned activities could not be implemented on time. The districts also reported that their allocations were inadequate, particularly limiting transport for fieldwork. CASU plans to increase district budgets in the successive LoAs, partly to respond to this problem and partly to reflect the increased task load. The MAL district financial reports analyse expenditures against agreed budgets for each budget line.

71 FAO’s approach to staff secondments and cost-sharing, as well as the MoA’s contribution of office space and staff costs to the NPCU, PACO, DACOs, Block Extension Officers (BEOs) and CEOs, have helped to reduce direct staff costs for CASU. Taking into consideration the delays at the start of the project and the staff turnover, which meant that some major costs were deferred or not incurred during certain periods, the overall budget seems adequate for the implementation period (see Table 4). In gross terms, no over-spending was reported by CASU on the budget subtotals. However, some budget lines presented in Table 5 have been over-spent and/or are deemed insufficient for successful implementation by the MTE team, unless adjustments are approved. It is noted that according to the Financial and Administrative Framework Agreement and the general conditions of the contract, there is some flexibility – for instance within a 15% movement of funds over budget lines.

72 Significant under-expenditures were observed on the Agribusiness Consultant, Adaptive Study, Mechanisation Case Study, publications (manuals and training materials), gender training of trainers and gender capacity building, as well as PACO operational costs. In view of the requests for training materials by LFs and FFs from the field, the funds remaining under publications need to be utilized to ensure that the beneficiaries have adequate and suitable training and reference materials. Implementation of gender activities also needs to be strengthened.
Table 4. Comments on budget components and adequacy of funds (based on full financial report dated May 2015 that was provided to the MTE team)

<table>
<thead>
<tr>
<th>Budget line</th>
<th>Adjusted amount (EUR)</th>
<th>Observations by the MTE team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human resources</td>
<td>1,973,382</td>
<td>By May 2015, 55% of the budget line had been spent. Taking into account the expenditures and hard commitments as of May 2015, and the remaining funds to be spent by June 2017, this main budget component seems sufficient to cover most of the planned costs in the original budget. There is, however, a need to readjust the allocations to individual budget lines based on the actual costs being incurred among all the budget lines. The re-allocation should also ensure that enough budget allocation is made to facilitate more technical support from the FAO SFS Sub-regional, Regional and HQ offices, as is expected by the EU.</td>
</tr>
<tr>
<td>Travel</td>
<td>45,792</td>
<td>The nature of the project demands a lot of travelling for training, M&amp;E and other activities. This budget component was under budgeted and needs readjustment; savings made from other budget lines should be considered for reallocation towards Travel.</td>
</tr>
<tr>
<td>Equipment and supplies</td>
<td>1,332,992</td>
<td>With the Mechanization strategy still to be implemented by CASU, and unit costs yet to be determined, it is not easy to assess the adequacy of funds under this component. However, based on the MTE team’s field observations and reports by the LFs and FFs during Focus Group Discussions (FGDs), there is great demand for rippers (mechanized CA, both animal and tractor powered) and sprayers to facilitate significant expansion of CA. This demand justifies revisions to this budget component, and equipment sharing mechanisms could be devised or refined to ensure good access by female LFs and FFs.</td>
</tr>
<tr>
<td>Local office</td>
<td>163,200</td>
<td>Although the budget for this line seems adequate, some sub-components are underfunded (e.g. the “Consumables” and “Other services FAO” lines were already overspent by May 2015). The budget line, therefore needs readjustment and reallocation among the components.</td>
</tr>
<tr>
<td>Other costs and services</td>
<td>922,995</td>
<td>Some components under this budget line are highly overspent, while others are grossly underspent. Considering that this budget line covers all trainings, visibility actions, evaluations, publication of materials (including manuals for training), baseline setting and adaptive research for the project, this budget line seems insufficient and needs readjustments among the budget lines. There are many topics identified during the MTE field visits where the LFs and FFs still require training/capacity building to enhance CA expansion. The costs for training are currently calculated only for the costs of participation, but exclude the costs of materials and this needs to be taken into consideration in calculating any new unit costs for training and dissemination. Similarly, visibility activities can be expanded to include more T-shirts and caps/head cloths, billboards, and Chitenges (wrapping cloths) for women.</td>
</tr>
<tr>
<td>Lead farmer inputs and other costs</td>
<td>5,807,801</td>
<td>Among the components for this budget line, the district operational costs show 33% total expenditure by May 2015. This figure suggests that the budget is adequate, yet all the districts the MTE team visited generally reported insufficient resources to fully implement the CASU activities. It is necessary to revise the figures for this budget line and re-distribute the remaining funds. More funds should be allocated to the districts and also take into consideration the increase in number of provinces. The MTE team also recommends that some funds be allocated to the SMS communication through and with LFs. Currently no budget allowance is given for FFs and if budget revisions result in any savings, some consideration could be made to facilitate FFs access to direct SMS messages, concurrently with LFs.</td>
</tr>
<tr>
<td>Eligible direct costs</td>
<td>10,200,370</td>
<td></td>
</tr>
<tr>
<td>Provision for contingency</td>
<td>45,792</td>
<td>This component is not reflected in the project document. These funds are a result of a mathematical error which had occurred in the project document and the resultant funds were placed here under contingency. The funds could contribute towards production and distribution of tailored training materials (e.g. flip charts, flyers).</td>
</tr>
<tr>
<td>Total direct eligible costs</td>
<td>10,246,162</td>
<td></td>
</tr>
<tr>
<td>Indirect/ administrative costs</td>
<td>717,231</td>
<td></td>
</tr>
<tr>
<td>Total eligible costs</td>
<td>10,963,393</td>
<td></td>
</tr>
<tr>
<td>Taxes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total accepted costs</td>
<td>10,963,393</td>
<td></td>
</tr>
</tbody>
</table>
Table 5: Budget components with over-expenditure (as observed by the MTE team from the latest financial report in May 2015)

<table>
<thead>
<tr>
<th>Budget line</th>
<th>Expenditure (%)</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.3. Baseline survey, including demographics, agronomic practices, gender, nutrition and income</td>
<td>306</td>
<td>Based on lessons learned from the FISRI project, CASU embarked on a detailed baseline to establish benchmarks and ensure attribution through the project. The costs were much higher than initially planned.</td>
</tr>
<tr>
<td>4.5 Other services FAO (telephone/fax, internet, electricity/ heating, maintenance)</td>
<td>229</td>
<td>With two years still remaining from the time when the last financial report was made, this line will be inadequate.</td>
</tr>
<tr>
<td>4.3 Consumables - office supplies</td>
<td>310</td>
<td>With two years still remaining this line will be inadequate.</td>
</tr>
<tr>
<td>3.1.1. Purchase of double cab 4x4 pickups</td>
<td>212</td>
<td>Through CASU, one Land Cruiser has been bought to date, but one more is still theoretically in the budget. Given the transport constraints observed by the MTE team during its field visits, it would be more appropriate in the opinion of both CASU and the MTE team to divert these funds to purchase more motorbikes for use in the field.</td>
</tr>
<tr>
<td>3.2.1. Electronic equipment (12 laptops, 6 desktop computers)</td>
<td>106</td>
<td>No plans for further purchase (although the districts requested additional supplies).</td>
</tr>
<tr>
<td>3.1.2. Purchase of motorbikes and helmets</td>
<td>97</td>
<td>70 motorbikes purchased through CASU. Considering the serious shortage of transport at field level, this budget line needs to be revised and the funds earmarked to purchase a Land Cruiser could be re-allocated to motorbikes.</td>
</tr>
<tr>
<td>5.7.7 M&amp;E training</td>
<td>227</td>
<td>The initial budget for this component was low, taking into account the level of monitoring being implemented for CASU. Reallocations are recommended to ensure quality data collection which can provide a basis for attribution of results.</td>
</tr>
<tr>
<td>3.2.2. GIS hardware and software</td>
<td>83</td>
<td>No plans for further purchase.</td>
</tr>
<tr>
<td>5.2.4. Inception and final workshops</td>
<td>75</td>
<td>Final workshops still to be held and the budget will need to be revised based on more accurate unit costs.</td>
</tr>
<tr>
<td>2.1. International travel (procurement missions, regional workshop, travel to Rome, headquarters and regional backstopping)</td>
<td>69</td>
<td>In view of the concerns from the EU regarding the need for more technical support to be provided from sub-regional, regional and HQ levels as appropriate, this line may need to be adjusted. The taskforce needs to be engaged when discussing this budget line.</td>
</tr>
<tr>
<td>1.1.1. Programme Coordinator, Zambia</td>
<td>80</td>
<td>This line includes hard commitments up to October 2016 based on the Contract. The budget in the project document is for P3 level, yet the Programme Coordinator holds a P4 position. However, since for most CASU staff the budgets were higher than actual costs, this balances out with the higher costs of the Programme Coordinator.</td>
</tr>
<tr>
<td>1.2.1. Expert agronomist backstopping the field activities</td>
<td>127</td>
<td>With two years still remaining this line needs to be revisited.</td>
</tr>
<tr>
<td>1.3.2 Per diems for local travel (FAO staff assigned to the Action)</td>
<td>113</td>
<td>The nature of the project demands a lot of travelling for training, M&amp;E, and other activities. This budget line is inadequate and redistribution of funds among the budget line components is required.</td>
</tr>
<tr>
<td>5.2.5. Environmental management (soil samples)</td>
<td>185</td>
<td>Only the baseline soil samples and analyses have been made to date. Subsequent sampling and analyses need to be covered; considering the current overspending, the frequency of sampling and budget need to be revised.</td>
</tr>
</tbody>
</table>

Following more than two years of implementation, during which lessons have been learned, CASU’s estimates on the actual unit costs of implementing different activities are more accurate. The MTE recommends major budget revisions to realign the remaining funds with prioritized activities for the remaining project implementation period. Refer to the section on Project Management for more details on the recommendations on reporting frequency.
3.3.3 Institutional arrangements including the government’s participation

74 Based on its assessments, the MTE team observes that the current institutional set-up, with close coordination via the MoA, is sound, and direct project coordination structures were effective.

75 At the start of the project, there was a broad Project Steering Committee (PSC), including the MAL, FAO, EU, National Authorising Office (NAO), Norwegian Embassy, CFU, the African Tillage Network, CARE, Golden Valley Agricultural Research Trust, and cooperating partners interested in CA in Zambia. It was planned that the PSC would meet every six months. The composition of the PSC has since changed, with it becoming more focused on the contracted parties – EU, FAO and MoA. The mandate of the PSC has also been narrowed to strategic issues. The PSC meets approximately twice per year (it will meet in February and June 2016).

76 In the contract, the project team is required to submit an annual report for consideration and approval by the PSC. The MTE team learned that initially the CASU team reported on a six monthly basis, but faced difficulties in defining the appropriate report content and also an excessive period of commenting on the report. These difficulties delayed approvals (of the report and subsequently of funds), and the project has now reverted to annual reports. The MTE team observed that this may be pragmatic, but has not supported good information sharing.

77 A Project Technical Committee has been established to deal with operational issues of compliance, reporting and payments. It consists of FAO, EU, MoA and NAO (Ministry of Finance). However, NAO is usually involved in contracts for private sector organizations, and is not necessarily needed for those signed with UN organizations. The EU Focal Point and FAO now meet on an approximately weekly basis regarding contractual issues, with the involvement of the MoA if technical discussion is needed. This arrangement has worked well.

78 **Government participation and commitment.** Government policy is very supportive of CA (as expressed by all levels of government staff and mentioned in the national policy), although there is no real instrument to apply CA, such as a strategy or action plan, or specific budget. The Memoranda of Agreement and Letters of Agreement (LoAs) for the provinces and districts indicate the government commitment to provide overall coordination and harmonization of CA work at each level.

79 Working with the government involves strict protocol. For instance, all LoAs have to be signed with the Permanent Secretary (PS) of the Ministry of Agriculture. This ensures that government requirements, protocol and quality control measures are met and observed. CASU negotiated with the MoA for a pragmatic approach to expedite project implementation once the LoAs are in place. This approach enables the project to work directly with both the NPCU and districts once the LoA is signed, while ensuring that the provinces are kept informed of the progress and milestones attained. This bypassing of some hierarchies in the day-to-day implementation of the project has caused some friction early on between different levels of the MoA and CASU, but has proved to be a faster and more efficient way to deliver the project activities within a tight timeframe.

80 A National Program Coordinating Unit (NPCU) within MoA supports CASU’s work in monitoring, training and coordination, including within the Ministry and in the field (including as part of the CASU evaluation support). All parties commented that this had been valuable to improving communication and information sharing.

81 **FAO participation and commitment.** CASU fits well within the FAO CPF (as noted in Chapter 2.6), and the project has been supported by the FAO Zambia country office in various ways – for instance, by providing office space and additional staff. In addition, some of the outputs of the project, such as the development of the e-voucher, have been disseminated as a lesson learned to FAO offices across the region.
Project Task Force. A project task force (PTF) is established for each FAO field project/programme. A PTF consists of representatives of FAO units in the areas of specialization covered by the project, who have an active role to play in project development and implementation. The PTF members constitute the right skill mix for the project, and are mandated with ensuring that the project is formulated and implemented in a coherent and consistent manner that complies with the Organization’s goals and policies, as well as with the provision of adequate levels of technical, operational and administrative support throughout the project cycle.

The FAO Project Taskforce was active at the handover from FISRI to CASU and during the Inception Period of CASU. There were several video meetings during the Inception Period. The regional M&E officer based in Harare was invited to Zambia by CASU to hold discussions with the EU and clarify some M&E issues. The officer also commented on the draft M&E strategy. However, since then there has been less involvement by the Taskforce. Reports and strategies have been sent by CASU to the Taskforce for approval, but in many cases, they have been sent for comment quite late, and most Taskforce members could not respond within the timeframe available. In some cases, they have not apparently been sent. For instance, the Gender Strategy has not been sent to the gender expert on the Taskforce for technical oversight. This defeats the purpose of the Task Force, which is normally the means by which the FAO can provide oversight and technical inputs on the major components of the project.

Coordination and commitment of different stakeholders via the Insaka/Indaba. The membership of the National CA Stakeholder Coordination Committee was the subject of considerable negotiation. At the time of CASU starting, two CA platforms were aiming to provide coordination on CA in Zambia: (i) the National Conservation Agriculture Taskforce (NCATF); and (ii) Conservation Agriculture Association (CAA). Through patient negotiations, the one Insaka has emerged, hosted by the MoA, and currently chaired by CFU.

CASU has made good progress towards achieving a consensus, particularly on the definitions and ways to measure CA. However, at the national taskforce level, this consensus is yet to be agreed by all partners. CFU and MAL met in December 2015 and are in the process of reviewing their CA databases to establish where the main differences are and how to develop tools that can be used to collect similar data. During the MTE team’s consultations with stakeholders, CFU indicated they are collecting the data using a standardized template, while MAL was still planning how to collect the data. Cooperating partners have shown good will and support for agriculture and CA in particular. The Insaka has also recognised that CASU is not starting from scratch, as there have been many activities in CA, including those by FISRI, Conservation Agriculture Scaling up for Increased Productivity (CASIP), Soil Conservation and Agroforestry (SCAFE), CFU, CARE and World Vision.

The expectation was that the Insaka would serve as a coordination and discussion body, and would avoid duplication of efforts or contradictions in methods of working on CA with farmers. However, the ROM mission noted that there were still some problems with complementarity (e.g. giving rewards or not). The MTE team also noted this in the field. In those camps where there has been longer term involvement of NGOs, for instance, the farmers appeared more reliant on hand-outs, and asked for study tours, and transport for their goods to market.

The full Insaka or National Taskforce has not met often (only once in 2015), and the results have been limited. However, the key members (CASU, CFU and MoA) are meeting on an ad hoc basis on specific issues. While the Insakas have been only intermittent (at national, provincial and district level) they have good potential for learning and sharing, harmonization, scaling out and policy influence. Some districts, such as Monze and Mpongwe, and some provinces, have held local level Insakas. Mpongwe is aiming for three monthly meetings and invited representatives from Natsave, the Office of Chiefs’ Affairs, the Animal Health Department, ZNFU, CFU, agro-dealers, the District Cooperative Union, the Department of Forestry and the Department of Agriculture. The Monze Insaka comprises MoA (Chair), traditional chiefs and agencies (CFU, NOCARD, Law and Development Association, World Vision, Land Alliance, Zambia National Farmers Union, and both CASU and non-CASU agro-dealers). The Insakas were very useful for sharing
Mid-term evaluation of the Conservation Agriculture Scaling-up (CASU) project

88 In general, the MTE team found that the direct project coordination structures were effective. Following an initial period of difficult communication, the regular meetings between CASU, the EU and the MoA appear to enable a reasonable flow of information. Having the institutional set-up within FAO while working with the MoA has been productive. Although the coordination has been narrowed considerably from the initial broad coalition, the MTE team considers this appropriate.

3.4 Assessment of the project’s contribution to results

3.4.1 Knowledge on CA among LFs and FFs

89 In all the camps visited, the LFs and FFs were able to articulate what CA means. They explained the three key principles, and went on to describe other good management practices associated with CA. This provided the team with the sense that the farmers, both LFs and FFs, were knowledgeable on what CA entails. This status partly reflects the effectiveness of the training being implemented through the project, although some LFs and FFs already had prior knowledge of CA (from FISRI and other sources) before joining CASU. Our assessment of the three core principles of CA in the field showed the following:

- Minimum soil disturbance
  - Minimum soil disturbance appeared to be the entry point to CA. However, the biggest impediment was weed growth, which is greater with CA minimum soil disturbance than with ploughing.
  - Each farmer (LFs and FFs) met by the MTE team was applying minimum tillage on at least part of their land (other than a handful of FFs who had just joined the group).
  - Ripping was more popularly practiced and said to save labour by as much as 50% in some instances.
  - Basins were used, but on smaller pieces of land compared to ripping, and reportedly with higher labour demands.
  - The MTE team did not observe direct planting in the field in the areas visited.

- Crop diversification through crop rotations and/or mixtures/intercropping
  - The area under legume production is increasing among LFs, partly due to the input packages.
  - FFs are also practicing rotations and/or mixed cropping, but on smaller areas as compared with the LFs.
  - While it is easier to use herbicides in crop rotation setups, crop mixtures could be impacted negatively by herbicide use when selective herbicides are applied (e.g. to control broadleaved weeds). This aspect could benefit from some socio-economic research to determine how herbicide use can influence cropping patterns, food/nutritional diversity, pride of women in providing greater variety of home-grown foods to their families, and other aspects at household level. One LF, for example, from Mwanjoke Camp in Sinazongwe, reported that she avoided such a challenge by growing her indigenous vegetables in plots where she does not use herbicides.

- Maintaining a permanent soil cover
  - The majority of CASU farmers reported retention of residues in the fields rather than burning as commonly practiced in the past.
  - Livestock grazing and termite damage to the residues are still a challenge to attaining adequate levels of soil cover.
  - The levels of soil cover indicated by LFs and FFs are variable, as this depends on how much crop residues are left by sowing time, reported to be 25-50% in most estimations
although it is quite subjective. Some districts (e.g. from Southern Province) have more livestock than others (e.g. in the Northern and Central Provinces). The extent of soil cover during planting is likely to be different under the two scenarios, and more pragmatic approaches to the theoretical concepts of residue retention are required for practical situations.

3.4.2 Outcomes of adoption/practice of CA based on the CASU data and findings from MTE field visits

The project monitoring system and the interviews and observations from the MTE field visits confirm that CASU is making good progress towards its objectives (more examples are provided in Annex 5). In most camps visited, farmers and extension staff reported increased yields of maize on land farmed under CA. For instance, in a group meeting of 55 farmers (30 LFs and 25 FFs) from various camps in Mpongwe, all reported that they had at least doubled their yields of maize; and 25 people in the meeting had tripled their yields. However, when effective rains are not received on time, as happened during the current season, the yields under CA can be lower than those under conventional production due to poor germination. In such cases, the conventional plots will only be planted when effective rains come and hence perform better. It is also noted that the CA production of maize by CASU farmers fell in the season 2014/15 to 1.77MT/ha (a long way from the target of 3.6 MT/ha). However, the overall maize production by small and medium producers in that season was also low - reported to be 1.68 by the MoA together with the Central Statistics Office (dropping from 2.26 MT/ha the season earlier). Hence, this still means that the CA maize yields of CASU farmers were still higher. According to the DACO's office in Mpongwe, the district averages are much better for CA than for conventional farming. The average production in the district is presented in the table below:

<table>
<thead>
<tr>
<th>Crop</th>
<th>Conventional production</th>
<th>CA production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
<td>30-40 x 50 kg bags/ha</td>
<td>100-130 x 50 kg bags/ha</td>
</tr>
<tr>
<td>Soya</td>
<td>1.5 ton/ha</td>
<td>3 ton/ha</td>
</tr>
<tr>
<td>Groundnuts</td>
<td>10 x 50 kg unshelled bags/lima</td>
<td>50 kg unshelled bags/lima</td>
</tr>
</tbody>
</table>

In the current season, weather conditions during planting and the early growing season in districts such as Monze, Choma, Pemba and Sinazongwe were very poor. CA yields are likely to be lower as rains started very late (as late as February to early March). On the contrary, the farmers acknowledged the comparative advantage of CA during moderate dry spells, when CA was said to outperform conventional plots. Those farmers who have been practicing for many years indicated better qualitative characteristics of soils under CA as compared with conventional methods. This observation is also supported to some extent by findings from the soils baseline in which soil test showed higher organic matter in CA soils. It can be anticipated that soil quality is likely to improve further over years of CA use. Therefore, it can be anticipated that the later monitoring data will demonstrate the benefits in this respect as compared with conventional farming. There was also a problem batch of soya seed having poor germination in Southern Province.

Many farmers also reported increased land under CA, but this may vary year to year, depending on anticipated rainfall. The MTE team observes that data related to this aspect of scaling up is mixed, while the project data claims that at the national level, 65.5% of CASU farmers’ land is under CA in June 2015 (baseline 31%), the district and provincial staff meeting with CASU in February 2016 indicated that the area under CA has not increased significantly. The LFs appear to have larger areas under CA. For instance, an average of 2 ha per LF was cultivated under CA in one camp in Kalomo, while the FFs had on average 1 ha under CA. However, there is a large variation in land size even between camps. In another camp of Kalomo, for instance, the LFs averaged 1.04 ha, while in Kazungula LFs had on average 0.92 ha and FFs had 0.4 ha under CA.

Nutrition and food security have improved for CA farming households. The CASU LF and FF women who participated in the FGDs were asked to indicate how many times they cooked legumes for their families. They reported that various legumes formed part of their breakfast, lunch, supper or snack. The majority said they cooked meals with legumes at least three times per week. By comparison, in Kachindu Camp (control site), four out of nine reported cooking legumes only once per week, and five out of nine only once to twice per
month. Most of the CASU LFs and FFs reported that they had enough food to last for the consumption season compared to the time before they started practicing CA.

94 Farmers (both LFs and FFs) reported some improvements in incomes, enabling them to build new houses, purchase goats and vehicles, pay children’s school fees, and even pay for their own college education. However, most farmers reported that the increase in production would not result in increased incomes unless links to markets improved. Otherwise, they are reliant on “briefcase traders” who pay low prices at the farm gate. The only persons likely to suffer negative consequences from CASU are these traders, as the project aims to achieve better prices for the farmers by eliminating the middlemen. To help facilitate diversity on output markets, CASU is also mobilising and encouraging private sector off-takers to offer prices that enable break-even point by the CASU farmers based on standard and documented gross margin analyses.

95 In sum, the MTE team found that those LFs and FFs who have experienced the benefits of CA vowed not to revert to conventional. “No CA, no food, no life for my family”, was a quote by one LF from Kaumba Camp in Monze district.

96 The discussion below presents the main findings of results against each Key Result Area, while Annex 5 provides a list of results against the project indicators (incorporating the baseline data and the monitoring data from the project, though some of the data needs further analysis and validation.

**Key Result Area 1: CA area expanded and consolidated**

97 Key Result Area (KRA) 1 focusses on promoting and stimulating animal draught power and mechanized CA to expand the area under CA. It also focuses on increasing the number of farmers practicing minimized soil disturbance and at least one other CA principle. Under this KRA, CA advocacy, capital financing for mechanization, agroforestry practices and adaptive research will also be promoted.

**Assessments and recommendations towards Result 1 indicators**

98 Indicator 1: Number of adaptive research recommendations incorporated in CA messages to farmers (Baseline = 0; Year 2 Target = 2; Project Target = 6).

99 Although a list of potential Adaptive Research Topics have been identified through stakeholder consultations, so far no research activities have been initiated. The CASU team mentioned that adaptive research is unlikely to happen during the remaining period, reportedly due to timing limitations in view of the long-term nature of most agronomic research. The MTE team proposes that there are some topics that can still be implemented during the remaining period to strengthen the evidence-basis for CASU. For example, CASU could still support some on-farm research by Masters-level students, for example, on topics such as attribution of the CA principles and practices to yield changes under CA, or some socio-economic studies among the LFs and FFs. The main argument for this is that in the current logframe indicators, yield is captured at crop/farm level and not disaggregated at plot level. This may attract criticism on the actual contribution of CA to the observed yield increases among the project farmers, particularly since most farmers still practice both CA and conventional production.

100 Indicator 2: Total project area (%) cultivated under CA increased by 100% (ADP & Mechanised) (Baseline = 32%; Year 2 Target = 50%).

101 The season one post-harvest data from the project MIS shows that the area under CA on CASU farmers’ land has approximately doubled from the baseline status. Findings from interviews with farmers suggested that CA area was gradually expanding, although seasonal variability exists partly due to climatic factors such as prolonged droughts. Additionally, when faced with high weed pressures, some farmers reported that, in the absence of chemical weeding, they apply mechanical weeding in their CA plots rather than losing yields.
The LFs and FFs interviewed indicated that they had been increasing the area under CA, particularly where rippers were available. CA areas of up to 7 ha per farmer were recorded with ripping, while the highest recorded land area under basins was 1 ha. Most farmers who reported using planting basins complained of high labour requirements in preparing the planting holes, and they are unlikely to expand further the basin method area beyond the current levels per household. Mechanization (through animal and tractor-powered implements) is therefore crucial to facilitate large expansion. An assessment of the existing mechanization levels and the demand for mechanization by target farmers has been undertaken by CASU to assess the demands for CA mechanization and identify possible private sector partners. A mechanization strategy is now being developed for implementation starting during the 2016/2017 season and this is expected to boost the area under minimum soil disturbance.

Table 6: Indicative ranges of farm and CA hectares reported by some LFs & FFs in Monze District during MTE visits

<table>
<thead>
<tr>
<th>Camp</th>
<th>Farmer category</th>
<th>Number interviewed</th>
<th>Range of areas (ha) reported by the farmers under different categories</th>
<th>Total farm size</th>
<th>Basins</th>
<th>Ripped</th>
<th>Legumes</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaumba</td>
<td>LFs</td>
<td>9</td>
<td>2 to 7</td>
<td>0 to 0.25</td>
<td>0.5 to 6.5</td>
<td>0.12 to 1.5</td>
<td>All were ripping; only 3 had basins in addition</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FFs</td>
<td>13</td>
<td>1 to 5</td>
<td>0 to 1</td>
<td>0.5 to 5</td>
<td>0 to 2</td>
<td>12 were ripping and only 5 had basins (alone or in combination with ripping)</td>
<td></td>
</tr>
<tr>
<td>Manungu</td>
<td>LFs</td>
<td>13</td>
<td>3 to 14</td>
<td>0</td>
<td>2 to 6</td>
<td>0.5 to 4</td>
<td>All were ripping</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FFs</td>
<td>13</td>
<td>1.25 to 6</td>
<td>0</td>
<td>0 to 5</td>
<td>0 to 2.5</td>
<td>12 were ripping only 6 had basins (alone or in combination with ripping)</td>
<td></td>
</tr>
</tbody>
</table>

The lack of adequate legume seed prevented most FFs from expanding the area under legume production. This will present technical challenges in rotations during subsequent seasons, since technically they would be expected to rotate the cereals and plant them on the smaller portions previously occupied by the legumes, a practice that could be viewed as negatively impacting staple food production. The MTE team applauds the progress with mechanization, even though this should have happened much earlier during the project to facilitate greater expansion.

During the fieldwork, the MTE team heard of many reports where the LFs shared legume seed with the FFS, which they had received through the input vouchers. Although this meant less legume seed for the LFs, it enabled the FFs to follow each step of the LFs’ instructions. The MTE team found that even though the legume seed quantities received by the FFs were small, such arrangements helped to build a stronger relationship and trust between the LFs and FFs.

The MTE team also noted that climatic factors have impacted the expansion of CA. During seasons when the rainfall season is delayed, or with extended periods of drought, some of the LFs and FFs reported that conventional plots might perform better, as the planting will be timed with the effective rains, contrary to CA where a false start to the rainfall season can result in poor germination.

Without the use of herbicides, and in the absence of other suitable techniques, weed control hampers CA expansion. The team heard of several cases where LFs and FFs reverted to conventional methods of weed control (e.g. using a cultivator) halfway through the season, as they strove to protect their yields. In the long term, as plant residues increase and potentially suppress some weeds, weed problems might lessen, but the transition phase requires some pragmatic solutions to weed control in order to keep the farmers motivated and interested in practicing CA.
Overall, if the mechanization strategy is operationalized, and supported by legume seed production and suitable weed control techniques, CASU can achieve the project’s targets for this indicator (provided another El Nino phenomenon or other extreme weather events do not disrupt the activities).

Indicator 3: Number of technical and business management trainings conducted (Baseline = 0; Year 2 target = 31; Project target = 93).

The CASU Team reported during the self-evaluation session of the MTE that 50 meetings had been held by June 2015. The project target is likely to be achieved during the remaining period. It was clear from the field visits that many farmers struggled with the basic calculation of land sizes and yields, and therefore could definitely benefit from more business training. The MTE team observed that some of the LFs visited (e.g. in Manungu B of Monze) had record books where they kept track of their farm operations. This is a good step towards farming as a business, as the farmers can easily tell the levels of inputs and outputs from their farms and judge their performance and make adjustments.

With regard to the project logframe, the MTE team recommends that this indicator, and all others related to capacity building, fits better under and should be moved to Key Result Area 2.

Indicator 4: Number of farmers participating in these trainings (Baseline = 0; Year 2 target = 17,000; Project target = 21,000)

A total of 148 LF farmers had participated by June 2015, according to the MIS, though the figure requires verification by CASU (project staff considered it may have been wrongly entered as only the number of CEOs trained). A step-by-step training of the LFs on Farming as a Business is required to strengthen the farmers’ grasp of the business concept, and their ability to pass it on to the FFs. The value of the input packages the LFs are receiving through CASU ought to be factored into their bookkeeping activities, and considered as a potential cost when the input package facility ends. Some of the LFs who participated in FGDs possessed farm record books, and the records enable the LFs to improve evidence-based training to their FFs, and reporting to CASU. Good record keeping needs be strengthened among CASU farmers as one of the prerequisites for a business approach to farming. Some LFs and FFs met in the field reported having received business training; therefore, this number is probably higher. The effectiveness of such trainings in improving the business skills and enhancing business dealings among the LFs will be difficult to understand unless specifically assessed.

Indicator 5: Number of farmers accessing financing from relevant institutions for agro-entrepreneurial projects (Baseline = 0; from 200 by Year 2 to 600 by end of project)

A training of 75 trainers (core team) on financial literacy and business skills is reported to have been completed through a partnership with WFP and the Savings Banks Foundation for International Cooperation (SBFIC). Based on the interviews held with LFs and FFs, it seems that financial access remains a big challenge. All but a few LFs interviewed during the evaluation team’s visits reported difficulties with accessing finances for their farm activities. Each FF interviewed reported the same challenge. This indicator is likely to be difficult to fulfill during the project period. However, many of the farmers the MTE team interviewed were members of cooperatives and could access some inputs through their cooperatives (though often in insufficient quantities and with unreliable delivery.

Some cooperatives run small credit schemes at local level, but the amounts are usually not adequate to invest in large farms run by individual farmers. The MTE team learned of cases (in Monze and Petauke) where farmers of large farms pooled their resources together, including Farmer Input Support Programme (FISP) vouchers received, to purchase large equipment such as sprayers or pumps for the group to share (reported in Monze and Petauke). In Petauke, for example, Profit Plus also runs some small savings and credit groups that facilitate farmer access to some inputs. One agro-dealer in Monze said that he lends agricultural inputs to his trusted (long-term) customers who also sell their produce to him. He is then paid after harvest.
Access to finance by CASU LFs and FFs

Credit sources for Zambian smallholder farmers are very few or non-existent. In all the camps visited, the majority of LFs and FFs reported that they had no sources of financing. In Pemba, however, due to the collaboration with WFP, 500 CASU farmers welcomed the Vision Fund scheme that is providing them with loans for agricultural inputs/activities, and the weather index insurance scheme in which farmers provide labour in exchange for insurance premiums. There are some growing concerns, however, with the additional charges that have been introduced in the Vision Fund Scheme, as reported by the LFs and the CEO. Financially stronger LFs and FFs can get some loans for agricultural equipment from NWK. The NWK office in Monze, for example, described the mechanization strategy that is meant to cater for different categories of farmers. CASU can further explore this avenue with NWK and provide information to the LFs and FFs through the MoA district core teams. The MTE team heard that the NatSave loan facility for tractors has been taken up by very few farmers due to the unaffordable conditions associated with the loan facility.

Indicator 6: Number of farmers adopting at least two principles of CA practices (Baseline = 31 360; Year 2 target = 240 000; Project target = 336 000)

The revised baseline status for this indicator, as reported in the CASU M&E strategy, was much higher (202 406 farmers) as compared with the project document level of 31 360. By May 2015 a total of 19 503 (92.87%) LFs and 207 700 (65.71%) FFs were reported to have been registered. In total, 41% of all registered farmers were reported to be females. In the remaining season, CASU hopes to register more LFs and FFs, and if things go as planned, they are likely to reach the targets based on minimum soil disturbance and residue retention. The entry point to CA for all LFs and FFs is minimum soil disturbance. Residue retention is also practiced, though there are some bottlenecks. Although access to legume seed by LFs has improved through the input vouchers, the MTE team finds that for most FFs, legume planting to the appropriate technical levels (e.g. allowing proper rotations with cereals) remains a big challenge without support for legume seed.

On this indicator, the team finds that the use of the word adoption gives the sense that the farmers are already convinced of CA and have fully embraced it. However, during the project support period some farmers may still be testing or trying out CA. A good measure of the adoption would be beyond the project lifetime to determine how many farmers will continue to voluntarily apply at least two CA principles without the influence of the project. The wording for this indicator should perhaps be modified to refer to ‘practice’ rather than ‘adoption’. This is justified in view of the contrasting findings through different studies (e.g. IAPRI).

Indicator 7: Percentage of CA farmers with at least 20 Faidherbia albida (F. albida) and any other agro-forestry trees growing on their plots (Baseline = 6%; Year 2 target = 10%; Project target = 30% of CA farmers)

F. albida seed (enough to raise 25 seedlings per LF) was distributed by CASU to 1 500 LFs from 15 districts to raise 150 000 seedlings. 12.596 MT of pigeon pea seed distributed to 6 297 LFs in 16 districts conducive to its use (in agro-ecological zones II A&B and III). Training of CEOs, district staff and LFs on propagation, planting and care of agroforestry species was also provided, and routine monitoring of survival of seedlings was introduced to keep track of the numbers. Seedling losses due to water shortage during early establishment were reported by some LFs during the FGDs, since there was a prolonged dry period after transplanting. Livestock damage to the seedlings was also mentioned.

According to the self-evaluation figures from CASU, the project has surpassed the 30% target, as already they have reached 36% of the farmers. Meaningful use and effectiveness of the F. albida trees during the project is unlikely to be experienced in the time remaining (though the pigeon pea could produce results), but the trees will certainly be beneficial in the years to come. If more agroforestry activities are planned in the remaining period, the MTE recommends that a wider choice of agroforestry trees, including faster growing species, should be made available to the farmers, together with good demonstrations (e.g. visits to existing sites) on the performance and suitability of the species to enable informed choices. In addition, more training and orientation is required among the FFs on agroforestry for
them to appreciate the importance and potential benefits of agroforestry. The MTE team recommends that this indicator be moved to KRA4 below on Land Management, as it is better suited there.

122 Indicator 8: CA Insaka established and functional (Baseline = where an Insaka exists, but is not fully functional; Year 2 targets = TORs developed and finalized; Project target = a fully functional Insaka)

123 As part of the advocacy and national coordination of CA in Zambia, an Insaka was formally established and is currently chaired by CFU with MoA as the secretariat. The TORs were drafted and endorsed by 67 stakeholders during a consultative meeting held in July 2015. While MAL is building and strengthening its CA capacity, the MTE team observed that it is appropriate for CFU to chair the Insaka, as for decades, CFU has been a major player driving CA in the country. This also ensures CFU’s continuing participation. However, for long-term sustainability and for greater mainstreaming of CA into national policies, programmes, plans and ownership, as well as reaching all suitable districts and camps, it would be most appropriate for MoA (which has the national mandate on agriculture development) to be the future chair of the Insaka. Further discussion on the Insakas can be found under the chapter on institutional arrangements (3.3.3).

124 Indicator 9: CA manual and extension materials developed and in use (Baseline = materials not developed; Year 2 target = materials drafted; Project target = CA training aids in use)

125 A draft Lead Farmer Flip Chart was developed and translated to seven languages, and distributed to 49 LFs in June 2015 for trialling. Review sessions were planned for early April 2016, at which point the chart should be reviewed, reprinted and distributed more widely. According to the CASU team, an Extension Officer Guide was developed and distributed to all extension staff. The MTE team was unable to verify if everyone had received it, as there were some complaints regarding lack of information on training. In the field, most LFs and FFs made reference to the CFU CA training materials. Some of the LFs did not seem to realize that the posters that they received through CASU were for training purposes. There is need for further explanation to the LFs regarding use of the materials. The MTE team also recommends that CASU, at different levels, strengthens or facilitates the production and distribution of more training materials, as the LFs and FFs said they required more and appropriate (well-illustrated and with a visual appeal) reference materials for their daily use. The existence of other training and awareness creation tools such as short videos, which are compatible with the Bluetooth application, can also be used by CASU for rapid distribution of information to and among LFs and FFs. The MTE recommends that this indicator be moved to KRA 2 to prevent information overlap and duplication.

126 A Communication and Visibility Strategy was developed in line with the agricultural calendar. A CA messaging calendar and plan were also developed and shared with some 68,000 farmers through the CASU SMS platform. The MTE observed that there were some practical limitations with the SMS system in cases where the LFs’ personal phones were not functional, or phone numbers have changed. In the field, the MTE team found that not all LFs were accessing the messages. Additionally, CASU produced 65 radio and three television programmes, two editions of a CASU newsletter, and three feature stories on nutrition, CA and postharvest management in print media. These were used for advocacy and awareness raising. CASU, through the NAIS communications contact person for the project, could try to understand the reach by these advocacy materials (e.g. a listener’s analysis could be done jointly with the national TV stations and local or community radio stations).

127 Indicator 10: Number of policy recommendations made to government to further consolidate CA adoption (Baseline = 0; Year 2 target = 2; Project target = 6)

128 No policy recommendations were developed after Year 2. The MTE team proposes that from the processes, activities, and data collected through the M&E system, CASU can identify some critical areas for developing key recommendations. The MTE team’s assessments reveal that there are several positive intended and unintended outcomes of the project. One is the e-voucher system, which could already be used to strengthen
discussions and policy dialogues related to CA and on general agricultural production and development. Another example is that the baseline findings on soil quality show that CA improves certain attributes that promote long-term sustainability as compared with conventional production. Combining the above information with adaptive research studies can strengthen the evidence base for the policy recommendations from CASU.

**Key Result Area 2: Conservation Agriculture skills improved**

Based on the data collected through FGDs with LFs and FFs, it is clear that the project is helping to build the capacity of MoA staff, LFs and to a lesser extent FFs. As reported under Result 1, the knowledge exhibited by MoA staff, LFs and FFs on CA is significant enough to conclude that skills are improving. The indicators of applying CA as explained in KRA 1 above suggests that farmers possess the necessary skills in CA. What is less clear is the issue of attribution, as there have been numerous CA-oriented projects, and the ME findings should be viewed in this context.

Trainings for MoA staff have mainly been conducted in M&E for focal persons; some trainings for CEOs were delayed or cancelled due to funding delays. CEOs and most other MoA staff indicated that they have been providing extension on CA for some time, and this has helped them to improve their skills. Some staff (mainly at the district level) indicated that they have not been trained in anything. This was partly due to staff changes and recruitments or transfers. The MTE team observed that the understanding of CA principles is good at both district and CEO level.

**Findings against indicators in the existing logframe**

**Indicator 1: Functional CA GIS by the start of Year 2.**

The methodology for digitization of camp maps was developed but not yet operationalized. The plan is to implement the methodology to develop the shape files for camp maps. A small team has been marking camp boundaries with GPS to digitise maps. Fieldwork is finished in the Eastern and Southern Provinces, but they still need to clean the data and receive the endorsement of the MoA; Central Province is halfway completed; other provinces have yet to start. There is a plan to add key agricultural attributes eventually. This is not very relevant to the achievement of the result area of ‘Conservation Agriculture skills improved’, but more of a tool that could be useful later in monitoring, and assistance for the MoA.

CASU has also created their own GIS module and added this to the Farmer Input Voucher Management System (FIVMS). This is an online system to provide harmonised and centralised information management on the programme activities. The system comprises a beneficiary farmer register; voucher platform; payment and tracking module; monitoring module for training, sentinel and routine monitoring activities; and a user management module. CASU planned to begin around the time of the MTE, to add geo-referencing of farmers and information from monitoring, such as numbers of farmers, gender, land preparation methods and crops. This information could then be used in the implementation of the mechanization strategy. The MTE team observed that if fully functional, the system provides a very useful database that will improve efficiency in monitoring. The MTE team, however, felt that due to the little time remaining before the conclusion of the CASU project, this system may not become useful during this phase of implementation. It could, however, be of use to other projects and as a potential resource for MoA.

**Indicator 2: Number of staff trained (not clearly specified in the indicator, but understood by CASU to refer to GIS training) (Baseline = 0; Year 2 target = 300; Project target = 820).**

12 persons have been trained to do geo-referencing of farmers, and they are currently working to digitise all camp boundaries on the maps. This is beneficial for the project and will be used in the mechanisation activity, in order to identify specific farmers. As noted above, this indicator is not very relevant to the achievement of the result area, and is very activity-based.
136 Indicator 3: Number of trainees in CA (disaggregated by gender) at least: 21 000 CA Lead Farmers, 315 000 Participating Farmers, 820 MAL extension staff; Beneficiary Farmers: Baseline = 211 018, Year 2 target = 250 000, project target = 336 000 from MIS; MAL Extension staff: Baseline = N/A, Year 2 target = 300, project target = 820

This is the main element of the result area. Trainings for all the LFs (currently 20 277) have been conducted mainly in CA practices (e.g. land preparation and weed control). After the 2014/2015 season, there were post-harvest trainings including the marketing aspects, and new training have been planned for the coming months. Some LFs also indicated that they received trainings from CFU; there were examples of LFs in Masumba 1 in Mambwe district, in Shimano camp and in Choonga camp of Kalomo, who belong to both CASU and CFU and are able to attend trainings at each. This was also true for some FFs, which sometimes made it difficult to differentiate between CASU and CFU in terms of where they accessed the training.

138 Each of the LFs should have recruited on average at least 15 FFs and provided space for learning through demonstrations (however, CASU reports there are currently only 207 593 active FFs; therefore only approximately 10 FFs have been recruited on average by each LF). Discussions held in the field indicated that most LFs treated the figure of 15 as a maximum, given the limitations of follow-up visits to farms, though they invite anyone to attend trainings. In Mpongwe, in a meeting of various camps, the largest group was 21 FFs, and the smallest was eight FFs.

139 The quality of training by LFs at FF level requires monitoring by the CEO and the district to ensure effectiveness. Some LFs who did not access inputs through the e-voucher (for instance, in cases with malfunctions or problems with issuing) did not provide any trainings to their FFs, although this was rare. If LFs can only provide trainings using the free inputs, this raises concerns around the sustainability of these trainings beyond the project life span. The FFs indicated that LFs were playing a critical role in reaching out to households to carry out follow-up training and checks of FF’s fields. When visiting households, they speak with all members present to ensure the message reaches all family members. LFs expressed concern about the lack of transport to effectively conduct these visits, and appealed to the project to speed up the procurement of bicycles as promised.

140 Indicator 4: Number of agro-dealers trained (Baseline = 0, Year 2 target = 50, project target = 100)

141 Agro-dealers are expected not only to supply inputs to LFs but also to contribute to building the capacity of farmers more especially in areas such as herbicide use. Most of the agro-dealers did not remember receiving formal training on CA and herbicide use (other than via ZEMA) or what their role should be in the project. However, they acknowledged having been trained in the use of the point of sale (POS) machine and in issuing inputs (according to CASU staff, 64 were trained). Most agro-dealers indicated that they have benefited significantly from the interactions with the project and the farmers. They were able to pass on knowledge in herbicide use to farmers at the point of collection. They did express a wish to have CA training and materials that they could hand out to farmers from their shops (both CASU and non-CASU farmers).

142 Indicator 5: Harmonised CA extension message and delivery guidelines and quality assurance standards developed by year 2 of the project and used by all CA practitioners.

143 Until now, there has been no standardised document on CA. There are quite a good number of CA actors at field level and at national level. Notable ones include CFU, Community Markets for Conservation (COMACO), MoA, World Vision, Concern Worldwide. This variety of organizations may imply that there are different channels of communication and the potential for varying messages on CA. During interviews, most districts indicated that they have made efforts to find common grounds with actors in CA, and that there are no major variations.
The MTE noted that in some cases there is a duplication of trainings because of inadequate joint planning and coordination at camp level. This was mainly the result of some organizations not involving the CEOs, who ideally would play the coordination role at camp level.

CASU has developed a CA manual (discussed under Result 1) that was tested in the field at district level. It was planned that the manual would be discussed in a technical meeting in April 2016 with the key actors: NRDC, Zambia Agriculture Research Institute, MoA, FAO, CFU and University of Zambia. CASU will recruit an independent consultant and MoA is expected to endorse the final product (a fusion of CASU and CFU materials), with both higher-level technical material and sections focused on farmers. Regarding the development of a tertiary education curriculum, CASU has no mandate to do so, but will work with the appropriate tertiary stakeholders (e.g. NRDC).

**Key Result Area 3: CA Farmer Input and Output Supply Chain Improved**

The project’s focus under this result is to develop the supply chain to enhance farmers’ access to inputs, and to facilitate the supply of produce to better markets. Under this result, LFs are targeted as beneficiaries of the e-vouchers, enabling them to access inputs as an incentive and a tool to provide extension services to their follower farmers. The rationale for this result as outlined in the project document is that linking CA to markets and private sector development will ensure the timely availability of business-related services and that market linkages are an important facility in relation to the adoption of legumes in crop rotation.

Under this KRA, the MTE team finds that the e-voucher system developed under CASU was a notable achievement. The introduction of legumes as part of the e-voucher package is another dimension that has been identified as a success. One of the challenges for legume adoption has been the lack of market and the fact that legumes are mainly grown using recycled seed, which does not encourage dealers to stock legumes. The MTE observed that the move to deliberately include legumes in the package provides a basis for engaging with farmers on nutrition, incomes and crop rotation. Further, the MTE team noted from its field visits that farmers are beginning to appreciate the need for diversification.

On market issues, the MTE found that the project has not created a significant number of functional linkages for farmers (i.e. only a small proportion of the farmers have benefited to date), although at the time of the field visits by the MTE team, some LFs were receiving SMS messages informing them that WFP and NWK would be purchasing legumes during the 2015/2016 harvest season. In the 2015/16 season, 33 forward contracts were signed with cooperatives (49 cooperatives were assessed for viability and 22 had signed contracts for this season by the time of the MTE visit – now increased to 33). It is not yet possible to say how sustainable these market linkages will be.

One linkage that is working and sets a good example of how the private sector can participate in the market value chain is the WFP P4P, where local traders are contracted to purchase legumes from farmers and supply to WFP for their school feeding programmes. CASU has facilitated trade meetings with potential buyers, and last season negotiated a better floor price for farmers than the going rate. The MTE team is of the view that CASU must focus on strengthening these linkages and make them even more independent of outside support. As alternative options, in some of the districts visited, such as Petauke and Mambwe, Profit Plus has introduced an approach of identifying local agro-dealers as traders.

The MTE also finds that CASU needs to focus more on building the capacity of farmers in entrepreneurship and business management, enabling them to identify and forge linkages with potential buyers and suppliers. With increased knowledge in business, farmers could adopt good marketing practices such as market research, bulking and bargaining. In Mzumwa camp for example, which is a non-CASU camp in Petauke district, farmers have become more proactive by organizing themselves into marketing groups, and they are able to create linkages with buyers. This approach has helped to address the challenge of access to markets, due to the long distance to Petauke town of about 78 kilometres.
Mid-term evaluation of the Conservation Agriculture Scaling-up (CASU) project

Electronic voucher development. CASU has spent a lot of time and money to develop a new system for distribution of inputs. In the first agricultural season the system was still being developed, so paper vouchers were used. However, the e-voucher system has many advantages over the scratch card, with regard to control of who receives the input, what input is redeemed, and what that might mean for agricultural production for the season. CASU has shared experiences in developing the system with the government (to assist with the FISP e-voucher development) and more widely in the region.

The MTE team learned that the e-voucher system has made progress towards demonstrating a more transparent, accountable and speedy process of input supply. Both agro-dealers and LFs described the system as a great improvement compared to previous systems used. For instance, farmers with whom the MTE team spoke during the field visits cited efficiency (in terms of transaction speed) and transparency as key attributes of the system. On the part of agro-dealers, major positives include less documentation, opportunity to forge relationships with farmers and increased sales. One agro-dealer in Kaoma district said:

*This system has made things easier for us; it’s quick, clear and simple to transact. It is also good for me as an agro-dealer because I have seen an opportunity to strengthen my role as a trader. Working through these camps and collaborating with CEOs, I intend to facilitate the establishment of bulking points in various camps so that I can also buy soya beans. It is good because we are part of the project as agro-dealers to contribute to the success of CASU by ensuring we play our role in the input supply value chain diligently.*

Many other dealers in all the districts visited echoed similar words.

The MTE also concluded that the e-voucher system is a very positive activity. In many other systems, there are risks of fraud and ghost farmers, in addition to usage difficulties. The CASU e-voucher system has addressed most of the challenges related to input distribution. As the government is in the process of adopting the e-voucher system in its FISP programme, the e-voucher provides an opportunity to contribute towards improving efficiency in the management of FISP with regard to input distribution. Annex 8 gives a comparison of the main e-voucher systems.

In addition to the positive features of the CASU e-voucher system, agro-dealers and farmers noted some areas that could be improved: there were cases of mismatching farmer data details, delays in payments to agro-dealers and untimely engagement of suppliers, which eventually resulted in delayed supply of inputs to agro-dealers. The agro-dealers complained that the delay was caused partly by suppliers who did not deliver on time and in some cases supplied inadequate quantities (such as in Kaoma and Kazungula districts). Farmers also complained of difficulties in using the toll free line to resolve problems, as it was either constantly engaged or, in some cases, the language barrier was a hindrance to communicating with the CASU project office. The MTE team were informed by the CASU team that a two-way SMS platform and SMS-based PIN reset function were available, but farmers whom the MTE team met did not seem to know of this.

Farmers sometimes feel that the e-voucher system is not transparent enough, since they can only see the list of redeemable items at the point of sale machine. “Only the agro-dealer can see the amount”, said some LFs. The possible inputs were explained initially, but many farmers forget. These areas need to be addressed to improve perceptions by some LFs on full transparency of the e-vouchers, while ensuring that the vouchers remain resistant to possible misuse.

The MTE proposes that the system could be improved by addressing the issues raised by end users. The MTE acknowledges that although most of these problems are expected of a complicated process that is just being introduced, they have the potential to dampen the momentum if left unchecked.

Indicator 1: Number of districts and farmers using swipe cards (Baseline = 0; Year 2 target = 31 districts, 21 000 farmers; project target = 31 districts, 21 000 farmers)
All 31 districts are reported to have used swipe cards as part of the e-voucher system. In each district, the selected agro-dealers were supplied with the point of sale machine for swiping. In terms of farmers, out of 19,517 eligible LFs who received e-vouchers, 17,647 successfully redeemed them. This process was verified using the CASU verification systems, and represented a success rate of 90.4% (CASU Year 2 Progress report). Minor issues exist; for example, some cards were not collected in Kaoma where the DACO’s office was still keeping cards for 48 LFs at the time of the MTE. 1,870 LFs did not redeem and there seems to be no explanations in the project reports. Farmers and out-growers that the MTE team met with reported the following reasons:

- Mismatch in details, or new LFs, and the card details were never rectified in time;
- Shortage of inputs with the agro-dealer; agro-dealers indicate that suppliers in some instances delivered less and in some cases never at all. One example was in Kaoma district where they gave Kamano district’s supplies;
- If the bearer of the e-voucher became ill, in some areas they did not accept someone else to collect on their behalf.

Indicator 2: Type and quantity of inputs traded through agro-dealers

It has proved difficult for this indicator to set a baseline or to establish a monitoring system. While CASU appears to have collected some data from agro-dealers on their overall sales at the start, it is not recorded in the monitoring system and there is no plan to revisit and collect monitoring data. In addition, the MTE team found that it would be very difficult to attribute any changes in sales to CASU (apart from the input packages for the LFs). This is beyond the focus of the project and should not be pursued.

Indicator 3: Number of farmers with access to input and output markets (Baseline = 99%; Year 2 target = 100%; project target = 100%)

This is a weak indicator. Most farmers have access to input markets in the local town; however, they often do not visit the agro-dealers, as they do not have the cash to purchase inputs. Whilst the 17,647 LFs remain as the number of farmers who accessed inputs under CASU (via the input packages), there were no reports to show how many CASU farmers besides the LFs purchased inputs (though according to CASU the post-harvest and monitoring tool has collected some data from the 2015/16 season from FFs). The MTE proposes that collecting data beyond the registered e-voucher beneficiaries (regarding who else is accessing inputs) could be helpful in understanding the extent to which farmers are beginning to become more self-reliant by purchasing their own inputs. Some agro-dealers indicated that farmers were buying inputs in addition to the e-voucher package. They further suggested that through the input redeeming process farmers could build a relationship with the agro-dealer and continue to purchase inputs in the future.

There is also no record of the number of farmers who had access to output markets, apart from those selling via CASU-supported contracts (such as via WFP links to the school feeding programme). The CASU data on sales is from June 2015 only, when few farmers had begun to sell to WFP. During interviews with farmers, it was clear that access to markets is more at camp level than at individual level. In other words, if a buyer was present in one camp then everyone in that camp accessed the market for his or her output. However, farmers are at the mercy of ‘briefcase’ buyers who may offer low prices in more remote communities (though CASU has run some SMS market price announcements to farmers on prices offered by various buyers, in order to give farmers some indication of alternatives). Farmers in the south also had some access to buyers from Botswana or Zimbabwe. In the Copperbelt and Luapula, there is a good market on the Congo border.

The FAO/WFP partnership agreement under the CASU and P4P programmes, respectively, includes a plan to establish 10 main aggregation centres and to link 46 agro-dealers to purchase legumes (especially beans and cowpeas) from farmers under the CASU project. Assessments of the effectiveness of this partnership require data on:

- The names of private companies;
• How the 10 aggregation centres are operating, and how farmers view their effectiveness; and
• If the agro-dealers purchased the legumes, how much income was produced for farmers?

166 This data was not yet available from CASU and was beyond the reach of the MTE team given the time and resource constraints.

167 One positive step taken under CASU was the linkages forged between cooperatives and traders under the cooperation with WFP. Cooperatives have the organizational ability to work as bulkers or to ensure that farmers bring their product at the right time for pick up. In the 2014/15 season, forward contracts were established with cooperatives and this has continued in the current season.

168 Indicator 4: Functional production and marketing data system developed (Baseline = N/A; project target = data system developed).

169 The project has a production data system as part of the M&E system, and there is an arrangement to collect data at the end of each cropping season. The MTE was provided with production data for the 2014/2015 season including the baseline (though it took some time to get the analysis correct). The analysis of production data (yields) has already been presented under Result 1; however, although the system to collect data is very clear, the MTE was told at district level that M&E officers could not articulate how they make use of the production data collected from the camps. Understanding how this data is used locally would show what is not working, and should form the basis for the districts to develop strategies to improve implementation. The data may also show which camps and districts are working best, and build cross-learning events from there.

170 For marketing data, the project has developed an SMS-based marketing monitoring module in the FIVMS, and a tracking system is in place through the FIVMS. The MTE did not find any data on marketing of the various crops at the time of this evaluation, and therefore concluded that it has not been used much to date. The MTE found that although the systems are in place for data collection and analysis, there is a need to invest more in building capacity at data collection level. The MTE also learned that CEOs are the prime data collectors, and they acknowledged that they need more training and resources in order to improve.

171 Indicator 5: Number of trade facilitation meetings held (Baseline = N/A; Year 2 target = 31; project target = 93).

172 CASU has facilitated trade meetings with potential buyers, and last season negotiated a better floor price for farmers than the going rate. The MTE observed that these meetings between small traders/agro-dealers and larger contractors were organized by CASU (for instance, 25 were held in 2015; while in the field, the MTE team heard from other agro-dealers that they had attended meetings in 2016), and they have facilitated the entry of WFP. WFP purchases considerable quantities of legumes for their school feeding program. Other organizations were also involved, including in Mpongwe where the Sustainable Agriculture Project (which is part of the WFP partnership) had held meetings with CASU farmers. The Project provides inputs for legumes which it later purchases. It does not appear that the activity to organize information exchange fairs between traders, agro-processors and farmers has taken place (although it was included in the LoAs). The above are critical areas of strengthening market linkages by creating platforms for information exchange among producers and buyers. It is therefore recommended that in 2016 the project put more emphasis on building and nurturing linkages with input suppliers, agro-dealers and farmers to create lasting relationships.

173 Indicator 6: Number of agro-dealers who also become crop traders (Baseline = NA; Year 2 target = 50; project target = 100).

174 According to the CASU MIS, 48 had become crop traders by January 2016. Based on the interviews with agro-dealers, a few indicated that this partnership has increased
opportunities for them as traders, including the buying of crops. In Kaoma, Garden Variety indicated that they were interested to continue buying soya beans by organizing farmers in bulking groups. In addition, NWK, which had always bought crops from farmers as part of their out-grower arrangement, indicated that the CASU project has created opportunities for them to access more produce, particularly legumes. In Kalomo, two out of three of the agro-dealers planned to become traders for the first time this season, and in Monze three of the four dealers were planning to buy this season (though they had done so earlier also). In an interim progress report for the period December 2014 to May 2015, the CASU team reported that 46 agro-dealers intended to purchase legumes (especially beans and cowpeas) from farmers under the CASU project; however these were not formal linkages that could be attributed to CASU.

Key Result Area 4 (KRA4): Land Management Improved

175 This KRA focusses on improving the capacity for land management, monitoring soil health and intensifying training of extension staff and LFs in the use of herbicides. The MTE team noted that the general use of the term “improving capacity for land management” was confusing and leads to overlaps with KRA2 (Conservation Agriculture Skills improved). This was because minimum soil disturbance practices, crop rotations and residue retention, which comprise the three CA principles, are also types of land management. Since KRA1 already assesses CA area expansion, the MTE team proposes that it is not necessary to repeat CA components under KRA4, which complicates reporting and duplicates the numbers being reported. The activities should focus on other land management practices that complement CA and enhance sustainability. Examples include the use of field contours for soil and water conservation, agroforestry stabilizing soils and contours with vetiver grass, and establishing live fences, as mentioned in the Project Document (though these activities were not very evident during the field visits of the MTE team). Other key practices could include gully control and fireguard making (to reduce chances of stray fires burning retained residues).

176 The MTE team assessment of the indicators currently provided in the M&E Strategy for KRA4 is summarised below.

177 Indicator 1: CEC, SOM, water retention and removal of hard-pan (project target: increased CEC, SOM, water retention, and removal of hard pan)

178 Baseline assessments of soil health were undertaken by the University of Zambia for CASU in 2015. Water samples were also collected from the sites and analysed for quality attributes and potential contamination, but not yet analysed for herbicide concentrations at the time of the MTE, due to the inability of the lab to carry out the assessment. The baseline findings on soils showed the potential comparative advantage of CA in improving soil organic matter content, increasing soil nitrogen, reducing soil bulk density and improving water holding capacity and infiltration. During the FGDs, the CASU farmers alluded to the qualitative improvements in soil quality under CA as compared with conventional methods. For instance, many farmers in Mpongwe and Kapiri Mposhi commented that the impact of nitrogen fixing legumes is very good. As a result, they can plant groundnuts, beans or soya first and then maize, without needing fertilizer. Soil quality improvements through CA have been widely reported in scientific publications (e.g. Thiefelder et al. 2015).

179 In view of the increased use of herbicides to manage weed pressures under CA and the associated variety of herbicides coming into the Zambia market from international sources, the MTE team recommends that CASU should support assessments of herbicide contamination in the water samples. Similarly, the MTE team also recommends that the soil residual effects of the herbicides and other environmental impacts be assessed, including impacts on human health.

180 Indicator 2: Number of beneficiaries and agro-dealers trained in the safe use of herbicides. Specific indicators from the M&E strategy:

- Number of LFs trained in the safe use of herbicides (Baseline = 0; Year 2 target = 17 000; project target = 21 000);
Mid-term evaluation of the Conservation Agriculture Scaling-up (CASU) project

181 CASU’s criteria to guide herbicide choices is to check that: (i) they have been approved by the Zambia Environmental Management Agency (ZEMA) within the Zambian pesticides framework; and (ii) active ingredients do not contravene international standards (the Rotterdam Convention). FAO HQ undertakes these evaluations. The criteria were applied in identifying input suppliers for the LF input package through vouchers. The available CASU records showed that by June 2015, 17,688 (90%) LF had established demo plots where the use of herbicides was demonstrated to their FFs. All LFs whom the MTE team met during field visits reported that they were using herbicides, that they had been trained on the topic, and that they had trained their FFs on the safe use of herbicides. CASU data from June 2015 shows that 120,534 farmers (inclusive of LFs and FFs) were trained in the safe use of herbicides; however, the CASU team also noted that this data may be double reported and should be verified. During the focus group discussions, few FFs reported using herbicides, mainly due to affordability challenges. CASU has also trained 351 MAL extension staff on integrated weed management. 276 agro-dealers were provided with orientation on the safe handling of herbicides and their storage. In turn, the agro-dealers were expected to provide information to the LF farmers as they purchased inputs through vouchers.

By the project’s end, CASU is likely to achieve the numbers of beneficiaries trained under the different categories, though full effectiveness may remain a challenge. Despite the training received to date by the LFs, the topic of herbicide use/application (e.g. calibration, mixtures, and compatibility of different chemicals) was repeatedly highlighted as requiring further training among the LFs and FFs interviewed, particularly the new LFs. As the types of herbicides available on the market continue to change, it is important that the MoA extension staff receive refresher courses on their use/application (e.g. calibration, mixtures and compatibility) so they can provide backstopping to the LFs. The agro-dealers can increasingly play an important part in consolidating feedback from the farmers on the use and impacts of herbicides. Currently they do not collect any feedback from the farmers. The MTE further noted that as CA practice expands and the associated use of herbicides increases, it becomes more imperative to assess the positive and negative impacts of the herbicides at household and community levels. Therefore, it is suggested that Trade-off Analyses, both short and long-term, be conducted as part of the adaptive research to appropriately inform decisions and policies, and foster sustainable food production and food systems.

183 Indicator 3: Number of extension staff and farmers trained in land management options.

184 Specific indicators:

- Number of LFs trained in land management options (Baseline = 0; Year 2 target = 17,000; project target = 21,000);
- Number of FFs trained in land management options (Baseline = 0; Year 2 target = 255,000; project target = 315,000);
- Number of MAL staff trained in land management options (Baseline = 0; Year 2 target = 300; project target = 820).

According to the project records, CASU has so far trained 298,007 farmers (however, the CASU team commented that this figure may include double counting by field staff), and 320 MoA staff on land preparation (gender not specified). Additionally, 351 MoA extension staff have also been trained on integrated weed management. Subsequently, the extension staff trained LFs on land preparation. The LFs who were interviewed by the MTE team clearly explained the different land preparation techniques under CA, such as ripping (mostly with animal draught power, and in some cases the LFs hired tractor ripping services) and preparing planting basins. Similarly, the FFs whom the MTE team interviewed could also describe the CA land preparation methods that the LFs had trained them on, but ripping...
was hindered by lack or limited availability of the rippers. As mentioned earlier, there were some overlapping problems with this indicator as it refers to several core principles of CA, including minimum soil disturbance, which should be part of the capacity building under KRA2. Land preparation is also not included on the list of land management practices in the description of this indicator in the M&E strategy. The MTE team recommends that those training activities that are part of the CA principles (e.g., land preparation) should be reported under Key Result Area 2, with the primary focus of CA capacity building.

186 Indicator 4: Percentage hectarage increase in the application of land management techniques.

187 Specific indicators from the M&E strategy: Average percentage hectarage per farmer using at least one land management technique (percent increase: Baseline = 0.38 ha; Year 2 target = 0.5 ha; project target = 1.0 ha).

188 According to CASU reports and data, the average area per farmer under at least one land management technique was 0.8 ha by June 2015. This exceeds the Year 2 target of at least 0.5 ha per farmer, and the project target is likely to be achieved provided no external factors occur during the remaining agricultural season of the project. As these land areas are likely to be captured under KRA 1, the MTE team recommends that this indicator be modified to exclude those land management practices that directly contribute to the three CA principles found in KRA 1.

189 Result 5 – Gender Mainstreamed - is assessed in Chapter 3.5.1.

3.5 Assessment of cross-cutting issues and sustainability

3.5.1 Gender and equity dimensions

190 Gender equality is central to FAO’s mandate to achieve food security for all. In addition to being essential for improving food and nutrition security, gender equality is also a human right. FAO’s gender equality goal, presented in FAO’s Policy on Gender Equality, is “to achieve equality between women and men in sustainable agricultural production and rural development for the elimination of hunger and poverty”. This also reflects the priorities of the Zambian government and the EU’s action plan. Work in this area is necessary to address the serious inequalities in Zambia, and achieve the project’s purpose and overall objective.

191 The Year 1 annual report had a good analysis of the difficulties faced by women in agriculture, and identifies some means for CASU to address them. CASU also prepared a Gender Equality and Women’s Empowerment Strategy, and a Gender Policy Brief (October 2015). The Strategy notes that a key disadvantage of CA for women is the increased need for labour intensive work, including weeding. In addition, women do not usually have access to rippers or other equipment. The Strategy proposed some steps to take in order to make CASU more gender sensitive. However, the Strategy was only finalised in October 2015 after a long incubation, and still has not been endorsed or disseminated.

192 Despite this lack of official strategic guidance, CASU and field staff have focused attention on gender and are actively pursuing gender equality goals in the implementation of CASU. However, it is unclear how much is normal MoA activity, and how much is additional. CASU has not yet held gender training for the MoA staff, but the MoA staff have been sensitised and have provided gender training in some districts (as well as training in human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS) gender-based violence). CASU farmers noted that they had discussed gender issues in meetings with CEOs, and that other NGOs and actors had provided training, such as the police and health centres. There has been a clear message that men and women can do all tasks interchangeably (as reported by farmers). All farmers interviewed reported that attitudes have changed over the last few years. People understand that farming is a business and they will not make good progress unless everyone helps with all tasks. As a result, women have been trained to do ripping, men are working with weeding and digging basins, and some are even assisting with domestic tasks.
The project purpose specified in the original logframe states the following aim: “To increase crop productivity and production for target farmers, of which at least 40 percent will be women”. This was linked to a clear gender indicator that at least 40% of LFs and FFs should be women. This quota has been met overall, with an average of 40% of LFs being women and 50% of FFs – and it was surpassed in many districts. The district with the best gender balance was Mpongwe (Copperbelt), where 53% of LFs and 51% of FFs are women. In Mafinga district (Muchinga Province), only 31% of LFs are women, yet 51% of FFs are women. The MTE team met some of the female LFs and FFs of Mpongwe, and were struck by their confidence in espousing CA messages.

Setting the quota of at least 40% female participants under CASU was important. It reflects the importance of women as the main agricultural labourers, and gives an excellent means to improve their access to information and inputs, and to build their status in the community (rather than assuming that the information will trickle down). It was noted in the field visit to Pemba that in at least one camp, Canchomba, CFU reportedly had only two female farmer coordinators out of 30 (less than 7%). Their representative was unsure as to the gender breakdown of participating farmers, but estimated there were many fewer women.

However, the MTE team also found that the monitoring system is not automatically producing disaggregated results on yields, land under CA, training participants, or other metrics. The data collected by CASU is disaggregated, and therefore it should be possible to analyse whether the results vary for men and women farmers, including how many male or female farmers have received training. This might also permit more targeted solutions to problems that arise. However, the CASU reports do not show this.

<table>
<thead>
<tr>
<th>Province</th>
<th>Farmer type</th>
<th>Male</th>
<th>Female</th>
<th>% females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central</td>
<td>LF</td>
<td>2 706</td>
<td>1 785</td>
<td>39.7</td>
</tr>
<tr>
<td></td>
<td>FF</td>
<td>19 622</td>
<td>18 887</td>
<td>49.0</td>
</tr>
<tr>
<td>Copperbelt</td>
<td>LF</td>
<td>342</td>
<td>384</td>
<td>52.9</td>
</tr>
<tr>
<td></td>
<td>FF</td>
<td>3 314</td>
<td>3 397</td>
<td>50.6</td>
</tr>
<tr>
<td>Eastern</td>
<td>LF</td>
<td>2 900</td>
<td>2 072</td>
<td>41.7</td>
</tr>
<tr>
<td></td>
<td>FF</td>
<td>27 653</td>
<td>30 044</td>
<td>52.1</td>
</tr>
<tr>
<td>Luapula</td>
<td>LF</td>
<td>840</td>
<td>529</td>
<td>38.6</td>
</tr>
<tr>
<td></td>
<td>FF</td>
<td>7 901</td>
<td>7 035</td>
<td>47.1</td>
</tr>
<tr>
<td>Lusaka</td>
<td>LF</td>
<td>622</td>
<td>528</td>
<td>45.9</td>
</tr>
<tr>
<td></td>
<td>FF</td>
<td>8 071</td>
<td>7 457</td>
<td>48.0</td>
</tr>
<tr>
<td>Muchinga</td>
<td>LF</td>
<td>575</td>
<td>287</td>
<td>33.3</td>
</tr>
<tr>
<td></td>
<td>FF</td>
<td>3 750</td>
<td>3 736</td>
<td>49.9</td>
</tr>
<tr>
<td>North Western</td>
<td>LF</td>
<td>223</td>
<td>139</td>
<td>38.4</td>
</tr>
<tr>
<td></td>
<td>FF</td>
<td>1 905</td>
<td>1 819</td>
<td>48.8</td>
</tr>
<tr>
<td>Southern</td>
<td>LF</td>
<td>3 230</td>
<td>1 983</td>
<td>38.0</td>
</tr>
<tr>
<td></td>
<td>FF</td>
<td>27 704</td>
<td>26 540</td>
<td>48.9</td>
</tr>
<tr>
<td>Western</td>
<td>LF</td>
<td>681</td>
<td>451</td>
<td>39.8</td>
</tr>
<tr>
<td></td>
<td>FF</td>
<td>4 344</td>
<td>4 414</td>
<td>50.4</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>116 383</td>
<td>111 487</td>
<td>48.9</td>
</tr>
</tbody>
</table>

The MTE noted that CASU’s women LFs had greatly increased in confidence as a result of learning new skills and taking on their training responsibilities. The use of rippers and herbicides means less labour for the LFs, and the MTE team found that a portion of the saved time (reported to be as high as 50%) was used to implement trainings or to monitor their FFs. Female LFs reported that their husbands and families were proud of them for being selected and having the knowledge, and that they are happy they are training others (though it is unclear whether this role is simply extra work for the women, or whether they genuinely get more help at home with domestic chores). In some camps, it was noted that they were more likely to select other female FFs (see the example from field meetings in Table 8). Male and female FFs said that it made no difference what the gender of the LF was,
and that participation of women in training has improved due to men relaxing traditional control to allow their wives to attend meetings and trainings (though not everywhere (e.g. Petauke, Kakwiya)). Some female LFs said that they prefer to invite both husbands and wives of FFs to trainings, as they like to build knowledge in the whole household, and they achieve a better result (and more respect) from the men if their wives are there. When LFs (both men and women) visit FFs farms, they speak with the whole family, including children, and ensure that everyone understands the message and can explain their progress in the absence of the LF. The whole household approach is an important element of CASU, and in contrast to FISRI.

Table 8: FFs by gender among some men and women LFs interviewed during FGDs in Pemba and Monze Districts

<table>
<thead>
<tr>
<th>District</th>
<th>Camp</th>
<th>Gender of LFs</th>
<th>Initial no. of FFs</th>
<th>Existing no. of FFs</th>
<th>Existing female FFs</th>
<th>Proportion of females (%)</th>
<th>Retention levels of FFs (%)</th>
<th>Reasons for FF drop-outs reported by the LFs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pemba</td>
<td>Canchomba</td>
<td>M 14</td>
<td>14</td>
<td>7</td>
<td>7</td>
<td>50</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>F 15</td>
<td>15</td>
<td>12</td>
<td>3</td>
<td>80</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>M 15</td>
<td>15</td>
<td>7</td>
<td>8</td>
<td>47</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>M 15</td>
<td>15</td>
<td>10</td>
<td>5</td>
<td>67</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>F 15</td>
<td>15</td>
<td>10</td>
<td>5</td>
<td>67</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>F 15</td>
<td>15</td>
<td>6</td>
<td>9</td>
<td>40</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>M 15</td>
<td>15</td>
<td>6</td>
<td>9</td>
<td>40</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>M 14</td>
<td>14</td>
<td>5</td>
<td>9</td>
<td>36</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mean 14.8</td>
<td>14.8</td>
<td>7.9</td>
<td>6.9</td>
<td>53</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Monze</td>
<td>Manungu B</td>
<td>F 15</td>
<td>15</td>
<td>2</td>
<td>13</td>
<td>13</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>F 23</td>
<td>23</td>
<td>18</td>
<td>5</td>
<td>78</td>
<td>100</td>
<td>They are now LFs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M 15</td>
<td>15</td>
<td>12</td>
<td>3</td>
<td>80</td>
<td>100</td>
<td>Too many initially</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M 15</td>
<td>15</td>
<td>5</td>
<td>10</td>
<td>33</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>M 19</td>
<td>19</td>
<td>8</td>
<td>9</td>
<td>42</td>
<td>89</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>M 23</td>
<td>23</td>
<td>10</td>
<td>5</td>
<td>43</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>M 21</td>
<td>21</td>
<td>8</td>
<td>5</td>
<td>38</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>M 15</td>
<td>15</td>
<td>8</td>
<td>5</td>
<td>53</td>
<td>87</td>
<td>2 deaths, 1 now a LF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M 15</td>
<td>15</td>
<td>5</td>
<td>10</td>
<td>33</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>F 15</td>
<td>15</td>
<td>10</td>
<td>3</td>
<td>67</td>
<td>87</td>
<td>2 are now LFs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F 16</td>
<td>16</td>
<td>11</td>
<td>4</td>
<td>69</td>
<td>94</td>
<td>Found a formal job</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F 15</td>
<td>15</td>
<td>5</td>
<td>10</td>
<td>33</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mean 17.3</td>
<td>15.3</td>
<td>8.5</td>
<td>6.8</td>
<td>49</td>
<td>90</td>
<td></td>
</tr>
</tbody>
</table>

During interviews, many district and extension staff said that women farmers followed advice more carefully than men, and achieved better results (although baseline data and some studies indicate that fewer women used crop rotation (perhaps due to lack of land, seed or information), and that female-headed households are less likely to be full adopters of CA). However, they also are less likely to own rippers or sprayers, or have access to their own land (being dependent on their husbands or parents for land to practice CA on). Usually women work on the household land, not their own piece. Women appear more likely to dig basins on their own land than men, but this needs to be verified through a statistically sound procedure. In some areas, there is a clear gendered difference in crops – for example, groundnuts are considered women’s business and men focus on cotton in Eastern Province.
CASU has a dedicated Gender Focal Person to spearhead gender activities, and she has many good ideas. However, it is unclear how much of a mandate she has to put these into action within the CASU team. Although the CASU team has considered the specific needs of women (e.g. when planning the bicycles, they selected designs with a low bar; and herbicide sprays were provided with lower volume packs (which are therefore lighter), more attention is needed to ensure that training materials promote gender. For instance, the draft CA training manual and the flipcharts usually reflect gender stereotypes regarding farming roles, such as men doing ripping or driving tractors, and this might unnecessarily perpetuate such perceptions.

There are some specific risks for women in using herbicides, particularly when they may unknowingly be pregnant. While CASU has distributed gloves and masks as part of the inputs for LFs, farmers do not usually use other protective clothing such as overalls or boots. SMSs should be sent to warn of the risks, and further training on safe herbicide use is definitely needed.

Legumes promoted by CASU are a particularly important dietary supplement for persons living with HIV and AIDS. While there has not been much specific attention given to HIV and AIDS in CASU, this support for improvements in nutrition and food security is an unintended positive outcome of the project.

### 3.5.2 Environmental protection and climate change adaptation – perceptions from the CASU LFs and FFs

Farmers discussed how they have seen trees disappear from their landscapes and the need to practice agroforestry to mitigate deforestation. Although *F. albida* seed has been distributed by CASU to some districts and pigeon pea to others, some farmers highlighted the need to diversify the types of trees they grow as a risk management strategy. Some LF or FF fields, and many other fields the MTE team saw when travelling to the sites, contained *F. albida* trees from natural regeneration which the farmers have conserved over time for their perceived multiple benefits. Insecure land tenure arrangements (e.g. in Petauke), however, influence the willingness of farmers to invest in activities with long-term connotations, such as tree planting.

The MTE team proposes that agroforestry species whose products have a good market would stand a better chance of being taken up by the farmers. For example, pigeon pea seemed less preferred in Kazungula as farmers were uncertain about the market potential. Linkages with potential markets, or strengthening awareness on the nutritional and other benefits of the pigeon pea could help to improve acceptance. The MTE team noted the existence of some active agroforestry programmes and initiatives. In Petauke for example, COMACO has been widely distributing *F. albida* and *Gliricidia* seed, and important contributions from past soil conservation and agroforestry-related programmes were also reported by the farmers (e.g. the SIDA-funded project SCAFE, land management and CA).

LFs and FFs highlighted the importance of CA in food security during poor rainfall seasons (but not prolonged droughts) and attributed this to the ability of CA to harvest and conserve more water compared to conventional farming. They also noted that under severe climatic conditions, (e.g. severe delays to the onset of rains) CA may fail and could be outperformed by conventional farming. In such cases, CA plots would need to be replanted when the rains eventually come. In poorly drained soils, some farmers also noted that crops can suffer (become chlorotic/yellowing) with the impacts of excessive rains. Water logging in planting basins has been observed and reported in literature (e.g. in Malawi and Zimbabwe).

Stimulated partly by the El Niño impacts of the current season, which resulted in up to three months delay in the onset of rains, the following question was raised by farmers (e.g. in Manungu B Camp of Monze): How can CASU support them by providing weather forecasts to align their planting under CA with effective rains? The MTE team proposes the below actions that could be provided by CASU through collaboration with the national meteorological department.
• Downscaling of regular meteorological weather forecasts into messages that are better understood by the CASU farmers in their local settings. The messages can be shared through the SMS and other platforms. Support is needed in passing on the information from the monthly weather forecasting bulletins of the government to farmers. This could include providing actionable advice to the farmers on how to adapt in situations of late or excessive rains. For instance, if there is a warning on late rains or flooding, change the message to the farmers even if it means forming strategic bunds in the field, or opening up the basins if necessary (although this is not CA, it may save the crop).

• Passing on weather forecast information to agribusinesses and advising them to stock seed appropriately (e.g. early, medium or late maturing varieties). This, however, requires sufficient lead-time on the weather forecasts in order for suppliers and agro-dealers to incorporate this information into their planning. The MTE team also acknowledged although that the current weather forecasts tend to provide total season rainfall projections, they do not show distribution, which would be more critical for decision-making on farming.

• Facilitating the CASU farmers to purchase innovative agricultural insurance for risk management. In Pemba, WFP and partners such as Development Aid from People to People (DAPP) are piloting a Weather Index Insurance in which CASU farmers work for insurance premiums in the same concept as the ‘Food for Work’ or ‘Cash for Work’ which is part of the R4 programme. This could be scaled up among CASU farmers in other camps or districts in the future, through other initiatives that are willing to use similar approaches to the WFP-DAPP approach.

• On soil fertility management, the MTE team noted that the first batch of vouchers distributed during the 2014/2015 season contained liquid lime as one of the redeemable inputs. Although the second batch (issued during the current season) did not list lime, it was unclear whether pH correction had already been completed. The MTE team also noted that fertilizer application by CASU farmers is generally not based on any soil analyses recommendations. In line with a question raised by one agro-dealer in Monze, the MTE team also questioned if group soil analysis could be one of the services included as an input option on the LF vouchers – to measure pH so that farmers know whether to lime or not, and base their fertilizer application on better informed decisions. Such an approach could help to limit potential leaching into underground water in cases of over-application.

3.5.3 Capacity development

The LF and FF model is working well, and it is particularly helpful that peer trainers are present and living in the camp. The system uses the concept of the Farmer Field School, as noted in the project document, and in some of the training materials of CASU. A number of observations are pertinent. First, apart from the field day event which brings together men and women FFs (along with the LF and extension staff) to be part of the learning process, there has been relatively little investment in directly strengthening learning at FF level. Much of the work is left to the LF and this varies depending on each person’s interest and commitment, and ability to facilitate and share knowledge with others. In almost every district visited by the provincial and district core teams, the BEOs and CEOs indicated that they had not been able to effectively follow-up beyond trainings of LFs. They cited inadequate funds as a contributing reason, though another factor was the way the extension approach was interpreted. This falls short of what is provided for in the project document under M&E, where it was acknowledged that introducing CA to farmers would include challenges such as mind-set change; the need for constant monitoring of activities for trainers and trainees; and extent of adoption of technology.

Pros and cons of using inputs as an incentive to LFs. The project document clearly outlines the rationale for using the e-voucher for LFs to access inputs as an incentive for them to support their FFs. It is assumed that the inputs will be used to provide a learning platform for FFs, and at the same time the LFs will benefit from the proceeds of the plots. In practice this has worked well; LFs have been encouraged to establish demos and in most cases have expanded beyond the demo sizes. However, as also noted by CASU staff, it is an indication that there are other incentives also beyond the inputs, as there is significant willingness and commitment to expand beyond the demo. The inputs alone are not sufficient to cover an enlarged plot size. The MTE team focused on this as a critical element of learning, adoption and sustainability, and received the below responses from LFs, district staff and FFs regarding the advantages and disadvantages of using this approach.
The alternative to using the direct extension staff-to-farmer method would have been more costly and probably failed to reach all the FFs that the CASU project has reached thus far. Although the inputs served as training tools for the LFs, in a practical sense they also serve as a recognition of the commitment and efforts made by the LFs. To some extent, the inputs compensate them for the opportunity cost of using their time in this way. There are also some hidden benefits of the LF inputs approach that cannot be achieved through direct extension by extension staff. For example, improvements in social organizational skills, networking, exchange of germplasm (some LFs shared the legume seed with their FFs), and building self-confidence among women and men LFs.

Field days – process versus result. The use of field days as a platform for learning is a progressive idea and reaches out to as many farmers as possible. Both LFs and FFs in every district and camp visited agreed that field days have been a useful tool in disseminating information on CA (and serves as a tool to reach non-CASU farmers). However, in practice this can be constrained by inadequate funding or support from the CEO. In Mambwe for example, only two field days have been held, due to inadequate funding. This means that out of 28 LFs and their respective FFs, only two LFs were selected for field days. Similarly, each LF is asked to identify only two to three FFs (out of 15-20 FFs) to accompany the LF during the organized field day. Of course, in some camps it was explained that LFs can organise events for their FFs in addition to the two ‘official’ field days, but then the plot needs to be approved by CASU on behalf of the group, but do not pass on the inputs earmarked for the FFs. This could have been part of the reason why the FF retention levels per LF reported by the LFs during the interviews (e.g. in Mwananjoke Camp of Sinazongwe) were low (as low as 29%). Clear messages need to be provided to the FFs to manage this expectation and build up trust.

The MTE team recommends that the rationale should be explained again to all LFs. This is especially so in view of the bicycles, which are planned for distribution this year and could create tension among the LFs.

208 Field days – process versus result. The use of field days as a platform for learning is a progressive idea and reaches out to as many farmers as possible. Both LFs and FFs in every district and camp visited agreed that field days have been a useful tool in disseminating information on CA (and serves as a tool to reach non-CASU farmers). However, in practice this can be constrained by inadequate funding or support from the CEO. In Mambwe for example, only two field days have been held, due to inadequate funding. This means that out of 28 LFs and their respective FFs, only two LFs were selected for field days. Similarly, each LF is asked to identify only two to three FFs (out of 15-20 FFs) to accompany the LF during the organized field day. Of course, in some camps it was explained that LFs can organise events for their FFs in addition to the two ‘official’ field days, but then the plot needs to be approved by CASU to hold a field day. These points expose the following gaps in terms of learning at FF level:

- The fact that not all FFs have an opportunity to attend the field day deprives farmers of the valuable lessons that are useful for skill and knowledge improvement.
- The lessons taught at field days seem restricted to what has worked or not worked in the past. This is confirmed by the process of approving the fields that can hold field days based on performance. In reflective learning, both positive and negative results are essential for transformative learning. If for example, the LF planted late due to delayed onset of rains and ultimately the crop is affected negatively, it will be important for farmers to witness how late planting can affect crop performance. The MTE team proposes that whilst the emphasis should be on exposing farmers to well performing learning plots, LFs must also have discussions or side clinics with their FFs to share experiences on what did not work for, and reflect on why it did not work.

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The LFs are encouraged to practice CA, at least on a demo plot (including the three principles).</td>
<td>• The sustainability aspect was questioned, as some of the LFs who did not receive inputs did not practice CA using their own inputs.</td>
</tr>
<tr>
<td>• There is a platform for knowledge learning and sharing at local level for FFs.</td>
<td>• The MTE team encountered several LFs who have been playing the same role for some time, even in past projects such as FISRI; however, they don’t seem to be graduating or even increasing their CA plot sizes, particularly when using planting basins.</td>
</tr>
<tr>
<td>• It helps to establish a Farmer Field School where a package of technologies are demonstrated over time.</td>
<td>• Some FFs consider the absence of inputs for them as a disincentive, and drop out of the programme.</td>
</tr>
<tr>
<td>• There is commitment by the district to monitor performance of the supported demos.</td>
<td>• The MTE team encountered several LFs who have been sharing the inputs with their FFs (e.g. musangu seedlings and cowpea seeds).</td>
</tr>
<tr>
<td>• Some LFs and FFs use these demos as a stepping-stone and are able to grow from there.</td>
<td>• It allows for dissemination of information on CA to all farmers (both CASU and non-CASU) and is good for scaling up.</td>
</tr>
<tr>
<td>• CASU is encouraging movement from demo to whole farm application.</td>
<td>• The MTE team encountered several LFs who have been sharing the inputs with their FFs (e.g. musangu seedlings and cowpea seeds).</td>
</tr>
<tr>
<td>• The MTE team encountered several LFs who were sharing the inputs with their FFs (e.g. musangu seedlings and cowpea seeds).</td>
<td>• It allows for dissemination of information on CA to all farmers (both CASU and non-CASU) and is good for scaling up.</td>
</tr>
<tr>
<td>• It allows for dissemination of information on CA to all farmers (both CASU and non-CASU) and is good for scaling up.</td>
<td>• The lessons taught at field days seem restricted to what has worked or not worked in the past. This is confirmed by the process of approving the fields that can hold field days based on performance. In reflective learning, both positive and negative results are essential for transformative learning. If for example, the LF planted late due to delayed onset of rains and ultimately the crop is affected negatively, it will be important for farmers to witness how late planting can affect crop performance. The MTE team proposes that whilst the emphasis should be on exposing farmers to well performing learning plots, LFs must also have discussions or side clinics with their FFs to share experiences on what did not work for, and reflect on why it did not work.</td>
</tr>
<tr>
<td>• The input packages help to compensate and reward the LFs for the time and effort they spend (opportunity cost) in training and monitoring their FFs. CFU uses a similar approach for compensating their LFs.</td>
<td>• The MTE team encountered several LFs who have been sharing the inputs with their FFs (e.g. musangu seedlings and cowpea seeds).</td>
</tr>
<tr>
<td>• The input packages help to compensate and reward the LFs for the time and effort they spend (opportunity cost) in training and monitoring their FFs. CFU uses a similar approach for compensating their LFs.</td>
<td>• It allows for dissemination of information on CA to all farmers (both CASU and non-CASU) and is good for scaling up.</td>
</tr>
<tr>
<td>• The MTE team encountered several LFs who have been sharing the inputs with their FFs (e.g. musangu seedlings and cowpea seeds).</td>
<td>• It allows for dissemination of information on CA to all farmers (both CASU and non-CASU) and is good for scaling up.</td>
</tr>
<tr>
<td>• CASU categorises the input packages according to LF performance and the MTE team lauds this approach. The MTE team recommends that the rationale should be explained again to all LFs. This is especially so in view of the bicycles, which are planned for distribution this year and could create tension among the LFs.</td>
<td>• The lessons taught at field days seem restricted to what has worked or not worked in the past. This is confirmed by the process of approving the fields that can hold field days based on performance. In reflective learning, both positive and negative results are essential for transformative learning. If for example, the LF planted late due to delayed onset of rains and ultimately the crop is affected negatively, it will be important for farmers to witness how late planting can affect crop performance. The MTE team proposes that whilst the emphasis should be on exposing farmers to well performing learning plots, LFs must also have discussions or side clinics with their FFs to share experiences on what did not work for, and reflect on why it did not work.</td>
</tr>
</tbody>
</table>
MoA role in CASU and structural arrangements (NPCU, provincial/district teams, camp level extension, CEOs). The proposal to work through MoA structures as a way of building institutional capacity is progressive in itself. From the national HQ to the provincial, district and camp levels, MoA staff acknowledged the importance of CASU being implemented through the existing structures. As the CASU project highlights, this is also good for sustainability purposes. This is discussed further under Section 3.5.5.

Focus on private sector development and participation. CASU acknowledges the role of various actors – research, government and the private sector. The project document acknowledges that the private sector has the potential to make a large contribution to sustainability, and this forms a strong foundation for more investment in the implementation of CASU. So far, there has been a significant result in building the capacity of agro-dealers through the e-voucher system. The private sector attested (through agro-dealers) that sales had increased and relations were enhanced between agri-businesses and farmers. It is assumed that this will continue beyond CASU. Once farmers visit the store, they are more likely to make other discretionary purchases of inputs. Also, by trialling herbicides and new seeds, the habit for use may be developed. There is room to strengthen the market linkages further and create an enabling environment to encourage active participation. For instance, how does the project build on the market linkages facilitated by WFP to create opportunities for long-lasting and independent linkages direct with the communities?

Capacity building overlaps. There is seemingly an attempt to draw a boundary between CASU interventions and those of other actors such as CFU and COMACO. This is appreciated from the perspective that: i) there is a need to avoid duplication of efforts to ensure better use of resources; and ii) the complications that accompany multiple overlapping efforts. In theory, these efforts build a strong case for being more efficient and accountable; however, in practice additional complexity is created, which is difficult to manage. For instance, in the districts visited (in Mambwe, Petauke, Kaoma, Kalomo, Pemba and Choma) there is a very strong presence of CFU and in some cases there is an overlap of the farmers targeted. However, the MTE team also found complementarity between CFU and CASU (e.g. in Pemba where CFU has been engaged to provide CA training to BEOs and CEOs). From the systems thinking perspective, these overlaps need to be harnessed to leverage the potential for different actors to work towards a common goal. This is also in line with the project document’s provision for the establishment of Insakas at national and district levels to build coherence and coordination in the implementation process. Against this complex context, it may be more meaningful to focus on contribution rather than attribution in its entirety. The project will then focus on identifying the changes taking place and describing what the contribution to that change might be, based on what activities were implemented. Of course, this requires deeper analysis, but it is a more realistic way of understanding how the CASU might have contributed to these outcomes.

Sustainability and ownership of results

The issue of sustainability is considered at two levels, both technological and methodological (implementation approach). According to the MTE team’s assessments, the challenges faced by CASU in sustaining or scaling-up the project’s results are as follows:

- Understanding how the MoA is positioning itself after 2017, bearing in mind that similar projects have been implemented and resource scarcity has always hampered continuity;
- The performance of the Insaka and what mechanisms were put in place for its sustainability;
- How the gap in terms of input supply for LFs will be bridged after the programme. Currently, LFs are being rewarded for training other FFs, but what is being put in place for them to sustain their use of CA and to continue to support others?
- The market linkages.

Points three and four above are linked. CASU already considers that it is important not to rely on the inputs as an incentive. If farmers are encouraged to scale up the amount of land under CA, the inputs will not cover the larger farms anyway. More critical for an emerging farmer is to gain knowledge and to have a market for their product – the outcomes of the increased production under CA should act as an incentive in the long-term. This is where the role of the WFP is important, brokering the private sector to buy CASU farmers’ products (especially legumes, as the government can provide a steady market for maize).
214 In the first year, all lead farmers were treated equally regarding inputs. In the second season, CASU carried out profiling and tailored the inputs for the farmer. Those cultivating more than one hectare under CA were given legume seed mainly, and were linked to market opportunities. The best LFs, who stay active and have proven training skills, will also receive bicycles.

215 Ideally, some LFs should ‘graduate’ soon to receiving no inputs. The project could then monitor whether they continue to apply CA to their fields, as a good test of true adoption. Well performing FFs who demonstrate interest could be promoted to the LF role and recruit new FFs, in order to further scale up the application of CA.

216 The following table summarises points related to the sustainability and scaling up of CASU:

<table>
<thead>
<tr>
<th>Advantages of CASU for sustainability and scaling up</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diversification of legumes (good for soil, nutrition and markets) supported by e-voucher (good practice)</td>
<td>Delays in inputs (e.g. seed and herbicide) contrary to CA message of ‘plant early’</td>
</tr>
<tr>
<td>Increased yields from CA apparent in the field</td>
<td>Links to quality weather forecasting missing (though may not be possible)</td>
</tr>
<tr>
<td>LF and FF model strengthens peer learning on the spot, high ratio, good sustainability</td>
<td>Access to finances is very difficult, and unlikely to eventuate on large scale</td>
</tr>
<tr>
<td>Potential links to markets can act as incentive and cooperatives have benefitted</td>
<td>Markets still to eventuate for the broader population of farmers</td>
</tr>
<tr>
<td>Quotas for women farmers, and consideration of methods to achieve equality</td>
<td>Many farmers equate CA with excessive weeds</td>
</tr>
<tr>
<td>Use of herbicide in an effort to overcome drudgery</td>
<td>Cost of herbicides is huge deterrent to use, risks of herbicide poisoning and environmental damage</td>
</tr>
<tr>
<td>The online data management system contributes to better institutional memory, though attribution is difficult</td>
<td>Top down planning contributes to inadequate finance for transport and fuel for field staff, insufficiently timely analysis of data</td>
</tr>
<tr>
<td>Moving from demo fields to whole farm approach successful in some areas</td>
<td>Hard to scale up in some areas to more hectares (donor dependency)</td>
</tr>
<tr>
<td>Strong financial controls</td>
<td>Delays in payments to districts</td>
</tr>
</tbody>
</table>

217 The recent study by IAPRI (2016), commissioned by the EU, found that CA adoption rates by smallholder farmers remain low, with widespread dis-adoption. The field data collection took place in 2013; while surveying occurred in CASU areas, this was the ‘gap year’ agricultural season when CASU had not yet begun field work. Consequently it reflected the impact of FISRI more than CASU. According to this study, in CASU-only districts, only 9.1% of farmers applied minimum tillage, 51% used crop rotation and 64.9% retained crop residues on the field. They found that only 3.6% of the farmers applied ‘full’ CA (all three techniques), while 3.9% could be classified partial adopters. Many farmers were also considered to have ‘dis-adopted’ (i.e. they had practiced CA earlier but stopped, mainly due to the high labour requirements).

218 Based on a desk review of relevant literature on adoption/dis-adoption, the MTE team observed the following:

- Triomphe et al (2007) noted, “Many projects and teams tend to focus on technical issues such as tillage, cover crops, weed control and implements at the field scale. This focus often implies less attention is given to non-technical issues, for example rural finance, marketing and value chain development, organizational or policy issues” (p. xix). The MTE team observed that CASU’s design has avoided this risk, as it combines many elements of the value chain, along with CA technology, and organizational and policy support.
• The lack of legume markets in Zambia hinders CA expansion, as farmers are not willing to produce large quantities of legumes that they cannot sell (beyond what they require for household use (Thierfelder et al, 2013a and 2013b). In this regard, it is positive that CASU is emphasising the importance of legume markets.

At the same time, lessons from some of these studies could also be considered by CASU to better sustain its results. For instance:

• Arslan et al (2014) looked at adoption and dis-adoption rates between 2004 and 2008 by reviewing the RILS survey data of IAPRI. They noted high levels of dis-adoption during this period, and considered that most adoption was in expectation of receiving free inputs; once these incentives stopped being delivered dis-adoption was observed. “The scale of dis-adoption also suggests that the benefits of these practices may take too long to materialize for farmers” (p.78). They found that farmers in Zambia view CA as a strategy to reduce risk of rainfall uncertainty, particularly in districts with large variability of rainfall or timing. In addition, the role of extension services was important for introducing new ideas.

• Thierfelder et al (2013) in several southern African countries found that retention of previous crop harvest residues and fertiliser application, or rotation with legumes, is critical for the success of CA systems. “When insufficient crop residues are available for soil cover, soil crusting and sealing may occur, leading to reductions in rainfall infiltration and ultimately small crop yields” (p.328). The MTE team noted that livestock grazing on crop residues is a vital element of resilience during droughts (particularly in the south), but one that reduces the effectiveness of CA. This may explain the questionable sustainability in those areas with many livestock.

• Another reason for lack of success with CA or dis-adoption may be the lack of experience of the farmer. Some studies have shown that CA yields improve with the years of applying CA. Thierfelder et al (2015) found that while in 80% of cases studied, CA produced good results, “on 20% of the cases there was a negative response to CA, due to lack of experience by farmers in the initial year, slow increase in soil fertility at the respective site and waterlogging in some years with too much rainfall.” Ngwira et al (2013) also commented on the lag time to achieve better yields. In the case of CASU, this emphasises the importance of maintaining farmers in the programme for at least three years to ensure that they have sufficient experience and soil fertility to gain good results.

• The impact assessment by ICRISAT found that CA adoption increases maize yields and reduces the likelihood of being food insecure. They found that ownership of rippers positively influences the adoption of CA, particularly in Zambia. Access to information through extension and group membership also positively influences the awareness of CA technology. As with the IAPRI study, they found that CA adopters are older, more educated (secondary education and above), and have more farming experience, as well as having more labour available in the household. Male-headed households were more likely to be adopters than female-headed households. Interestingly, despite the dominant paradigm that CA is less beneficial in high rainfall areas, the study found that in the high rainfall areas surveyed there were a greater proportion of maize plots where all three principles of CA were applied, and the yields were greatest (as the MTE team also found in Mpongwe with CASU). In the drier areas, few plots received all three CA principles (mostly focusing on minimum tillage), possibly because of the small amount of biomass due to low rainfall, which constrains mulching.

With regard to the MoA, as discussed under Section 3.5.3, CASU’s implementation through MoA structures is good for sustainability purposes, as MoA will exist beyond the CASU lifetime and there is a good possibility to sustain the gains. Secondly, this is a good strategy for scaling up. One level of scaling up is the role the MoA plays in guiding government in the agriculture policy development process. Their involvement in CASU provides an opportunity to influence the policy based on what is working. For example, staff from the MoA were keen to mention that government has drawn on their experience in formulating strategies to promote conservation agriculture. The staff felt that instead of developing a policy on CA, which does not exist now, the MoA was working on the high-level commitment by government to promote CA as enshrined in the National Agriculture Policy (NAP); all that is required is to develop strategies to operationalize the policy. With experience drawn from CASU implementation and other projects on CA, the ministry staff sees a greater opportunity to devise pragmatic strategies that have been tried and tested. Other specific examples include the e-voucher system, which is being integrated in FISP as a pilot.
Taking into consideration this huge role of MoA and the potential for the success of the project beyond its life span, there is a need to further strengthen its participation in critical technical decision-making processes at all levels. This was mainly argued at provincial level, where it is felt that promoting direct reports by districts to the national offices (CASU and MoA) is creating a coordination problem in the overall MoA. The provincial teams claim that if MoA is expected to scale this up in their nine provinces and all the districts, the role of the provincial team is critical. This critique was also noted for other approaches to agricultural extension (e.g. NGOs that bypass government systems), regarding the failure of the responsible party to sustain the activities beyond the project life span. CASU has thus far acted pragmatically to speed up activities via direct contact with the districts; however it may be beneficial to gradually increase the role of the province as a handing over strategy.
4. Conclusions

**Conclusion 1:** Positive outcomes from CASU are evident, although access to legume seeds, mechanical implements and markets should continue to be improved as an incentive to CA adoption.

222 Number of farmers practicing CA: This CASU MTE finds that despite delays in starting up, results in the field are positive. CASU is actively working with approximately 15.5% of the total possible population of smallholder farmers in Zambia. It is currently working with 20,277 active LFs (97% of the target of 21,000) and 207,593 FFs (67% of the target of 315,000). Rather than an average of 15 FFs per LF, the average is only around 10. It will be important to make a big push to recruit more LFs and FFs before the next season starts.

223 The definition of CA has been generally considered to include minimum tillage (basins and ripping), maintaining crop residues on the field, and crop rotation with legumes. In addition, application of agro-forestry has been studied by CFU. CASU is monitoring all of these activities. In the field, it was clear that most farmers were applying all three principles, though usually not on large areas of their land.

224 In some districts, farmers appeared more enthusiastic and committed to CA than in others. For instance, farmers interviewed in Kapiri Mposhi, Monze and Mpongwe were increasing their land under CA, and reporting good progress. Yet in Sinazongwe, Kaoma and Kazungula – more marginal agricultural land – farmers were not so positive, despite (or perhaps because of) many years of CA project interventions, and each farmer’s land area under CA was not increasing much. From the literature, there is a great variation in results of different studies regarding adoption and dis-adoption of CA, yields under CA, influencing factors, etc. It is the MTE team’s assessment that CA solutions in CASU may need to be tailored more precisely for each area and group of farmers in order to achieve the set targets.

225 Increase in production and land area under CA: CASU has succeeded in increasing the area under CA, particularly among the LFs. This was accomplished partly by intervening with input packages containing inputs such as legume seed and herbicides. However, this clearly was not the only reason for increasing their land under CA and production, as the inputs were not available on time in many camps. The LF incentive categories introduced by CASU, which considered area under CA, have also motivated the LFs to expand CA areas. For FFs, the area under minimum soil disturbance in increasing, yet optimal legume production is still constrained by insufficient seed quantities among the FFs. The use of herbicides and rippers have also helped to increase land area under CA. Markets for legumes are an excellent incentive for both LFs and FFs.

226 CA has likely contributed to an increase in productivity of individual crops and overall production. In meetings and interviews, LFs, FFs and district staff consistently reported increases in productivity from CA, and some increases in area under CA (though the area of land under CA may vary from year to year, depending on the anticipated rainfall). Since the data in the MIS seems to be aggregated at crop/farm level (according to the project document), the actual contribution of CA to the yield increases among CASU farmers remains to be established.

227 Improved diversity of production, food security, nutrition, and household incomes for some farmers: Most farmers (LFs and FFs) reported increased diversity of production due to CASU activities, as well as improved food security and nutrition. Incomes have increased for some, but greater increases can be expected once markets for legumes are established for everyone. At present, inadequate supplies of legume seeds are a barrier to progress.

228 The involvement of WFP to broker links to traders and forward contracts for some cooperatives is an important way to resolve the marketing challenge for farmers, particularly for legumes. Providing steady markets (and to date, very good prices) could prove to be the most important incentive for farmers to use CA and to grow legumes. The risk is whether WFP will continue in the long-term, but hopefully the market linkages will remain.
An e-voucher system that serves as best practice in the region: Design and implementation of the e-voucher scheme has been a good practice developed by the project. It is currently used for input delivery but is about to be expanded to provide transport (bicycles) and mechanisation services (and possibly credit). Although it was part of the project document, the actual design is largely due to the ideas and commitment of the CASU team. The concept has been discussed in Zambia, and helped to inform the FISP voucher development by the government (a system for providing inputs such as seed and fertilizer to farmers). The e-voucher system has also been disseminated in the region as an excellent tool for good governance, with several neighbouring countries showing interest in using the system. On the negative side, the system development required a significant amount of time from experts on the CASU team, which may have led to delays in some other activities.

**Conclusion 2:** CASU has contributed to capacity development on CA at the individual level and to some extent at the institutional level, and needs to do more at the enabling environment level through the Insakas.

From discussions with farmers, it appears that the greatest incentive for farmers to participate in CASU was the knowledge and experiences they gained. The LF-FF extension approach is functioning well, meeting gender targets of more than 40% women, and has greater potential for sustainability than other systems, as the LFs remain in the community. However, the MTE team notes that capacities of LFs differ, as do their levels of commitment; thus, leaving the process entirely to LFs may not result in adequate FF capacity development. Further, CA learning materials are overly focused on LFs. Training needs to be strengthened, with more materials rolled out to FFs. Further support to transport for the extension services would also allow consolidation of training and more contact with both LFs and FFs. Although an opportunity for scaling up to non-CASU farmers has been missed, there is still a possibility for implementing this during the coming season. This could be accomplished by training the agro-dealers to share information with clients, and increasing the numbers of FFs and LFs.

At the institutional level, CASU has worked with CFU and MoA to try to define common CA modalities and training materials. Ownership of the CA training materials developed under CASU needs to be mainstreamed within the MoA, which has the national mandate on agriculture-related training and capacity building.

With regard to the enabling environment, Insakas are held at national, provincial and district level (though varying by region and restricted by funding). It was hoped that common definitions would be agreed, and there would be agreement not to emphasize inputs or payments that might create dependency and distract farmers from owning CA practices. However, some NGOs are operating differently. To varying degrees, Insakas have improved relationships among actors, and the dissemination of common information and ideas. This area still requires strengthening through CASU.

**Conclusion 3:** Female farmers under CASU demonstrate increased confidence and skills, and gender issues are actively considered in the implementation of the project, even though a gender mainstreaming strategy has not been formally applied.

The project quota of at least 40% women LFs and FFs appears to have been reached in most districts; on average, there are 40% women LFs and 50% women FFs. The CASU Gender Mainstreaming Strategy has been prepared, but has not been endorsed nor distributed. Gender-disaggregated data is collected but apparently not analysed or reported. Despite this, constraints facing women have been analysed by the CASU team, and there is considerable attention paid to gender issues in practice. There has been good progress made by CASU to ensure that the standard CA tools in use (e.g. sprayers) and facilitating tools (such as bicycles) do not disadvantage women farmers participating in the project. District and extension staff also appear to be providing good support to women farmers, with the districts providing gender training to CASU farmers even though gender training by CASU to MoA has not been implemented. The MTE noted that CASU’s women LFs had greatly increased in confidence as a result of learning new skills and taking on their training responsibilities. This is significant from both a rights perspective and a results focus, given that they are responsible for much of the agricultural work.
More attention is needed to ensuring that training materials promote gender. For instance, the draft CA training manual and the flipcharts usually reflect gender stereotypes regarding farming roles, such as men doing ripping or driving tractors, and this might unnecessarily perpetuate such perceptions.

**Conclusion 4:** The project’s logical framework does not support good project monitoring and reporting.

The MTE team found that the logical framework is not particularly clear and is not easy to monitor. There are issues with the logic and duplication of indicators, some indicators are vague and hard to measure, and some indicators and results are more about tools than indicators of success. Changes proposed include merging KRA 1 with the Project Purpose, removing KRA 5 and mainstreaming gender throughout the four KRAs and indicators. As the baseline and monitoring framework is already established for the existing Logframe, the changes proposed are not intended to overhaul the current logical framework, but to make it clearer and easier to measure.

The MTE team notes however that despite this weakness with the project logical framework, the project is relevant for the country and stakeholders, and appropriate for the beneficiaries. There are no clear unanticipated negative impacts (the only persons who might suffer from the success of the project are the middlemen, the ‘briefcase’ traders who buy crops from farmers at the farm gate at low prices).

The literature on CA adoption shows great variation in the results of different studies regarding adoption and dis-adoption of CA. The MTE Team observes that CASU’s design has already sought to address some of the issues concerning dis-adoption.

**Conclusion 5.** Project monitoring and technical support structures are sound, but could be optimised to better support project management and reporting.

While project management has turned around a difficult start-up and introduced innovative tools and systems, there is scope for improvement. A very detailed monitoring system has been developed with significant potential usefulness; however, there are long delays in analysis of the data and some apparent problems with the reliability of results (e.g. CASU staff were doubtful about the training figures produced by the system). Much of the analysis of monitoring data did not take place when it is collected, but was left until the following year. This is a missed opportunity for using the extensive data collected to improve the project implementation. Related to this, there have been problems with the CASU annual reports, such as more focus on activity and process-based reporting, and very little gender disaggregation in the reporting. This has resulted in delayed approval of the report, and subsequently of fund disbursements.

**Conclusion 6:** As an implementing partner of CASU, the project has contributed to developing the MoA’s capacity to promote CA, which holds some promise for sustaining results from CASU. However, the time frame for implementing the rest of the project activities is insufficient to fully entrench practices, systems and results.

As an implementing partner of CASU, MoA has supported coordination of the project at national level, and facilitated mainstreaming into MoA programmes, plans and policies. The structure of MoA down to camp level is working with CASU, with information, tools and market linkages passed on to farmers, and feedback carried up to national level. The MoA district M&E staff in CASU provide technical and extension support to district staff, lead farmers and participating farmers. They also monitor, coordinate and report the operations of CASU activities at district level. All parties interviewed by the MTE team commented that this had been valuable to improving capacities, communication, and information sharing.

The relevance of the project is clear, as government policy is very supportive of CA. The Zambia National Agriculture Policy (2004) emphasizes the promotion of environment-friendly farming systems such as CA, while the National Agriculture Investment Plan for 2014-18 has set a target of 25% of small-scale farmers to have adopted CA by 2018 (from a
The MTE team observed that the involvement of the MoA in CASU provides an opportunity to influence the national policy and practice based on what is working. Taking into consideration the role of MoA in driving the national CA agenda, and the potential for the success of the project beyond its life span, there is a need to further strengthen MoA’s participation in technical decision-making processes at all levels.

Although much work has gone into establishing the supporting guidelines, tool and systems for CASU, only two agricultural seasons have run, and only one remains. Thus, there has not been sufficient time to test whether the system is sustainable (e.g. will LFs who ‘graduate’ off the inputs, and other FFs with three seasons of experience, still practice CA?) True adoption of CA is untested by CASU. This can best be done after the project has ended to determine if the LFs and FFs will continue to practice CA without support from the project. One confounding factor with such an approach is that very often other programmes continue promoting CA with the same farmers, which could artificially result in continued participation.
5. Recommendations

The MTE team suggests the following recommendations, with the responsible organizations enclosed in parentheses.

**Recommendation 1: Promotion of safe use of herbicides and greater emphasis on mechanization, including through: (i) operationalization of the CASU mechanization strategy; and (ii) establishing targets for improved access to mechanization implements for female CASU farmers. These activities will be critical to expanding the area under CA through the CASU project. The CASU project team should also strengthen the focus on legume seed and legume market access by both LFs and FFs (including via local seed multiplication) alongside market linkages (CASU project team).**

- The MTE found that farmers were more likely to increase the area under CA where rippers were available. In view of the perceived high labour requirements in preparing the planting basins, farmers are unlikely to expand the basin method area beyond the current levels per household. Mechanization (through animal and tractor-powered implements) is therefore crucial to facilitate significant expansion. Operationalization of the CASU mechanization strategy, together with supporting legume seed production and access to suitable weed control techniques, can promote achievement of the project targets, provided another El Nino phenomenon or other extreme weather events do not disrupt the activities. Targets need to be placed on improving access to the planned mechanization implements among the CASU female LFs and FFs, given that they normally have less access to such inputs.

- The suitability of area expansion across the agro-ecological regions also needs to be verified together with farmers (CASU and MoA).

- Legume growth and crop rotation are important aspects of CA, and it is recommended to strengthen legume seed access through the provision of inputs (encouraging agribusinesses to stock the seeds) and providing training in local seed multiplication.

**Recommendation 2: Capacity development actions towards meeting planned objectives require the CASU project team to: (i) recruit more follower farmers; (ii) produce an increased number of training materials that are also gender sensitive; (iii) enable more contact between farmers and CEOs, through the MoA; and (iv) extend training to agribusinesses, in order to support replication (CASU project team, MoA).**

- The project needs to move as soon as possible to recruit more FFs in order to reach the target of up scaling CA. The MTE team heard in the field that there are many interested farmers outside the project, so the most logical method to recruit them would be to increase the number of LFs, as well as topping up groups sizes when some farmers have dropped out (CASU).

- The MTE recommends that after two seasons, LFs are weaned off the inputs and monitored to see if they still hold onto the practice of CA using their own resources. This will ensure that it is not creating a dependence syndrome instead of incentivising LFs to adopt CA and help FFs to learn and adopt CA as well. The MTE further recommends that through a graduation model, more farmers move up from FF into LF roles and are covered under the e-voucher, so as to spread the trial of whether this incentive can stimulate adoption (CASU).

- Farmers would appreciate more contact with CEOs and district staff. This requires increased funding to the district for transport and DSAs, as well as better two-way planning (CASU, MoA).

- In addition, the MTE team considers that agribusinesses are well placed to replicate training to both CASU and non-CASU farmers, and therefore should be provided with training and leaflets to hand out (CASU, MoA).

- Production of learning materials (e.g. radio programs, pamphlets, flip charts) should be increased. In addition, a stronger gender focus should be adopted, including more diagrams of women doing stereotypical men’s tasks such as ripping (and vice versa), as well as the championing of successful female CA farmers (CASU, NAIS).
Recommendation 3: CASU should continue to actively pursue gender equality and equity goals in the implementation of and reporting on the project (CASU project team).

- The CASU Gender Strategy should be tabled for endorsement and disseminated as soon as possible. The project then needs to actively ensure that actions are followed up (CASU, EU).
- The project should continue to target women as LFs and FFs during further recruitment, as it is critical to ensure that they receive the information. Otherwise, it is likely that mainly men will attend trainings and field days (CASU).
- Publicity on women farmers can be strengthened through awareness raising, for example, by nominating female champion farmers for awards, interviews with female farmers on the radio, more stories in CASU newsletters to increase learning among districts, showcasing women LFs and FFs on World Food Day or International Women’s Day celebrations (in districts and nationally), and running workshops for female LFs from different camps to share experiences (CASU, NAIS, Districts, Field Staff).

Recommendation 4: Strengthen project management and monitoring through adoption of a revised logical framework and timely analysis of monitoring data, the results of which inform regular reports and feedback to CASU stakeholders and implementing partners (CASU project team, EU).

- The MTE recommends that the logical framework of the project be revised in order to address its logic and measurability issues. CA impacts need to be clearly determined, for example on yields and household food security, and gender needs to be meaningfully mainstreamed across the logframe. The MTE has proposed an alternative logframe in Annex 6 (EU and CASU).
- Better feedback, information sharing and links with districts and camps are vital. There is too long a lag time between monitoring and carrying out the analysis. CASU should give feedback to the districts and camps on the results of the monitoring, which can inform any corrective actions as necessary, and not just provide feedback on the quality of the report (CASU).
- The MTE team recommends that in the annual report prepared by the CASU team, more data on results should be included, including information from the monitoring system as well as gender disaggregated data. Project stakeholders should be requested to give feedback within a set time, to avoid excessive delays of its approval (CASU, EU). Furthermore, the annexes of annual project progress reports should identify lessons learned and good practices.
- In between the annual reports, the MTE recommends that CASU prepare short (maximum of five pages) informal reports every three months to update stakeholders (especially the EU and FAO Task Force) on progress. These would not be formal documents, and would not require approvals.

Recommendation 5: An extension or new phase of the project is recommended, as a number of positive outcomes from the project are already evident, but the time remaining is likely insufficient to sustain these results (EU).

- CASU should be extended (ideally by two years), in order to achieve its planned results, rather than moving into a new phase. There is always a risk of delays in the handover between phases. Extra time would give the chance to graduate some of the LFs and bring in new FFs. Then the project can follow what happens with those who are weaned off support and inputs, in particular to track if they continue with CA.
- This also gives more than one season to trial the mechanisation vouchers, as well as time to do some action research (or to at least contract someone who can look at the monitoring data and analyse impacts), and to combine the CA and IAPRI and ICRISAT findings.
- In the case that the EDF 11 funds cannot be used for an extension of the current project, the MTE team recommends that a new phase should be planned, with an overlap with the current phase. This would ensure that institutional memory is maintained; the current phase should be funded for a bridging period, to enable a handover of information, analysis of the data from the final agricultural season, and consolidation and dissemination of knowledge gained.
Recommendation 6: In order to achieve the expected results by the end of project, the CASU team are recommended to undertake actions related to: (i) increased recruitment of LFs and FFs; (ii) the mechanisation e-voucher; (iii) better use of existing disaggregated data to inform planning; (iv) development of input and output markets for legumes; and (v) improved training materials and training of agribusiness.

- CASU should focus on the mechanisation e-voucher and not on the credit voucher, as there will not be sufficient time to try out yet another tool that is still in development. Mechanisation will support the provision of ripping services, but also other services such as shellers for groundnuts, sprayers, etc. (CASU).
- Recruitment of new FFs is a priority. The average group number should be raised from 10 FFs per LF to 15. If LFs wish to have more than 15 members they should be permitted to do so, providing they can provide adequate support to the FFs. The provision of bicycles should assist LFs to reach more FFs (CASU, MoA).
- New LFs could be recruited in camps and districts with the greatest potential, where CA is showing promising results and demonstrating the most interest and potential (e.g. Mpongwe or others, as demonstrated by results from the 2015/16 season). However, the MTE team also acknowledges the need to continue supporting those camps in the drier zones until the end of the phase, as this is where food insecurity challenges are greatest (CASU, MoA).
- Ensure that the inputs for LFs are delivered to the agribusinesses in time for the coming season (CASU).
- Focus on timely disaggregated data analysis and reporting, and disseminate the results, using them for planning the next season and informing the districts – this information can also be used to provide lessons for the future EDF11 programming (CASU).
- The soils baseline status findings need to be packaged into appropriate formats and disseminated widely. The results (e.g. on pH and liming requirements) can be used for planning the 2015/2016 input packages and ensuring that corrective measures are made.
- Develop the training materials and disseminate them widely. This can include finalisation and printing of the training flipcharts, brochures on various topics, and even printing CA messages on chitenges (not only logos but actual training messages) (CASU).
- Provide targeted capacity building for agribusinesses on CA techniques, seed varieties, herbicide types and uses, to enable them to provide information to all farmers visiting their businesses (CASU, MoA).
- Continue to develop the input and output markets for legumes. The results of the 2015/16 marketing should be analysed and shared widely via all media, and access to legume seed enhanced, to encourage farmers to grow legumes in the next season (CASU, WFP).
- CASU should prepare an exit strategy together with the EU delegation (CASU, MoA, EU).
- CASU should contract a short-term expert to review the monitoring data and analyse impacts, and aim to combine the CASU and IAPRI and ICRISAT findings, in order to develop recommendations of tailored solutions for application of CA in different agro-ecological zones and farm sizes (CASU).
- Consolidation and documentation of lessons learned and success achieved (CASU), including on drivers for and against FF retention among LFs.

Good practice suggestions

Capacity development

- More consideration should be given to the role of agro-dealers in CA, not just in distribution. They have a potential role in scaling up CA to many more farmers by discussing it with farmers who visit their store; thus, they should receive training and pamphlets for distribution (CASU, CFU, districts).
- In setting up demos/field days there is also a need to consider the concerns and misunderstandings of farmers, and establish demos tailored to clarify these. Most misunderstandings are the result of mind-set issues and a natural inclination towards old habits, which requires innovation in setting up learning plots to provide more evidence (CASU, districts, LFs).
- Document and disseminate innovations and lessons at all levels and share the information (CASU).
• Use remaining funds in contingency to pay for more training materials – especially the further development and printing of the flipcharts (EU, CASU).
• More training is needed in farming as a business, and safe herbicide storage, mixing and application (CASU).
• Create more communication materials for dissemination to FFs, including pamphlets, radio programmes for local community radio stations; DVDs could be copied to CEOs for showing on laptops or on televisions (CASU, NAIS).
• More work is needed on Insaka establishment, and making action plans, particularly at provincial and district levels (CASU, CFU, districts and provinces).
• Farmer to farmer exchange visits are recommended (especially for women, who are less likely to travel otherwise) (CASU, districts).

Project management and monitoring

• It is critically important to provide stores with inputs in time for the coming agricultural season. This requires good information sharing with the agro-suppliers, and setting deadlines for them to provide set quantities to the ago-dealers (CASU and agro-suppliers).
• Funds should also be made available from CASU or MoA for some form of district experience sharing regarding outcomes of CA (not just procedures) – ideally in person, via workshop or better still, shared field monitoring activities (CASU and districts, provinces).
• Use remaining funds under vehicles budget line (originally intended to buy another Land Cruiser) to buy more motorbikes for use at field level (EU, CASU).
• Prepare informal reports on a quarterly basis for improved information sharing with EU, FAO Task Force and MoA) – simple, bullet point format, not requiring any comments or approvals. This will allow reporting of seasonal data in the quarter when it is collected, rather than waiting for the following annual report (CASU).
• Involve the FAO Task Force more in supervision and technical backstopping (e.g. send quarterly reports, hold quarterly Skype link ups, send any formal report or strategy/guideline two weeks prior to the deadline for comments (CASU and Task Force Members). The FAO mechanization experts should be engaged in finalizing and operationalizing the CASU mechanization strategy (CASU and FAO Taskforce).

Action research

• Engage with MoA, ZNRA, farmers and researchers to identify areas of adaptive research that might be feasible within the remaining period, probably involving use of CASU’s existing data (CASU, MoA).
• One adaptive research area CASU could address in the remaining time is to determine the actual contribution of CA practices to yield increases. This would help to answer the question of how much of the yield increase is emanating from CA practice and not just from improved management? As of now, the data is aggregated at farm level and one cannot really say CA is the causal factor since there are no plot level comparisons. In the remaining season (although it usually better to have more than one season), a student could be assigned to undertake this work and decipher the different sources of yield increase (such as increasing use of improved seed, increasing use of fertilizer, increasing use of herbicides, use of other land conservation techniques and agroforestry). These are practices that can also be applied by conventional farmers and are not necessarily CA specific. Sustainability assessments are recommended and can be done over a relatively short period, together with trade-off analyses of the practices, particularly herbicides (CASU, MoA).
6. Lessons learned

Considerable work and thought has gone into the development of CASU strategies, systems and tools, and to achieving consensus on CA approaches and methods. Notable among these tools is the electronic voucher system, to provide inputs to lead farmers as a tool for training (and, to some degree, as an incentive). This has been relevant and well executed, serving as a best practice in the region, and is supporting the development of the government’s own system. There are also several other potential good practices, but they will need time to demonstrate success:

- Monitoring system and MIS – the system has the potential to collect data on a wide range of topics. It is also being used to consolidate CFU, MoA and CASU data to form a national database of CA farmers. However, some work needs to be done regarding the extraction of accurate data.
- Potential development and use of a shared farmer database with government and other stakeholders.
- SMS system for delivering agricultural extension messages, as well as practical information (e.g. information on the potential for marketing). This seems to be working effectively for those farmers whose mobile phone number is registered and still operating, and the MoA could use this system. It would be valuable to assess the impact of the messages on farmers’ practices (e.g. a small survey on what messages farmers have remembered and acted on).
- Mechanisation credits, with GPS monitoring. At the time of the MTE mission, this was still being developed. 423 mechanisation service providers had been registered, and the plan was to georeference farmers and their fields. By this time next year, it will be clearer whether this can be labelled a good practice.
- Training of the enumerators for the CASU baseline. This could be done using the same staff who work for the government census, by strengthening their skills for the future.
- Working closely with WFP to develop markets for smallholders.