

From training to practice

Mid-term evaluation of the UTZ-Solidaridad
smallholder tea programme in Kenya



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smallholder tea programme in Kenya

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Preface

The smallholder tea sub sector in Kenya is faced with many problems which include low productivity and inconsistent quality, leading to low income for the farmers. Many problems arose out of poor agricultural practices, which result in low incomes and environmental damage such as soil erosion, water pollution and deforestation. UTZ Certified and Solidaridad have initiated a tea programme in Kenya and Malawi to tackle these issues by developing and implementing the UTZ certified code of conduct for tea, improving the participation of national stakeholders in the development and implementation of sustainability standards, stimulating domestic and international market demand for sustainably produced tea and ensuring access to and benefits from certification schemes and markets for smallholder tea producers. UTZ and Solidaridad expect that by means of increasing the sustainability of tea production and trade, tea production will become a more economically viable option for the current and future smallholder tea farmers, enhancing their standard of living.

This study presents the results of the mid-term evaluation of the UTZ-Solidaridad smallholder tea programme in Kenya. The research was commissioned by Solidaridad and UTZ Certified to obtain insights into the effectiveness, the appropriateness and relevance of the UTZ-Solidaridad tea programme in Kenya and to obtain recommendations on how to improve the tea programme and other future programmes. We hope that the findings of this study will be useful to strengthen the programmes currently being implemented, and to inform the current debate on sustainable tea production.

We are greatly indebted to the information from and assistance of the farmers, KTDA factory staff, the Solidaridad East and Central Africa Expertise Centre and the hard work done by the enumerators to collect data. Without this, we would not have been able to do this study. We also thank the Solidaridad and UTZ Certified team members involved in the study, for providing us with information on their training and certification approach in Kenya and feedback to the questionnaire and report.

Abbreviations

ETP	Ethical Tea Partnership
EU	European Union
FFS	Farmer Field School
FSCs	Field Services Coordinators
GAPs	Good Agricultural Practices
IDH	The sustainable trade initiative
ICS	Internal Control System
Kg	Kilogram
Ksh	Kenyan Shilling
KTDA	Kenya Tea Development Agency Ltd
NPK	Nitrogen, Phosphorus, Potassium
PPE	Personal Protective Equipment
RA	Rainforest Alliance
SAN	Sustainable Agriculture Network
SECAEC	Solidaridad East and Central Africa Expertise Centre
TESAs	Tea Extension Services Assistants
TIP	Tea Improvement Programme
UTZ	UTZ Certified

Executive summary

S.1 Background and aim of this study

The UTZ-Solidaridad tea programme in Kenya is built around the implementation of the UTZ Certified tea Code of Conduct in smallholder tea production. In 2010, Solidaridad and UTZ Certified (UTZ) decided to evaluate the effectiveness of their activities and the impact of the implementation of the UTZ-Solidaridad programme on smallholder tea producers in Kenya. LEI Wageningen UR was commissioned by UTZ and Solidaridad to carry out the evaluation of the UTZ-Solidaridad smallholder tea programme. The evaluation was conducted through the delivery of two studies: a baseline study at the start of the UTZ-Solidaridad programme in 2010 and a mid-term evaluation after the programme had been running for two years (2012).

This report presents the findings from the mid-term evaluation with regard to: i) the effectiveness and the appropriateness and relevance of the UTZ-Solidaridad tea programme in Kenya and ii) lessons learnt and recommendations for the current programme and other future programmes. The research methodology adheres to a mixed-methods approach in which quantitative analyses based on survey data, with a before treatment and after treatment approach, are combined with qualitative analyses based on interviews and focus group discussions. The analyses of the quantitative and qualitative information follow closely the theory of change underlying the UTZ-Solidaridad tea programme.

S.2 Effectiveness of the UTZ-Solidaridad tea programme in Kenya

The effectiveness of the programme was assessed based on the following evaluation questions:

1. To what extent have the activities led to the planned outputs?
2. To what extent have the objectives (outcome level) of the programme been realised as a result of the output?
3. To what extent have the different target groups been reached?
4. What are the main factors influencing the results of the actors?

The first evaluation question (to what extent have the activities led to the planned outputs?) was addressed by investigating whether promoter and other farmers were trained, and whether all factories participating in the programme had become UTZ certified at the time of the mid-term survey. With regard to the training of promoter and other farmers, all promoter farmers had been trained as planned and at least 45% of the farmers had been trained on UTZ certification. The exact percentage is not clear. Four out of five factories became UTZ Certified before the mid-term evaluation was carried out, which means that 80% of this output was reached.

The theory of change of the UTZ-Solidaridad programme specifies the immediate and ultimate outcome indicators and their expected changes as a result of the programme outputs. In this report, results are presented for the group of all farmers who participated in trainings, but we specifically focus on its subset of farmers who participated in the UTZ-Solidaridad trainings. Looking at the question 'to what extent have the objectives (outcome level) of the programme been realised as a result of the output', it can be concluded that positive changes on outcome level have been observed.

As can be seen from Box 1, most of the immediate overall immediate outcome indicators (73%) have changed significantly in a positive way between 2010 and 2012 for farmers who participated in trainings generally and the UTZ-Solidaridad programme participants: i) their knowledge on sustainable tea production increased significantly, ii) they improved record keeping, iii) they make better informed decisions on farm management, iv) they diversified their income, v) they improved their implementation of sustainable practices, vi) they improved the implementation of resource management and conservation practices, vii) they have healthier and safer working and living conditions, and viii) the relationship between farmers and tea factory managers improved. Even though the overall scores for knowledge and the implementation of practices increased, the study did observe unexpected neutral and significant and negative changes for some of the underlying scores of individual knowledge questions and individual questions related to the implementation of practices.

Box 1**Changes in overall outcome indicators for UTZ-Solidaridad training participants****Significant positive changes in overall outcome indicators**

Immediate outcome indicators

- Improved knowledge on sustainable tea production
- Record keeping
- Better informed decision making on farming
- Farming as a business
- Improved implementation of sustainable practices
- Better resource management and conservation practices
- Healthy and safe working and living conditions
- Improvement of relationships between farmers and managers

Ultimate outcome indicators

- Improved use of personal protective equipment
- Decreased, and safe use of crop protection products
- Improved productivity
- Improved income a)
- Improved farm-efficiency (economic, agronomic)

No significant changes in overall outcome indicators

Ultimate outcome indicators

- Improved quality and consistency level of quality of green leaf
- Correct use of fertilisers
- Increase in investment and savings

Change in the overall outcome indicator could not be established

Immediate outcome indicators

- More transparent processes
- Groups are better organised
- Better services to group members

Ultimate outcome indicators

- No child labour (in line with International Labour Organization standards)

The qualitative findings of this research are positive for most of the indicators except for the indicator 'increase in investments and savings'. Focus group discussion respondents mentioned that investments and savings decreased. Three indicators were not mentioned in the focus group discussions: changes in record keeping, better informed decision making and improvements of relationships between farmers and managers.

a) The calculated net income should be treated with great caution as there were many missing values on input use which were interpreted as zero to be able to calculate net income, but this could underestimate input costs and overestimate net income.

With regard to the ultimate outcome indicators, 63% of them have changed significantly and in a positive way between 2010 and 2012: the generally trained and UTZ-Solidaridad trained farmers improved the use of personal protective equipment, the use of crop protection products, their productivity, income and farm efficiency. Green leaf quality, investments and savings did not change over time, and farmers also did not show a more correct use of fertilisers compared with the baseline situation. Change could not be established for the indicators 'more transparent processes', 'groups are better organised', 'better services to group members' and 'no child labour'.

With regard to whether the target groups have been reached by the UTZ-Solidaridad programme, this study looked at the programme's target group, which consists of all farmers connected to five factories that were to become certified. More than 45% of the targeted farmers have been reached by the programme, but there is a high degree of uncertainty about the actual percentage due to the lack of systematic training records. Furthermore, in the programme setup, a specific objective was set that 33% of all training participants should be women, as in Solidaridad's experience women usually hardly participate in training programmes, even though they are involved in green leaf production. About 50% of all training participants (both promoter farmers and other farmers) were women, which is well over the 33% target.

Identifying the factors that influence farmers' results, this study found that important factors are training and high fertiliser costs, both of which are addressed by the UTZ-Solidaridad programme, and costs for personal protective equipment. But the study also found that external factors, such as weather, inflation, bonuses, labour availability in the peak season, fertiliser prices, logistics in green leaf collection and an over-commitment of income from green leaf leading to farmers ending up in a loan-spiral, which were not part of the training programme, influence farmer performance.

Overall, this study concludes that, halfway through its implementation, the UTZ-Solidaridad tea programme has trained all promoter farmers and has reached at least 45% of the targeted farmers. The training was effective in attracting women to the trainings, and having four out of five factories reach UTZ certification by June 2012. Furthermore, 13 out of 20 outcome indicators showed significant positive changes since the baseline situation. Finally, this study identified that important factors that influence farmer performance are training and high fertiliser costs, both of which are addressed by the UTZ-Solidaridad programme, and costs for personal protective equipment. But the study also found that external factors, which were not part of the training programme, influence farmer performance. It is not clear which of the identified in-

fluencing factors identified in this study has the biggest influence on smallholder tea producer performance in Kenya.

S.3 Appropriateness and relevance of the UTZ-Solidaridad tea programme in Kenya

To assess the appropriateness and relevance of the UTZ-Solidaridad tea programme, the study used the following evaluation questions:

9. To what extent is the programme with regard to the training of UTZ certification of smallholder tea farmers in Malawi and Kenya appropriate to the needs among the target group?
10. To what extent are the methods and activities well chosen to attract the target group?
11. What, if any, is the added value for the various actors going through the certification process? What, if any, is the added value for the various actors being certified?
12. Of the changes observed in the situation of the tea farmers in Kenya and Malawi, if any, what can be said for contribution and attribution with regard to the Solidaridad/UTZ intervention?

Looking at the question whether farmers' needs are met by the UTZ-Solidaridad programme, this study found that many training needs of the farmers who participated in UTZ training were met as almost all participants said they were satisfied with the training and most of them would recommend the training to other farmers. Farmers would like to see some training topics addressed in the future; e.g. how to negotiate with pickers and how best to grow food crops next to tea production and learn more about the implementation of Good Agricultural Practices (GAPs). Factory staff stress the need for training on health and safety and financial management (although the latter was part of the training already). Some major challenges, which can be seen as external factors because they have no link with training activities but nevertheless impact on farmers' performance, have not been addressed by the programme. Among these are: labour availability in the peak season, input costs for Personal Protective Equipment and fertilisers, logistics in green leaf collection and over-commitment of income from green leaf leading to loan spirals.

With regard to the methods and activities chosen in the training programme, we conclude that it is not entirely clear yet how farmers are best to be trained: farmers prefer to be taught in in small groups of farmers led by well-trained, ex-

perienced and knowledgeable farmers while KTDA extension staff indicate that promoter farmers can disseminate information to other farmers in a better way than when the information would be disseminated in an FFS when it includes farmers from different backgrounds. In the current promoter farmer system as it is implemented in Kenya, promoter farmers either visit individual farmers, or farmers meet in big groups (e.g. 200 or more farmers), which does not correspond to farmers' view of the 'perfect training method' profile. It is recommended to further investigate which type of training is the most effective or cost-effective in the dissemination of information to smallholder tea farmers.

For the promoter farmer system to work, the motivation of promoter farmers to teach other farmers is key. The promoter farmers are still active in their role, even though they have been training other farmers for two years. However, factory extension staff suggests giving the promoter farmers a compensation because otherwise their motivation may decrease as leader farmers working for RA get a remuneration, while promoter farmers in the UTZ-Solidaridad programme do not. Solidaridad mentions that financial payments would run the risk of promoter farmers stopping training after the programme and thus the payments end. It therefore needs to be verified whether the voluntary promoter farmer system is a sustainable way of training farmers in the future.

Almost all farmers who participated in UTZ-Solidaridad training were satisfied with the training. The most frequently mentioned reasons were increased productivity, increased knowledge on farm management and farm practices. However, the training would probably be less effective if there was no certification to be obtained as certification is seen a motivation for farmers to implement the required practices. Certification is also seen as a means to maintain markets and increase the probability of buyers buying their tea, which in turn motivates the farmers to obtain certification. A final added value of certification is the potential to obtain a premium for certified tea; the chance is expected to be 50% by factory extension staff (no premium has been paid yet).

In attributing the changes to the training programmes in which farmers participated, this study concludes that farmers who received more training on farming practices scored better with regard to knowledge, the implementation of practices, productivity and real gross and net income, compared with farmers who received fewer or no trainings. The changes observed were influenced by the UTZ-Solidaridad training in combination with other trainings. This, and the fact that no detailed information was available on the training programmes, makes it difficult to attribute the effects to the UTZ-Solidaridad training alone. For some farmers, the possibly positive effects of knowledge and practices on productivity and income have however been offset by adverse effects of exter-

nal factors (drought, frost, high inflation). To better attribute the changes in productivity and income to the UTZ-Solidaridad tea programme, it is advisable to collect more complete information on training activities and define indicators that are less prone to external factors such as weather and inflation (for instance 'real income' instead of 'income').

Overall, we can conclude that combinations of training activities, of which the the UTZ-Solidaridad programme was one element, have positively influenced knowledge levels, implementation of good agricultural practices, productivity and gross and net real income, but that the observed changes cannot be attributed to the UTZ-Solidaridad programme alone. Furthermore, the UTZ-Solidaridad tea programme in Kenya has met most training needs of the target group. However, also other, non-training related, factors which are not addressed in the programme influence farmers' performance. With regard to training methodology, it is unclear yet whether the UTZ-Solidaridad training matches the 'perfect training method' profile, as farmers and extension officers have different opinions.

S.4 Major lessons learnt

Following the theory of change sequence from programme development to training output to outcome indicators, we describe the major lessons learnt during this study.

First, at the time of this mid-term evaluation, smallholder tea farmers were facing a number of challenges that were not addressed in the UTZ-Solidaridad programme. It could be that these challenges arose after the programme had been developed and its implementation had started. The challenges brought up by farmers in 2012 include high costs of fertiliser, adverse weather conditions and labour shortage in the peak season, amongst others. These challenges might need to be taken into consideration in the next stage of the programme, in order for the programme to respond to the most pressing needs of farmers. This implies revisiting the theory of change, the underlying assumptions, and re-considering the boundaries and scope of the programme.

Second, changes in overall implementation score showed a significant positive correlation with changes in the overall knowledge. This confirms the basic assumption underlying the theory of change that improved knowledge on sustainable practices would lead to better implementation of these practices.

Third, when other things are equal, the increase of knowledge level and the level of implementation of practices is significantly higher among farmers who had a lower knowledge score or implementation score in the baseline situation.

Fourth, many positive changes cannot be attributed to the UTZ-Solidaridad programme alone as the trainings participated in were usually a combination of different topics, and activities undertaken within the programme were not well recorded. Such specific records were required as the respondents probably did not recognise the name of the UTZ-Solidaridad programme even though they did participate in the trainings.

Last but not least, the factories appear to have a lot of data and other information which has not entirely been tapped into for this mid-term evaluation.

S.5 Recommendations

For the next phase in the programme, it is recommended to focus activities on those knowledge and implementation topics that have a low score in the mid-term situation. This can be done based on the scores applicable to the whole target group, the trained farmers, the UTZ-Solidaridad training participants, or the scores for farmers connected to each of the five factories. Furthermore, the needs of the farmers with regard to training topics and methodologies, indicated in this report, can also be used to adapt the programme.

From this research, it has not become clear how information can best be disseminated to smallholder tea growers as farmers and extension officers have different opinions. It is recommended to further investigate which type of training is the most (cost)effective in the dissemination of information to smallholder tea farmers.

An important success factor for the training cascade is the willingness of promoter farmers to train other farmers. As it is not clear if promoter farmers need some kind of reimbursement to continue training other farmers, while concerns exist that they may lose motivation without reimbursement, it is recommended to discuss how to keep promoter farmers motivated in the future and to take action when required.

With regard to the training activities, promoter farmers appeared to be in need of follow up trainings during the mid-term survey. LEI understood that such trainings have been organised after the validation workshop took place.

As no detailed information was available on the training activities, it is recommended that in the next phase such activities are monitored, and especially to make sure that all targeted farmers participate in UTZ-Solidaridad trainings.

Monitoring activities would include specifically defined outcome indicators so they can be measured in a good way as well as an indication of the time frame of the outcomes to be expected and the interdependencies of different outcome indicators. Such information could be used for programme evaluations, be it by programme staff itself, or an external party.

From a strategic programme point of view, it is recommended to revisit the theory of change and review the underlying assumptions, output and outcome indicators in light of the findings in the mid-term assessment. By doing this, there should be a specific focus on external factors and their potential influence on the outcomes as well as on how they will be addressed when they arise.

For potential future assessments, we recommend to increase awareness-raising activities to better communicate the programme and UTZ certification to the farmers, so that the farmers know who is involved in the implementation and for which certificate they receive training. This can be done through posters, leaflets with the logo's and pictures about the training topics etc. at leaf collection centres. This will enable farmers to connect to the programme, and will also enable them to answer in a better way to queries on programme activities and impacts. Furthermore, it is recommended to use factory data for parts of the analyses and cross validation. When available, accessible and of good quality, such factory data could assist in the analysis of changes in core production and income figures for the whole population and, potentially, the assessment costs could be decreased.

For the development and execution of future other programmes, it is recommended to:

- When a needs assessment is conducted prior to the development of a programme, to update it during the implementation of the programme and to adjust the programme's intervention strategy if required
- Critically review the theory of change with relevant stakeholders and potential evaluators prior to implementing the programme. This includes an assessment of how external factors may influence programme outcomes, and how to address such factors when they arise
- Set up a monitoring system at the start of the programme and record activities in the field throughout the programme duration. This can be done relatively simply through an excel spread sheet although it does take time to monitor and record the activities. Based on such monitoring data, evaluations by programme staff or external parties can be conducted in a much better way than without such data

- When an evaluation takes place, assess the availability of data at various value chain actors for the purpose of evaluation as this could potentially decrease the assessment costs.

1 Introduction

1.1 Tea production in Kenya¹

Kenya is the third largest tea producer in the world after China and India, having overtaken Sri Lanka in the last two years. Most of the tea produced in China is green tea, making Kenya the second largest global black tea producer. Because the quality of Kenyan tea is high, it is often used for blending. Tea production in 2011 was 378m kilograms (kg) of made tea, representing a decrease of 5.3% compared to 2010 (399m kg). The country produced around 23% of the total global marketed black tea and has overtaken Sri Lanka as the world leader in tea exports (421m kg exported in 2011). The main market outlet for Kenya is the Mombasa Auction, where 95% of smallholder output is sold through twelve registered Tea Brokers. The main export destinations are Pakistan, Egypt and the UK.

About 56% of total tea produced in Kenya stems from smallholder tea growers; the remaining 44% is produced by estates and independent growers. There are about 632,000 smallholder tea growers organised in 63 tea factory companies managed by Kenya Tea Development Agency Ltd. (KTDA). Total cultivated land is estimated at about 145,000 hectares, of which 90,000 hectares is managed by smallholder farmers. The average smallholder tea holding is very small, with 0.4 acres (1,000 tea bushes) per farmer (Kamanu, 2010a).

1.2 The UTZ-Solidaridad tea programme and the context for the evaluation²

The smallholder tea subsector in Kenya is faced with numerous challenges, which include low productivity and inconsistent quality, leading to low incomes for the farmers. Many problems arise out of poor agricultural practices, which not only lead to low income, but also cause environmental damage such as soil erosion, water pollution and deforestation. Against this background, two factors enabled various actors to tackle these problems in the tea sector. First, market drivers created the opportunity to start working on the certification of tea in Kenya and Malawi. These market drivers consisted of market parties demanding

¹ The information in this section was provided by Joseph Kamanu from Solidaridad.

² The information in this section was provided by Geertje Otten from Solidaridad.

sustainably produced tea. Second, UTZ Certified and Solidaridad were willing to start creating the supply of UTZ certified tea in order to ensure sufficient supply for future demand for such tea. Third, donors such as IDH, the sustainable trade initiative, were willing to support projects that would improve the livelihoods of smallholder tea farmers.

In 2008, Solidaridad, in partnership with UTZ Certified, initiated a tea programme which was originally built around the development and the implementation of the UTZ Certified tea standard. By the end of 2009, a Solidaridad-led consortium (including UTZ Certified and D.E Foundation as direct consortium partners and SOMO and Oxfam Novib as specific projects partners) successfully received co-funding support from IDH for implementing the UTZ-Solidaridad tea programme within the IDH 'Tea Improvement Program' (TIP).

The specific purposes of this tea consortium are:

1. To improve the participation of national stakeholders (both men and women) in the development and implementation of sustainability standards through national reference groups¹
2. To stimulate domestic and international market demand for sustainably produced tea
3. To ensure access to, and benefits from certification schemes and markets for smallholder tea producers (both men and women).

Following the success of the growing demand for and supply of UTZ certified coffee, the above objectives offered UTZ Certified an opportunity to develop a similar programme for sustainable tea. With Sara Lee, one of the first movers in sustainable supply chain development, a committed private partner was found to translate these ambitions into concrete projects and results. The cooperation also offered a solid basis to further develop the market for sustainable tea.

At the same time, the programme's ambition was more than creating demand for sustainable tea from Europe alone. The partners were realistic in the limited volumes covered by the European Union (EU) market demand and therefore added an important element on market development of the main tea consuming markets in Asia.

Two other elements distinguished the programme from the other tea programmes under IDH TIP: a bottom-up approach through interventions such as

¹ A national reference group is a national voluntary body composed of tea industry stakeholders (farmers, producers, processors, exporters, traders, government etc.) who push the industry concerns, particularly with regard to multiple certifications.

national reference groups (through which the local realities were taken along in the UTZ Code of Conduct and further programme development) and the focus on sustainable tea production by smallholders. Other certification activities in the tea sector had only been focusing on larger estates.

The programme is carried out in several countries, among which Kenya and Malawi. In Kenya, the programme targets 33,000 smallholder farmers, their five producer organisations (KTDA factories) and field staff. It was planned that training would reach all farmers through Tea Extension Services Assistants (TESAs) assisted by promoter farmers. TESAs, promoter farmers and other farmers would be trained on Good Agricultural Practices (GAP) based on the UTZ Tea Code of Conduct for Tea Farms. Key factory staff would be trained on tea processing requirements based on the UTZ Tea Code of Conduct for tea factories.

The decision to start the programme in Kenya was based on the following arguments:

- Interest of KTDA smallholder farmers in the improvement programme;
- To have a broad base of UTZ certified supply available to further develop market interest for UTZ certified tea;
- The ambition of the Solidaridad East and Central Africa Expertise Centre (SECEAC) to gain experience with UTZ certification of smallholder tea producers in addition to their experience on the implementation of UTZ coffee certification.

Compared to other certification and training programmes in Kenya (such as Rainforest Alliance (RA) and later on also IDH), the UTZ-Solidaridad programme chose a different approach in their programme: instead of using a top-down approach in which needs and activities were discussed and agreed upon by KTDA top management, it was decided to opt for a more bottom-up approach. In this approach, the interest of the farmers to participate in the programme was created during several meetings between the factory company boards and staff of SECEAC. During these meetings, also information on the needs of the farmers was collected to be used for programme development. Once the factory company boards of the five producer organisations approved the planned programme, the programme team felt that the buy-in and motivation of the farmers was guaranteed. Only after that, the KTDA head office was involved and asked to support the programme.

From June 2010 onwards, Solidaridad started its trainings. The first phase entailed trainings to a selection of about 700 farmers organised in five different KTDA factories (Chinga, Gathuthi, Gitugi, Ira-ini and Ragati) to become promoter farmers. The promoter farmers would assist the TESAs in training the other

32000 smallholder farmers in their factory catchments to reach UTZ certification for tea production. The training programme for the smallholders in Kenya in relation to the UTZ certification would run for four years (2010-2014), as the number of requirements increased over a four-year period. Training of the farmers would be conducted by TESAs supported by promoter farmers.

After the first successful certifications of the factories in 2011 (Gitugi and Iria Iri), it became clear that the uptake of UTZ Certified tea from Kenya by the market was slower than expected. Middle East countries, an important market for Kenya tea, turned out to show little interest in certified tea. European markets showed interest, but Unilever, by far the biggest buyer of Kenya tea for its Lipton brand, and other UK companies had committed to Rainforest Alliance certification. As a result, it proved difficult for the factories that had committed themselves to the UTZ-Solidaridad programme to sell their tea as UTZ Certified tea.

Although Solidaridad believes that UTZ Certified offers a strong programme for the farmers, it decided to change its approach to meet the needs of the smallholder farmers. From 2011, the farmers were trained in a more generic way enabling them comply with various relevant certification requirements (mainly RA and Fairtrade and through this Ethical Tea Partnership (ETP)). Moreover, on a local level and where relevant, Solidaridad teamed up with RA and ETP, to provide combined training activities for those producer organisations that are connected to UTZ, RA, Fairtrade and/or ETP certification programmes.

1.3 The Theory of Change of the tea programmes in Kenya and Malawi

1.3.1 Mapping out the Theory of Change

In a workshop setting, the theory of change of the UTZ-Solidaridad tea programme for Kenya and Malawi was mapped out in July 2012 by UTZ, Solidaridad and D.E Foundation. LEI consequently elaborated and finalised the theory of change with feedback from UTZ, Solidaridad and D.E Foundation. Figure 1 presents the theory of change as a flow diagram starting with the reasons why the programmes started, followed by programme activities, leading to expected changes in the farmers' situation.

The theory of change describes how Solidaridad, UTZ and D.E Foundation intend to create desired impacts, assuming certain conditions are in place, and which steps need to be taken to get there.

In the next sections, the rationale and assumptions behind the tea programmes and the impact logic of farmer training will be explained, following the

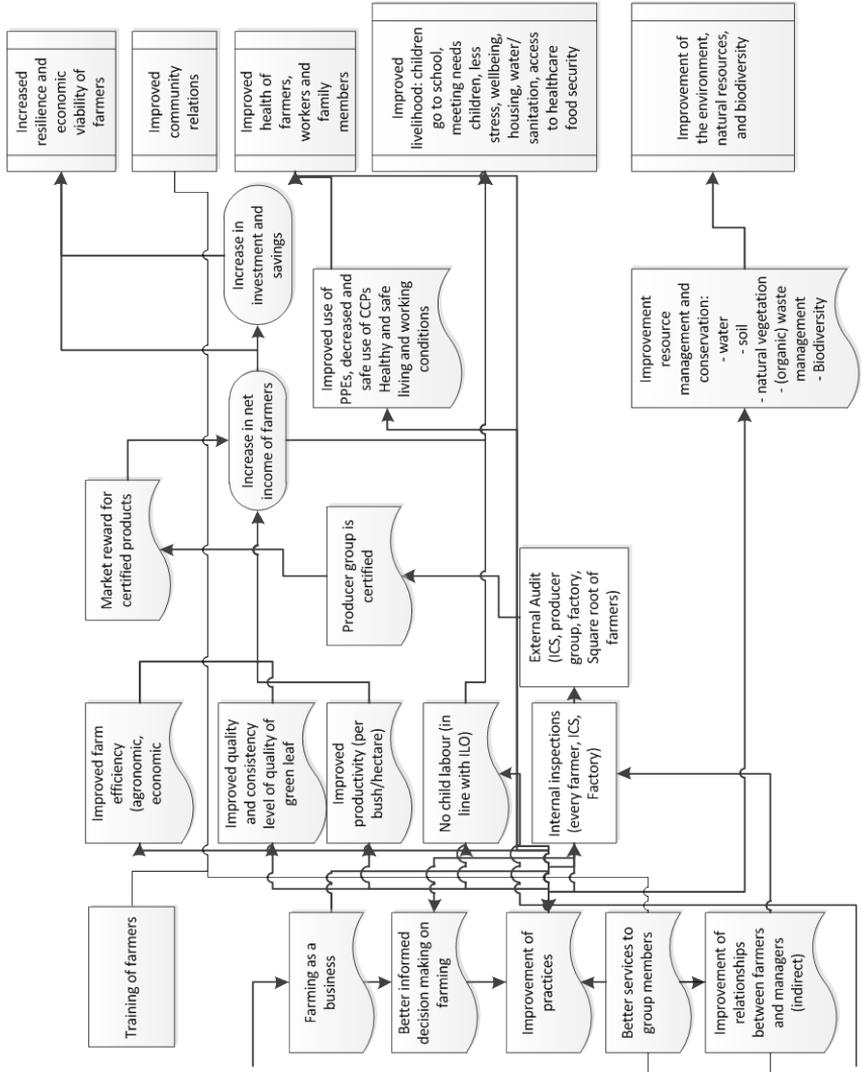
elements of Figure 1 from the left to the right. Keeping in mind that the programme outcomes are influenced by many factors beyond the control or influence of the programme, a list of external factors is presented that should be taken into consideration when evaluating programme outcomes. The theory of change around Internal Control System (ICS) establishment and management and detailed information on how improved farm practices are expected to lead to certain outcomes can be found in Appendix 1.

1.3.2 The rationale behind the tea programme

After funding became available to start the programme, the programme team identified factory companies to take part in the programme and convinced them to do so, based on the reasoning that the programme will positively influence organisational management (through the ICS), farm productivity, efficiency and green leaf quality, and improve the efficiency of factory operations.

In Kenya, it was assumed that problems such as low productivity, inconsistent quality of tea and a low efficiency (high ratio of inputs to outputs) amongst smallholder farmers are partly explained by the fact that they did not implement Good Agricultural Practices (GAPs) because of a lack of knowledge. A large part of the programmes is therefore focused on training farmers on implementing GAPs. The rationale is that when farmers learn about GAPs and see the benefits of it, they will start implementing these GAPs on their own farms, which will in turn improve their productivity and green leaf quality, efficiency (higher ratio of outputs to inputs), and income.

Figure 1 (continued) Theory of Change of the UTZ-Solidaridad tea programme in Kenya and Malawi.



1.3.3 Impact logic of farmer training: activities, expected outcomes and impacts

Before farmers could be trained, training materials were developed by Solidaridad with contributions from Agrican (Kamanu, 2010b) to facilitate the trainings, since appropriate training materials did not exist when the programme started. These training materials were then used to train promoter farmers and TESAs. One promoter farmer was to train 50 other farmers. The reason to use promoter farmers instead of professional trainers to train other farmers is that UTZ Certified (UTZ) and Solidaridad expect that farmers can learn well from colleague farmers, as they are often in contact with each other. This expectation is based on personal experience from the tea industry and experience from the regional coffee programme that had been running before. Promoter farmers are first required to implement what they have learnt, becoming model farmers from whom other farmers can copy (Kamanu, 2012). It is also planned by KTDA that in the long term, farmers will adopt the Farmer Field School (FFS) methodology¹ of extension and that promoter farmers may then form the nucleus around which the FFSs can coalesce.

Promoter farmers were selected in a participatory way; all farmers from a leaf collection centre were gathered together and they chose the promoter farmers amongst themselves. The reason for letting farmers choose their own promoter farmers was to give them ownership of the programme, and obtain their support to the programme. Promoter farmers are not reimbursed for their role. Kamanu (2012) indicates that 'the farmers' motivation to become promoter farmers is first to get the opportunity to become trained, to learn and improve their practices on their own farms, leading to improved productivity and income. Second, the promoter farmer would be seen as a knowledgeable and better farmer by peer farmers, and hence would share this knowledge with the others, contributing to the improvement of his or her community and assisting them in getting certified. Farmers are proud of their association or factory being certified. Some promoter farmers also use this position to popularise themselves in order to be elected as tea committee leaders in the leaf collection centres or association and even political leaders (councillors) in the wards.

¹ FFS is a method of extension where farmers learn from one another in groups of 20 to 30. Learning is informal through observation and discussion within the group that meets regularly, e.g. once a month. Through this method, farmers make better informed decisions and as a group can source for resources including training. The class is the field/farm and the teachers are the farmers themselves. Learning continues throughout the season of the crop (one year for tea) and the group then can graduate. Farmers who graduate can form other FFSs.

Finally, some promoter farmers also think that they may make money in future as they offer services to others'. These reasons for becoming a promoter farmer are confirmed by information from the quantitative survey.

Promoter farmers were to become model farmers and would assist TESAs in training other farmers. Trainings would focus on a variety of topics required for UTZ Certification such as tea production practices, the correct use of crop protection products (CCPs), pesticide use, record keeping and first aid. Because smallholder farmers undertake mixed farming and often grow a variety of crops in addition to rearing animals, the training would treat more topics than just the practices required for UTZ Certification, to address sustainability holistically. Examples of such topics or practices include gross margin analysis of a variety of crops, tea production bylaws¹, water harvesting, food storage, kitchen gardens, savings, investments, grouping and economies of scale, gender equity and youth involvement. The knowledge and awareness of farmers on all topics is expected to increase through the trainings, and through learning from the promoter farmers in their role as model farmers.

UTZ and Solidaridad expect that training would lead to an increase in knowledge and skills of smallholders on agricultural, social and environmental practices in line with UTZ Code of Conduct for Tea Farms, and the other topics covered in the training. They also expect that the farmers will have knowledge on the requirements and procedures for UTZ certification, and that in the end they will adopt this knowledge, and put it into practice. Thus, the increase of awareness and knowledge of farmers through the trainings and examples of model farmers, as well as keeping records and a better administration, is expected to lead to farmers 'farming as a business', making better informed decisions on farming matters and improving their practices.

Improvement of their practices will lead to farmers passing the internal inspections, external audits, and then to the certification of the producer group. Being part of the certification process, including group formation (social peers) and receiving inspections, is expected to contribute to the implementation of the practices learnt in the training: a full set of good practices instead of quick wins only; and continuation of practices after the training. Certification itself is expected to lead to market rewards for certified products, which also contributes to increasing the net income of farmers.

¹ Bylaws are the written rules for conduct of an organisation, be it a corporation, association, partnership etc. A bylaw can be for example a rule made by a local authority for the regulation of its affairs or the management of the area it governs, a regulation of a company, society, etc., or a subsidiary law.

It is important to emphasise that the focus of the programme is not on the premium. Namely, Solidaridad and UTZ assume, that in the long run (long-term outcomes) farmers will have increased productivity and increased quality tea, increased efficiency, increased income and improved social and environmental conditions. Better social conditions are also expected to benefit workers. Eventually, they expect better livelihoods will be created. In the context of smallholders, the programme focuses on the following immediate and intermediate outcomes:

1. Improved knowledge on sustainable tea production
2. Record keeping
3. Farming as a business
4. Better informed decision making on farming
5. Improved implementation of sustainable practices
6. Better resource management and conservation practices (water, soil, natural vegetation, (organic) waste management, biodiversity increase)
7. Healthy and safe working and living conditions (including safe handling and storage of agro-chemicals and chemical waste)
8. More transparent processes
9. Better organised groups
10. Better services to group members

Improvement of relationships between farmers and managers (indirect).

When these immediate and intermediate outcomes are realised, the following mid-term outcomes are expected:

1. Improved quality and consistency level of quality of green leaf
2. Improved productivity (per bush/hectare)
3. No child labour (in line with International Labour Organisation standards)
4. Correct use of fertilisers
5. Improved use of personal protective equipment (PPE)
6. Decreased and safe use of crop protection products (CCPs)
7. Improved farm-efficiency (economic, agronomic)
8. Improved income
9. Increase in investment and savings.

These mid-term outcomes, and receiving a market reward for UTZ Certified products, are expected to lead to an increase in net income of producer groups and farmers and subsequently to lead to an increase in savings from income from tea and other farm enterprises.

Training and an increase in savings is expected to lead to an increase in investments by farmers. An increase in net income, savings and investments of farmers is expected to contribute to the following impacts:

1. Increased resilience and economic viability of farmers
2. Improved health of farmers and workers & families
3. Improved livelihoods: children going to school, meeting the needs of children, less stress, improved wellbeing and food security (indirectly, through increased income). Estates are expected to invest in and by doing so improve housing, water/sanitation and access to healthcare for workers.
4. Improvement of the environment, natural resources and biodiversity
5. Better community relationships, through increased interaction between farmers (as part of the training programme) and better services by the producer organisations, leading to trust and loyalty.

For detailed information on how the improvement of tea practices is expected to lead to the impacts areas mentioned above, see Appendix 1.

1.3.4 External factors that can influence programme outcomes

Although external factors are not explicitly displayed in the theory of change in Figure 1, they are an important issue for the evaluation of the programme as they can influence programme outcomes. During the theory of change workshop, several external factors that could influence programme outcomes were identified to be taken into account during the mid-term review. These are:

1. Rainfall and rainfall patterns/climate change
2. Market prices
3. Governmental stability
4. Other trainings and certification programmes
5. Labour availability (including health of farmers and family members)
6. Relationship between farmers and factory
7. Market demand for certified products
8. Services or subsidies by the government
9. Access to credit
10. Plagues and diseases on tea
11. Input costs
12. Age and education of farmers
13. Land ownership/tenure issues: if land is legally owned by men, but women do the work, they may not fully adopt the knowledge learnt as they believe they are not fully benefitting.

Most of these external factors have been taken into account in the analyses in this study, except governmental stability, services or subsidies by the government and land tenure issues. LEI could not take these factors into account as no quantifiable information could be found for them or no (explanatory) information on these factors was obtained in the focus group discussions and interviews. The same counts for the external factors: the relationship between farmers and factory, access to credit and plagues and disease on tea.

1.4 Aim of this study and research questions

In 2010, Solidaridad and UTZ decided to evaluate the effectiveness of their activities and the impact of the implementation of UTZ certification amongst smallholder tea farmers in Kenya and Malawi. Their aims for such an evaluation study was to show their contribution to impact on smallholder farmers and their households, and to use the findings for their own learning and improvement. For this reason, a baseline study was carried out at the start of the UTZ-Solidaridad programme and a mid-term review after the programme had been running for two years.

The baseline study, carried out in 2010, described the situation of the smallholder tea farmers in 2010 that was to be compared to the mid-term situation. The baseline situation included basic characteristics of the farmers such as household characteristics, their knowledge and implementation of GAPs, and their production and livelihood situations (see Waarts, Y. et al., 2011).

The objective of the mid-term evaluation, and thus of this study, is to present information about the achievements (on output and outcome level) and the relevance and appropriateness of the UTZ-Solidaridad tea programme with regard to the training and implementation of UTZ certification of smallholder tea farmers in Kenya. The information from the mid-term evaluation will be used in two ways:

1. It is a learning experience for Solidaridad, UTZ and the smallholder farmer organisations in the implementation of similar programmes and may possibly lead to an adjustment or optimisation of the current programme to enhance the outcomes. This process will be reinforced, by using the results of the LEI impact assessment study: Sustainable tea production, impact assessment of Farmer Field School and Rainforest Alliance training (Waarts et al., 2012) as a basis for shared learning.
2. It is expected that preliminary results can be used as input for communication towards donors or potential donors and other stakeholders about the effectiveness of the programme.

1.5 Research questions

The research questions for this mid-term evaluation study are divided into three categories: effectiveness, appropriateness and relevance, followed by lessons learnt and recommendations. The questions are listed below per category.

Questions on effectiveness of the tea programme:

1. To what extent have the activities led to the planned outputs?
2. To what extent have the objectives (outcome level) of the programme been realised as a result of the output?
3. To what extent are the different target groups reached (for example men versus women, workers versus farmers, etc.)?
4. What are the main factors influencing the results of the actors (e.g. productivity)? (for example lack of availability of labour, climate/rainfall, impact of aids etc.)?

Questions on appropriateness and relevance

5. To what extent is the programme with regard to the training of UTZ certification of smallholder tea farmers in Kenya appropriate to the needs of the target group?
6. To what extent are the methods and activities well chosen to attract the target group?
7. What, if any, is the added value for the various actors going through the certification process? How do the intervention of training and certification influence/strengthen each other?
8. Of the changes observed in the situation of the tea farmers in Kenya, if any, what can be said for contribution and attribution with regard to the Solidaridad/UTZ intervention?

Lessons learnt and recommendations

What are the major lessons learnt and what recommendations can be given with regard to the current tea programme in Kenya and in the development and execution of future other programmes?

1.6 Outline of this report

This report is organised as follows: first, the methodology of the mid-term evaluation is described in Chapter 2. Chapter 3 presents the results, and thus the answers to the research questions. Chapter 4 concludes and recommendations

are given for the tea programme in Kenya and for the development and implementation of other programmes.

2 Methodology

2.1 Introduction

As described in Chapter 1, the evaluation of the UTZ-Solidaridad tea programme in Kenya is carried out through two studies, of which this mid-term review is the second study after the baseline study was delivered in 2010 (Waarts, Y. et al., 2011). At the time of the baseline study, the programme activities had just started and most of the farmers had not been trained. The mid-term situation was expected to be different as the programme had been running for two years and all targeted farmers were expected to have participated in the UTZ-Solidaridad programme. By comparing the mid-term evaluation study results with the baseline study results and taking into account the potential influence of external factors, LEI analysed the evolution of targeted farmers' performance. This allows for provisional conclusions on the outcomes of the programme.

2.2 General approach

The research methodology adheres to the 'mixed methods' principle. This implies that multiple research methods were used to analyse the impact of the programme. The specific properties of the programme impact entail some validity threats for the research conclusions. When combining multiple research methods (both quantitative and qualitative), the qualitative data can back the findings of the quantitative study.

The quantitative analyses of this impact assessment adheres to the before and after treatment approach. In this approach a comparison is made of the change in the longitudinal data to establish the effect before and after a situation occurred (in this example: before training started and after a certain amount of time farmers have been trained). Data have been collected before farmers actively participated in the programme during a baseline study.

Next, data were collected for this evaluation, two years after the programme had started. The impact of the UTZ - Solidaridad tea programme is established as the change in the selected indicators over the time period of the programme, taking into account the external factors. In the presentation of the results from the quantitative data analyses, qualitative information from focus group discus-

sions and interviews is presented to indicate stakeholder perceptions on changes over time.

2.3 Sampling

A stratified sample was taken during the baseline survey from the five KTDA factories that were to become UTZ certified. The same sample was to be used for both the baseline study and the mid-term review to assess changes over time. Farmers were selected randomly from a list with all farmers per factory after stratification. In each factory, 60 untrained farmers and 12 promoter farmers were randomly sampled. In total, 354 farmers (294 common farmers and 60 promoter farmers) were to be interviewed in the baseline study. See for more information on the actual farmers interviewed in the baseline and mid-term studies, Chapter 3.

Sampling was done during the enumerator training of the baseline survey by the enumerators, TESAs and Field Service Coordinators of each factory. First, the total group of farmers was stratified according to the electoral areas. Then all farmers who were part of the Farmer Field Schools (FFS), who were promoter farmers for UTZ, who were lead farmers for Rainforest Alliance and who were not active in green leaf production were deleted from the list. Third, the group was stratified for male and female tea farmers to guarantee a spread over gender.

We sampled promoter farmers separately, to be able to test the assumption that the knowledge level of promoter farmers was higher than that of the group of untrained farmers in the baseline study.

For the mid-term assessment, we have interviewed as much as possible the same farmers that were interviewed in the baseline assessment. Some farmers could not be interviewed, for instance because they were away. These farmers were not replaced by others. See for more information on the interviewed farmers in Chapter 3.

During the assessment, LEI came across farmers in the dataset who indicated not to have been trained, and farmers who indicated that they participated in UTZ-Solidaridad and other trainings. In the analyses, the farmers were therefore divided into two groups: i) all farmers who have been trained ('farmers who participated in trainings generally') and ii) the farmers who affirmed to have participated in the UTZ-Solidaridad programme (the UTZ-Solidaridad trained group). The latter group is a subset of the former group. The group with 'generally trained' farmers probably also consists of farmers who participated in the UTZ-

Solidaridad programme as during the assessment it became clear that farmers were often not aware of the name UTZ or Solidaridad while they participated in the programme. But as no information is available to what extent those farmers participated in the UTZ-Solidaridad programme, and also other trainings were made available to the targeted farmers, this second category was created. The study results are still presented as a before and after treatment analyses with a focus on the UTZ-Solidaridad trained group, although also information will be provided on the evolution of the 'generally trained' group over time.

2.4 Indicator selection

From the discussions on the theory of change, outcome indicators have been extracted that enabled us to analyse the outputs and outcomes of the programme for these indicators. Next to indicators derived from the theory of change, the research questions and the external factors potentially influencing the programme outcomes also provided a basis for deriving indicators for the evaluation. Both sets of indicators are presented in Appendix 2. In these tables, the proposed measurement indicators for the mid-term review are presented per type of outcome indicator, per research question and for external factors. In the last column, relevant indicators used in the baseline survey are presented.

2.5 Data collection

The main data required for the mid-term evaluation was collected by enumerators visiting individual farmers with a questionnaire after having been trained to interview farmers with the questionnaire. This questionnaire collects information on the general characteristics of farmers and their farms and queries the farmers about information that can be used to assess the results on outcome level of the programme. The questionnaire can be found in Appendix 3A.

In addition to data collection through quantitative household surveys by interviewing farmers, LEI also organised focus group discussions with farmers, TESAs and FSCs of the factories involved in the research.

Besides interviewing farmers and field staff, as many data as possible on rainfall, production statistics at the factory level, the trainings and the Internal Control System (ICS) were collected to enable LEI to better assess whether the impacts (if any) could be attributed to the tea programme. Thus, both quantitative and qualitative data were gathered, from primary and secondary sources.

The qualitative data was gathered to back the findings of the quantitative analyses, to enable an interpretation of the results and to gain understanding of the attribution of the results to the programme. The fact that all farmer groups are (or will be) double certified has received special attention in the analyses.

While analysing the performance of the different producer groups, these issues were taken into account as explanatory factors for the groups' performance. The main validity threat for the analysis is the attribution problem. Farmers are not exclusively trained by Solidaridad. Nor are they exclusively trained on the UTZ Code of Conduct requirements. To deal with this issue, this mid-term evaluation tried to obtain insights into the characteristics of training participated in by the farmers interviewed (topics, length, quality, relevance to the UTZ Code of Conduct/certification requirements etc.). Such issues were also solved by asking farmers qualitative questions in the survey to understand reasons of certain behaviours and/or outcomes.

2.6 Data analysis and validation

Information collected through the survey was first entered into Excel sheets and then processed and analysed in the statistical programme Stata¹. The raw data contained significant spelling errors and omissions, which increased the time spent on data cleaning and identifying the correct information of the households and the respondents. Table 2.1 provides an overview of the households interviewed in 2010 and 2012.

¹ StataCorp. 2007. Stata Statistical Software: Release 10. College Station, TX: StataCorp LP. Stata is a general-purpose software package created in 1985 by StataCorp. It is used by many businesses and academic institutions around the world. Stata is a complete, integrated statistical package for data analysis, data management, and graphics.

Company to which the respondent sells tea	2010 (Baseline)	2012 (Mid-term)	Matched Households ^{a)}
Chinga	72	72	66
Gathuthi	71	58	52
Gitugi	67	67	55
Iri-ini	72	71	62
Ragati	72	60	51
Total	354	328	286

a) In about 30% of the cases, the respondent was a different person from the one interviewed in the baseline study

An essential part of the methodological design was to establish changes over time on the same households (the 'before' and 'after' comparison). This required that information was collected on the same households in both baseline study and in the mid-term review (i.e., repeated observations). As shown in Table 2.1, part of the households surveyed in 2010 (baseline) were not reached in the 2012 survey. And part of the households surveyed in 2012 had not been surveyed in 2010¹. The 'before' and 'after' comparison could only be made on 'matched households', households that were both surveyed in 2010 and in 2012.

Since the dataset contains repeated observations (data from two points in time) on the same farmers (who represent their household), LEI used panel data techniques² to analyse the changes in each household and the influence of UTZ-Solidaridad training and other trainings on such changes. Each household in the dataset, which is uniquely identified by a grower number, is one panel about which information was collected on various indicators in different periods, i.e., the baseline situation 2009-2010 (noted as 2010) and the mid-term situation 2011-2012 (noted as 2012).

Changes in each individual household are calculated as the differences in values of various variables or indicators between 2010 and 2012. We use two-sample mean-comparison tests (t-test) to see whether these differences are statistically significant.

¹ As some farmers could not be located or reached during the survey period, the enumerators interviewed farmers that were not sampled in the baseline in order to keep up the number of interviews.

² In statistics and econometrics, the term panel data refers to multi-dimensional data that contain observations on multiple phenomena observed over multiple time periods for the same firms or individuals. A basic introduction to panel data techniques can be found in Verbeek (2000), *A Guide to Modern Econometrics*. John Wiley & Sons, Ltd Chichester.

In the analysis, farmers are primarily grouped according to the types of trainings they said to have participated in. Possible trainings include UTZ-Solidaridad training (as promoter farmer or common farmer), training for RA and FLO certification, Farmer Field Schools (FFS) and other trainings (see table 3.1 for an overview). In many cases, one respondent has participated in different types of trainings, which may complicate the attribution of impact to one certain type of training. The marginal effect of a single training is then assessed using regression analyses, taking into account the participation in all other trainings.

To obtain insights into the differences among different groups, both in their current level and in their changes, regression analysis is performed using these differences as the dependent variables, and variables representing trainings and other characteristics of the households as well as external factors as the explanatory variables.

In general, the tables presented in this report give mean, median, standard deviation and sometimes minimum and maximum values. Differences are considered statistically significant using a confidence interval of 95% indicating that there is no more than a 5% chance that the difference registered in the sample has happened by chance. Whether the difference is significant depends on the variations both between and within the groups.

To describe the changes that have taken place from 2010 to 2012 among different groups of households, we computed the tables of transition probabilities for the indicators of interest that take a limited number of discrete values (levels). For a variable X, the transition probability table is illustrated in Table 2.2. The probability P_{ij} shows the proportion of households whose variable has changed from level i in 2010 to level j in 2012. The table of transition probabilities offers insights into the stability of the group with regard to a number of key features.

Table 2.3		Transition probabilities of variable X from baseline to mid-term		
Level of variable X in baseline (2010)	Level of variable X in mid-term (2012)			
	a	b	C	
a	P_{aa}	P_{ab}	P_{ac}	
b	P_{ba}	P_{bb}	P_{bc}	
c	P_{ca}	P_{cb}	P_{cc}	

2.7 Methodological limitations

Like all impact assessment studies, the main methodological challenge to this study is how to attribute outcomes to the intervention of the programme. More specifically, the challenge concerns: 1) defining and designing outcome indicators for which specific and reliable data and information can be obtained; 2) demarcating the scope of the intervention; and 3) correcting for the impact of contextual factors other than the intervention and assessing the counterfactual.

Dealing with these methodological challenges requires good understanding of the theory of change, careful contextual analysis, and good quality data on the target group, to which this study has paid great attention. There are however still limitations with regard to the quality of survey data collected both in the quantitative part and in the qualitative part. Since most information on production and the living environment was based on the respondents' 'historical account', the information is subject to recollection error and dependent on the respondents' level of literacy and articulation. This has resulted in missing or erroneous values in the datasets. From the qualitative part, due to possible confusion with the training programmes, the focus group farmers interviewed might be untrained and are from a factory that was not UTZ certified at the time of the discussions. Finally, respondents did not appear to know the name of UTZ and Solidaridad and do not seem to understand what a promoter farmer is, indicating that they were not aware of the status and role of promoter farmers. This limitation poses difficulties to the attribution of the outcomes to the UTZ-Solidaridad programme.

3 Results

3.1 Introduction

This chapter presents findings from the mid-term review study as answers to the research questions that concern the effectiveness of the UTZ-Solidaridad programme (section 3.2-3.5), the appropriateness and relevance of the programme (Section 3.6- 3.9). Also we highlight the external factors that influenced the mid-term review results (Section 3.10).

3.2 To what extent have the activities led to the planned outputs?

Training promoter farmers is the key intervention activity in the theory of change of the tea programme which is supposed to lead to the promoter farmers training other farmers and the smallholder associations (factories) obtaining UTZ certification. In this section, following the theory of change, the training of promoter farmers is described as an activity, and the training of other farmers and whether factories obtained UTZ certification are presented as outputs of the tea programme.

3.2.1 Main programme activity: training of promoter farmers

In total, 719 farmers were trained in 2010 by Solidaridad (between 136 and 154 per factory) to become promoter farmers, fifty-eight per cent of them female. After being trained, these promoter farmers were to train other farmers. One promoter farmer was to train about 50 other farmers, assisted by TESAs, who were also trained. UTZ-Solidaridad programme training activities were discussed during planning meetings with factory staff; promoter farmers were informed about them during their training.

3.2.2 Expected output of the programme: training of 'common' farmers

The UTZ-Solidaridad 'common' farmer training programme was implemented in similar ways in the different KTDA factories:

- Meetings at Leaf Collection Centres with about 200 farmers per meeting

- Giving information on UTZ certification and GAPS during barazas, large gatherings in which all farmers from a factory get information from factory management, TESAs and farmer-directors
- Farm visits by promoter farmers. These farmer-to-farmer visits usually took place during the low season, since during peak season promoter farmers were too busy on their own farm.
- Field days (technical meetings).

Because in LEI's experience farmers often do not recollect in which training programme(s) they have participated, LEI has sought information on training activities from the five factories involved in the programme. Information on trainings from three factories (Chinga, Gathuthi, and Gitugi), indicates that often UTZ-Solidaridad training issues are combined with other topics during KTDA trainings (especially with RA certification and farm management issues). The training location is often a Leaf Collection Centre or 'the field'. At Chinga factory, relevant training sessions lasted between 1 and 2 hours and took place about 30 times per year. Apparently, farmers supplying green leaf to Chinga are trained in smaller groups than farmers connected to the other factories as training at Chinga factory takes place in small groups (16-31 participants). At Chinga factory, between 9 and 18% of all farmers of the factories participated in each of the individual trainings in the year before the mid-term survey.

About 75% of the respondents answered the question whether they attended UTZ-Solidaridad trainings. Among these respondents, 45% indicated to have participated in UTZ-Solidaridad training, of which about 50% said to have been trained as promoter farmer. These numbers need to be treated with care: the factory extension staff was quite positive that all farmers had been trained even though it appears that they do not record all training activities, including those of promoter farmers, in a system. Furthermore, it is highly unlikely that about 21% of the farmers in our sample are promoter farmers. Apparently the respondents do not know exactly what a promoter farmer is or have misunderstood the question.

Based on the information provided by the respondents, Table 3.1 provides an overview of different combinations of trainings that the respondents participated in, assuming no training was participated in when the respondent did not answer the question (detailed information can be found in Appendix 5). As indicated in the introduction, most farmers participated in UTZ-Solidaridad trainings also participated in other trainings. Only a small percentage (about 3%) of all respondents participated only in the UTZ-Solidaridad training programme. The in-

formation from the farmers seems to confirm that UTZ-Solidaridad trainings are usually given in combination with RA, FFS and other training topics.

Table 3.1 Overview of training combinations a)		
	Percentage of all respondents	Percentage of subgroups
No training	22%	
Trained	78%	
Affirmed UTZ-Solidaridad trained		51%
Other trained farmers b)		49%
Affirmed UTZ-Solidaridad trained (including promoter farmers)		
UTZ-Solidaridad training only	3%	4%
UTZ-Solidaridad + Other combinations (RA, FFS, Other)	37%	47%
Total	40%	51%
Other trained farmers		
RA only	12%	15%
RA + Other combinations (FFS and Other)	16%	20%
Non-RA training	11%	14%
Total	38%	49%
a) Based on the answers by the respondents of the survey. When answers to questions on trainings were missing, it is assumed that the respondent did not receive the training. RA training includes the respondents indicating they are a lead farmer.		
b) The group 'other trained farmers' may include farmers who participated in the UTZ-Solidaridad programme but who are not aware that they did		

The farmers in the focus group discussion said that they did not participate in the UTZ-Solidaridad training programme. However, when we explained what the training was about they said that they understood better, and that they did not recognise the terms UTZ and Solidaridad. An explanation for that could be that their factory is not certified yet and TESAs usually combine information on RA and UTZ certification. When the farmers explained what types of training they had participated in (field day, baraza) and which topics were addressed, such trainings could have been part of UTZ-Solidaridad trainings but also could have been regular extension activities from KTDA or training for RA certification. For instance, they mentioned that they were visited by other farmers, who taught them about PPE and waste management (which can be similar for UTZ-Solidaridad and RA trainings). With regard to visits from TESAs, they learnt from

TESAs when to apply fertilisers and why to follow such instructions. TESAs visit them about twice a year.

It is worth noting that SECAEC indicates that it is practically impossible to reach 100% of all farmers as some of them are what is referred to as 'telephone farmers' who live far from their farm and manage their tea farm through telephone communication with their workers. Since such workers are often seasonal, they do not attend trainings. This accounts for between 20 to 30% of registered farmers (Kamanu, 2012).

3.2.3 Expected output of the programme: UTZ certification

With regard to obtaining UTZ certification, all factories except for Gathuthi had become UTZ certified by July 2012. As can be seen in Table 3.2 on the next page, the factories that have obtained UTZ certification are also RA certified and three out of the five factories are Fairtrade certified (through FLO).

Company to which the respondent sells green leaf	UTZ certification	RA certification	FLO certification
Chinga	1-3-2012	1-3-2012	1-5-2007
Gathuthi	N/A	N/A	N/A
Gitugi	1-5-2011	21-12-2011	1-8-2010
Iri-ini	1-3-2011	1-7-2011	1-10-2006
Ragati	1-4-2012	1-6-2012	N/A

a) The information in this table is obtained from the factories.

3.2.4 Conclusion

Looking at the question 'To what extent have the activities led to the planned outputs?', it can be concluded that: i) all promoter farmers have been trained (100% of the planned activity has been implemented), ii) all factories except Gathuthi have become UTZ Certified (80% of this output has been reached) and that probably more than 45% of the farmers have been trained on UTZ (minimally 45% of the output has been reached). A reason not all farmers participated in the UTZ-Solidaridad programme could be the involvement of so-called 'telephone farmers' (between 20 to 30%), who are often absent from their farms.

With respect to the impact logic of cascading trainings through promoter farmers, it is difficult to assess to what extent the logic was indeed followed, i.e.

whether promoter farmers replicated training to common farmers. The difficulty arises because factory staff said that promoter farmers did not always train other farmers in a busy season and no records on the promoter farmers and their training activities were available.

3.3 To what extent have the objectives (outcome level) of the programme been realised as a result of the output?

3.3.1 Realisation of objectives

The theory of change specifies the expected changes in outcome indicators as a result of programme outputs. As shown in Figure 1, training activities were expected to lead to improved knowledge on and implementation of sustainable practices. These immediate outcomes should then lead to the realisation of mid-term outcomes. Following the theory of change in Figure 1, Table 3.3 presents an overview of the realisation of these two types of outcomes for the group trained in the UTZ-Solidaridad programme (the UTZ-trained group). More information is presented in the subsequent paragraphs, and in Appendix 5 (A5.4 and A5.5).

Table 3.3

Expected changes according to the theory of change and observed changes for the UTZ-Solidaridad participants

	Expected outcome by the theory of change	Outcome indicators	Observed changes in the indicators based on the survey + : Positive and significant changes +/- : No significant changes - : Negative and significant changes	Qualitative information (interviews, focus group and workshop): F: mentioned by farmers E: mentioned by extension staff
Immediate/intermediate outcomes				
1	Improved knowledge on sustainable tea production	Knowledge scores	+ (See 3.3.2)	+ (F, E)
2	Record keeping	Score for implementation of practice Decision making based on records	+ (See 3.3.3)	Not mentioned by F or E
3	Farming as a business	Diversification (other sources of income)	+ (See 3.3.3)	+ (E)
4	Better informed decision making on farming	Use of knowledge from training and other sources of information in decision making	+ (See 3.3.3)	Not mentioned by F or E
5	Improved implementation of sustainable practices	Overall implementation scores	+ (See 3.3.4)	+ (F, E)
6	Better resource management and conservation practices (water, soil, waste, biodiversity)	Implementation scores on environment	+ (See 3.3.4)	+ (F, E)
7	Healthy and safe working and living conditions (incl. safe handling and storage of agro-chemicals and chemical waste)	Implementation scores on social indicators	+ (See 3.3.4)	+ (F)
8	More transparent processes	Evaluation of the services of the factory on ICS and audit	Change could not be established (See 3.3.5)	+ (F)

Table 3.3		Expected changes according to the theory of change and observed changes for the UTZ-Solidaridad participants			
(continued)		Expected outcome by the theory of change	Outcome indicators	Observed changes in the indicators based on the survey + : Positive and significant changes +/- : No significant changes - : Negative and significant changes	Qualitative information (interviews, focus group and workshop): F: mentioned by farmers E: mentioned by extension staff
Immediate/intermediate outcomes					
9	Groups are better organised	Perception Satisfaction with service and information provided by producer group	Change could not be established (See 3.3.5)	+ (F)	
10	Better services to group members	Perception Satisfaction with service and information provided by producer group	Change could not be established (See 3.3.5)	+ (F)	
11	Improvement of relationships between farmers and managers (indirect)	Perception Satisfaction with relation with the tea factory	+ (See 3.3.5)	No feedback by F or E	
Ultimate outcomes					
1	Improved productivity	Yield (kg/bush); Perception;	(See 3.3.6)	+ + (F, E)	
2	Improved quality and consistency level of quality of green leaf	Percentage of first grade tea; Reduction of rejected green leaf	(See 3.3.6)	+/- + (E)	
3	No child labour (in line with International Labour Organisation standards)	Percentage of farmers using child labour; Activities carried out by children	Change could not be established (See 3.3.7)	+ (E)	
4	Correct use of fertilisers	Timing and amount of fertiliser application; labour input;	(See 3.3.8)	+/- + (F, E)	
5	Improved use of personal protective equipment (PPE)	Use of PPE	(See 3.3.9)	+ + (F, E)	

Table 3.3		Expected changes according to the theory of change and observed changes for the UTZ-Solidaridad participants		
(continued)	Expected outcome by the theory of change	Outcome indicators	Observed changes in the indicators based on the survey + : Positive and significant changes +/- : No significant changes - : Negative and significant changes	Qualitative information (interviews, focus group and workshop): F: mentioned by farmers E: mentioned by extension staff
Ultimate outcomes				
6	Decreased, and safe use of crop protection products (CCPs)	Percentage of farmers not using agrochemicals; Use of bio or organic pesticides; Treatment of empty containers and excess agrochemicals	+ (See 3.3.9)	+ (F, E)
7	Improved farm-efficiency (economic, agronomic)	Agronomic and economic Input-output ratios	+ (See 3.3.10)	+ (E)
8	Improved income	Net income from green leaf Diversification of income	+ (See 3.3.11)	+ (F, E)
9	Increase in investment and savings	Saving: perception Investment: perception	+/- (See 3.3.12)	- (E)

As shown in Table 3.3, 13 of the 20 overall outcome indicators (65%) showed significant positive changes and none of the indicators showed negative changes for the group of farmers trained in the UTZ-Solidaridad programme. Three overall outcome indicators did not change significantly and for four indicators, change could not be established. The qualitative information confirmed positive changes on the related outcome indicators, although they are overall more positive than the quantitative data, which is a trend often seen in other assessments, except for the indicators 'saving' and 'investment'. Detailed explanations can be found in the subsequent sections as indicated in the table.

3.3.2 Knowledge on sustainable production

The overall knowledge score for trained farmers has improved significantly (from 4.0 in 2010 to 4.6 in 2012) and in particular for farmers who were trained in the UTZ-Solidaridad programme (from 4.1 to 4.9). This result is confirmed by the farmers in the focus group discussion and factory staff (See Appendix 5). Nevertheless, the rather low overall knowledge score in the mid-term situation leaves room for improvement.

The respondents' knowledge on sustainable tea farming was measured as knowledge scores that are derived from the number of correct answers they had given to the 15 knowledge questions concerning sustainable agricultural practices (see part E of the questionnaire). For each question, the score is scaled between 0 and 10 based on the number of correct answers given to the question and the maximum number of correct answers to the same question.

The level of increase in knowledge scores varies among the groups. No significant difference was observed between UTZ-Solidaridad trained promoter farmers and common farmers. Detailed knowledge scores for each knowledge question and for each group in 2010 and in 2012 can be found in Appendix 6.

Looking at the knowledge scores for individual questions and their changes between 2010 and 2012, we observe that the knowledge scores of training participants has significantly increased for 12 out of 14 knowledge questions and that farmers participating in the UTZ-Solidaridad programme significantly increased their knowledge scores for 9 out of 14 knowledge questions. No significant negative change was observed for individual knowledge questions for both groups (see Appendix 6).

A detailed analysis of the individual knowledge questions shows that large and significant positive changes (greater than 1.00) are observed for the UTZ-Solidaridad programme participants for the following questions:

- Benefits of PPE (+1.46).
- The potential dangers of applying agrochemicals and fertiliser near natural water bodies (+ 1.23).
- Benefits of leaving prunings in the field (+1.18)
- Benefits of a riparian strip (+1.10).
- Benefits of infilling (+1.02)

Although significant changes have been observed in overall and individual knowledge scores, still 87% of all knowledge questions (13/15) score lower than 6 out of 10 in 2012 for the participants of the UTZ-Solidaridad programme,

of which three questions score lower than 4 out of 10.¹ We do not know why specifically these knowledge scores are so low in 2012. This means that there is still room for improvement with regard to the knowledge levels of the farmers targeted by the UTZ-Solidaridad programme.

3.3.3 Record keeping, better informed decision-making, and farming as a business

Farmers were asked whether they keep records and which records they keep (e.g., on production/sales, inputs, both input and production). Depending on their answer to the question, a score between 0 and 1 was assigned to indicate their level of record keeping, with 1 for keeping records on both input use and production and 0 for not keeping records.

Farmers who participated in training have significantly increased their score regarding the implementation of record keeping (from 0.29 to 0.36). And those who participated in the UTZ-Solidaridad training increased their score significantly by more than 30% (from 0.34 to 0.45). Also, significantly more farmers who participated in UTZ-Solidaridad training agreed on the statement that they regularly looked at their records on input use or production to see whether they need to change farm management, compared to the baseline situation.

Record keeping is seen as an important enabler for informed decision making and farming as a business. Looking at the aspect of informed decision making, we found that more trained respondents (about 70%) would use what they learnt from the training to make decisions on general farm management compared to 2010. This is particularly the case among the respondents who participated in the UTZ-Solidaridad training (about 80%). Decision-making on fertiliser applications changed significantly in the following aspects: significantly fewer farmers apply the same amount per bush/ha as their parents/neighbours do than in 2010, while significantly more farmers follow recommendations by the factory or from the trainings. The same trend can be seen for decisions on plucking frequency. Decision making on the handling of agrochemicals also changed: significantly more farmers base their decisions on training, recommendations by the factory and UTZ Code of Conduct requirements, while significantly fewer farmers base their decisions on advice of parents, friends or neighbours, or do the same as last year.

Significantly more participants of the UTZ-Solidaridad training base decisions on the areas mentioned above on the records they keep, compared to 2010.

¹ 'The best height of pruning mature tea', 'the benefits of a riparian strip' and 'why application of agrochemicals is discouraged in green leaf production'.

It is worth noting here that none of the farmers or factory staff included improved record keeping and decision making as benefits of the programme. Detailed changes in decision making can be found in Appendix 10.

When considering farming as business, besides making informed decision on tea farming, it is usually also relevant to consider other income strategies farmers use to diversify the income risk of tea farming. The indicator for 'farming as a business' used in this study is whether or not farmers have diversified. About 80% of the UTZ-Solidaridad trained farmers also earn income from other sources besides income from tea production, which is significantly higher than in 2010 (70%). The highest number of other sources of income mentioned by individual farmers is 5 in the mid-term situation, which is lower than the 7 income sources mentioned in 2010 (see Appendix 8). TESAs have indeed indicated that they see farmers diversifying. Even though more UTZ-Solidaridad training participants diversified their income, no significant changes, both in nominal and real terms, are seen with regard to income earned from other sources than green leaf production, although the average in 2012 is slightly lower than in 2010. It should be noted here that about 13% of the respondents did not want to mention the amount of income earned from other sources of income.

3.3.4 Implementation of sustainable practices

To assess farmers' level of implementation of sustainable practices, the respondents were asked a set of 32 questions on production, social and environmental aspects. For each answer to the question, a score is assigned (see Appendix 3) between 0 and 1. A score of 1 indicates that the farmer applies the desired practice, while a score of 0 suggests that the farmer does not apply the desired practice.

On average, farmers who were trained have significantly improved their overall score for the implementation of sustainable practices. This improvement also counts for farmers who participated in the UTZ-Solidaridad training between 2010 and 2012 (from 0.64 to 0.68). This was confirmed by factory staff and farmers, who said that the farmers had improved the implementation of many practices.

When looking more specifically at the scores for the particular practices within the production, environmental and social indicator categories, it shows that the overall scores for social and environmental practices increased significantly (from 0.74 to 0.79 and from 0.56 to 0.60 respectively), while the overall score for production practices did not (0.63 to 0.64). No explanations have

been found for why the overall score for production practices did not show a significant increase over time.

We also had a detailed look into the change in scores of individual questions with regard to the implementation of practices. Of the 32 questions, 13 show a positive and significant change and 8 show a negative and significant change for the generally trained group of farmers and 11 did not change over time. Similar results are found for the participants who specifically recall to have participated in the UTZ-Solidaridad programme: 12 scores increased significantly while 7 decreased significantly between 2010 and 2012, and scores for 14 practices did not change significantly. Below, detailed information is presented on the changes in the scores found in this study. This means that even though the overall score for the implementation of practices has changed significantly in a positive way, the individual scores show mixed results with significant positive but also significantly negative changes over time. In the validation workshop we could not find reasons why some of these practices decreased significantly over time.

Looking into the changes of scores for the UTZ-Solidaridad programme participants, large positive and significant changes (>0.10) are observed for the following practices:

- Whether the person who prunes the tea has been trained (+0.37)
- The number of indigenous trees on the farm (+0.28)
- The conservation area on the farm (+0.18)
- Whether a plucking stick or wand is used (+0.17)
- At what height the farmer prunes his bushes (+0.17).
- The plucking frequency (+0.13)
- Whether family members and workers have access to good quality drinking water and latrines (+0.13)
- How often family members or workers needed medical attention after injury on the farm (+0.12)
- Whether the farmer keeps records on input and production (+0.11).

Significant negative changes occurred for questions on:

- How many eucalyptus trees grow within 10 meters of water bodies (-0.48)
- In which climatic conditions clones are planted (-0.43).
- Whether children go to school (-0.21)
- The distance of spraying from water bodies (-0.17)
- At what height the farmer tips in (-0.15)
- Leaf spillage (-0.13)
- In which period the farmer prunes his bushes (-0.08).

The following practices show a low score in 2012 (lower than 0.6 out of 1) for the UTZ-Solidaridad programme participants, which could receive specific attention in future training programmes:

- In which climatic conditions clones are planted (0.15)
- Frequency of application of composted manure (0.19)
- Methods of application of crop protection products (0.44)
- Record keeping (0.45)
- The distance of spraying agrochemicals from water bodies (0.45)
- The percentage of crop cover (0.5)
- Leaf spillage (0.52)
- Success rate of nursery (0.53)
- The number of indigenous trees on the farm (0.54)
- Whether the farmer has a riparian strip when the farm borders a water body (0.55).

So even though there has been a significant overall improvement in the implementation of practices, the scores for production practices did not increase significantly over time, and some of the practices still need attention in future programmes as they still score low in 2012 or saw a negative change between 2010 and 2012.

3.3.5 More transparent processes, better organised producer groups and better services to group members

Two areas of services provided by the factory were used to assess the outcome on more transparent processes: providing information about inspection results and corrective actions after Internal Inspection (ICS) to farmers, and providing information about the external inspection (audit) to farmers. Farmers were asked whether they are satisfied with these services. About 65% of the respondents who participated in a training in general were satisfied (44%) or neutral (21%) with these services. Of the remaining 35%, about 20% answered 'I don't know' or 'not applicable', while about 15% were unsatisfied. These figures correspond to a great degree with the participants of the UTZ-Solidaridad programme. About 75% of them were satisfied or neutral (46% satisfied, 29% neutral), about 10% responded 'not applicable' or 'I don't know', and about 15% were unsatisfied. This suggests that there is room for improvement with respect to transparent processes of the factories. A change in this indicator could not be established as the baseline survey did not include questions addressing this issue.

With regard to service delivery by the producer groups to the farmers, the respondents were generally satisfied with a variety of services delivered to them by the factory in the mid-term situation. Also for this indicator, a change could not be established as the baseline survey did not include questions addressing this issue. More than 50% of the respondents is satisfied with the following services:

- Market information on inputs (73%)
- Market information on sales and prices (64%)
- Access to fertiliser (86%)
- Access to planting material (79%)
- Access to credits (54%)
- Commercial activities; sales and marketing (63%).

Some services need attention as more than 10% of the farmers is unsatisfied with them (see for a full overview Appendix 11):

- Market information on sales and prices (19% is unsatisfied)
- Commercial activities; sales and marketing (13% is unsatisfied)
- Market information on inputs (12% is unsatisfied)
- Access to fertilisers, seedlings and planting material (12% is unsatisfied)
- Access to pesticides (10% is unsatisfied).

3.3.6 Production, quality of tea, and productivity

Comparing data from 2010 and 2012, farmers who participated in trainings have significantly increased their productivity. The average productivity of green leaf, calculated as kilograms of green leaves per bush, is also significantly higher among UTZ-Solidaridad training participants in 2012 (1.26kg/bush) than in 2010 (1.13kg/kg).¹ This is confirmed by the factory staff from all factories and farmers who indicated that they increased their productivity as a benefit from the programme (see also 3.3.12). For those farmers supplying green leaf to Iria Ini and Ragati, the average productivity was lower in the mid-term situation due to the frost period from December 2011 to January 2012 and the ensuing dry weather. Although the other three factories catchments also had dry weather,

¹As we are interested in the yield (kg tea green leaves/bush) of individual households, the average yield is calculated as the average of individual yields. Another way to estimate average yield is to calculate it as the ratio between the average tea green leaves production (kg) and the average number of bushes, which has the interpretation of the average yield of any tea bush in the group. Although the calculated averages differ in absolute values, both ways lead to similar comparison results. The estimated difference in the ratio of the averages is even higher (0.17 kg/bush), although the significance level is lower (<0.18 instead of <0.05). The estimated ratios are shown in Appendix 8, Table A8.3.

they were not affected by frost. Detailed information on the production area and productivity can be found in Appendix 8. The average number of bushes per farm remained about 2035 for both generally trained and UTZ-Solidaridad trained farmers.

Factory data on the quality of tea showed a stable percentage of main grade tea between 96% and 99% over the period from 2010 to 2012. The top two grades, BP1 and PF1, showed however a slightly declining trend (see Appendix 9) though the decline is not significant. We were not able to analyse the change over time in the four top grades that are usually used, as Gathuthi factory only has two top grades.

The proxy for quality used in the survey was the number of times green leaf was rejected by the leaf collection centre. The majority of farmers (93%) never experienced green leaf rejection in 2012, which did not change significantly compared to the baseline situation for both training groups. Again, it is interesting to note that factory staff indicated that they saw an increase in tea quality since 2010, but that it is not confirmed by our quantitative analyses.

3.3.7 Child labour

Regarding child labour, the UTZ Code of Conduct makes a distinction between child works (being in accordance with national laws, not interfering with schooling and non-hazardous) and child labour, which is the term used to identify activities that are harmful for children to perform. Heavy and/or dangerous work is not allowed (e.g. pesticide application, carrying heavy loads, etc.). According to the UTZ Code of Conduct, children are not allowed to work on the farm during school hours. Because of this distinction, it is difficult to assess child labour in a household survey. We have asked the respondents in how far they are assisted by their children, and have included a question probing the farmers' knowledge on activities that are not appropriate for children to perform. In the baseline survey, child labour as defined in the UTZ Code of Conduct has not been addressed¹; therefore, a comparison cannot be made between the situation in 2010 and 2012.

To assess farmers' knowledge on child labour issues, farmers were asked to mention activities not appropriate for children. A knowledge score between 0 and 10 is then calculated based on the number of correct answers the farmer

¹ We did ask farmers about whether their children, who have the age to go to primary or secondary school, go to school. But we did not ask whether their children assist them on the farm, what they did, and whether the children assist them during school hours.

provided and the total number of correct answers. As no information is available for this indicator from the baseline situation, we compare the scores between generally trained, UTZ-Solidaridad trained and untrained farmers.

Farmers who participated in UTZ-Solidaridad trainings had a significantly higher knowledge score on child labour issues than the generally trained farmers (4.95 vs. 3.98) in the mid-term situation, but we do not know what their scores were at the start of the programme so we cannot establish a change over time. These scores are relatively low, which indicates that knowledge on child labour issues can be improved. More than 50% of the farmers trained in the UTZ-Solidaridad programme were aware that activities such as carrying heavy loads, pesticide or chemical fertiliser application, and working on the farm during school hours are not appropriate for children. Between 40% and 50% of the farmers mentioned using dangerous tools or equipment and doing heavy work as inappropriate for children. Far fewer farmers (16%) were aware that working without the company of an adult is not appropriate for children either.

According to the participants of the validation workshops all farmers 'really understand the issue of child labour now' as they have been trained on it and the requirements as they are part of the bylaws in the ICS. Again, we see that the perception is more positive than the quantitative evidence. Since there is no comparative material from the baseline study, we are not able to indicate whether the knowledge levels increased or decreased.

We also asked farmers whether their children assist them in farming activities in the mid-term survey, but cannot compare their answers to the baseline situation as this question was not asked then. As shown in Appendix 8, children assisted in farming activities in all groups. According to the respondents' answers, the average distance the children walked to the leaf collection centre was about 1.5km, ranging from 300meters to 4km, which is not seen as heavy work by Kamanu (2012).

Generally trained and UTZ-Solidaridad participants indicated that children who assisted in farming activities and have the age to attend primary or secondary school, did go to school. No information is available about whether they assisted their parents during school hours.

As mentioned, the household survey has limitations to monitor child labour, since it does not include first hand observations and relies on answers given by farmers. However, the survey shows that farmers' knowledge on this topic is still low in 2012. We thus recommend focusing on this issue in the future training programmes and include on site observations in a future assessment.

3.3.8 Correct use of fertiliser

To assess whether farmers apply fertiliser correctly, farmers were asked how often and when they applied fertiliser. In the same way as with the other questions concerning the implementation of good practices, a score between 0 and 1 is assigned to their answers. For the trained group as a whole, the change was significant (from 0.89 to 0.93), while for the UTZ-Solidaridad training participants, the score in the mid-term situation is slightly higher than in the baseline situation (from 0.91 in 2010 to 0.94 in 2012), but the difference is not significant.

Furthermore, both participants of general trainings and UTZ-Solidaridad trainings applied on average a lower amount of fertiliser per bush in 2012 than in the 2010 period (from about 0.09 kg/bush to about 0.07 kg/bush). This has resulted in lower average fertiliser costs per bush (from about 4.3 Kenyan Shilling (ksh) per bush to about 4.1 ksh/bush), which can be seen as a benefit to the farmers (lower input costs) and the environment. This can be a result of trainings as KTDA recommends farmers to apply 0.07kg of NPK per bush. As can be seen from the figures, UTZ-Solidaridad training participants over applied fertilisers in 2010, but have, on average, decreased it to the recommended rate in 2012. A remarkable result of the comparisons is, however, that the percentage of farmers not applying fertiliser is significantly higher in 2012 (about 12%) than in 2010 (about 3%) among the trained farmers. Thus still some farmers over-apply fertilisers, while others apply too little in the mid-term situation.

More details on fertiliser use can be found in Appendix 8. This result was partly confirmed by factory staff as well as farmers; both mentioned that the farmers apply lower amounts of fertiliser, reducing input costs.

3.3.9 Crop protection products and PPEs

The use of conventional crop protection products did not change compared with the situation in 2010 as still very few farmers apply crop protection products. However, significantly more farmers are using bio-pesticides or organic pesticides in the mid-term situation compared to 2010. Its use increased from about 2% to about 11% among farmers who participated in UTZ-Solidaridad trainings, which is similar to the generally trained group. This change could be positive or negative; positive if it led to a decrease in use of chemical pesticides or if it is a practice to fight increasing incidences of pest attack. It would be negative if it has replaced good integrated pest management practices. SECAEC indicated that possibly the change can be explained because the farmers have become

more knowledgeable and apply bio-pesticides instead of chemical pesticides (Kamanu, 2012).

Significantly more UTZ-Solidaridad training participants bought full Personal Protective Equipment (PPE) sets for tea or other production in 2012 than in 2010. In particular, about 37% of the respondents bought a full PPE set in 2012 while only about 3% of the respondents did so in 2010. Details on the purchase of other PPE items can be found in Appendix 8. When asked about the reason for buying PPE, about 20% gave as reason that they were taught in training that he or she could benefit from it. About 33% of the respondents bought PPE because it would increase his or her status as a farmer. A small percentage (7%) bought PPE for required practices for UTZ certification.

Significantly more general training and UTZ-Solidaridad training participants handled empty containers in a better way in 2012 than in 2010. With regard to the handling of excess agrochemicals, there was no significant change with the situation in 2010. In the qualitative discussions, farmers indeed indicated that they handle agrochemicals in a better way than two years ago, leading to improvements in health.

3.3.10 Farm efficiency and income

On average, both economic and agronomic farm efficiency have significantly improved. Farm efficiency entails both agronomic and economic efficiency. Agronomic efficiency refers to the condition in which the same level of output is realised with the lowest level of inputs possible. Economic efficiency refers to the increase of net income at the same level of production (e.g., number of bushes). Improved farm efficiency is reflected in decreased input-output ratios and increased net income per bush. To assess the agronomic efficiency of green leaf production, farmers were asked to provide information on their input use, namely information on labour, fertilisers, and other agro-chemicals. Based on the information provided on chemical fertiliser, we calculated the input/output ratio for N, P, and K, respectively (Nitrogen, Phosphorus and Potassium). The quantities of N, P, and K used were calculated based on the composition of the compound. Details on input use can be found in Appendix 8.

Gross income from green leaf production was calculated using information on the price and bonus from the factories and information on the kilograms of green leaf produced from the survey and expressed as 1,000KSH/1,000bush. The average number of bushes per household was around 2,050. Gross income per 1,000 bushes has significantly increased from 2010 to 2012 for the group of trained farmers and its subgroup of UTZ-Solidaridad training participants.

Net income was calculated by deducting input costs (hired labour, fertilisers, not crop protection products because there were too few observations) from the gross income. Since not all input costs were included, the calculated net income is an overestimate of the actual net income. Furthermore, labour costs and fertiliser costs were calculated using information provided by the respondents in the survey. It should be noted that the survey data contained a large number of missing values on input use for which it could not be verified whether no input was used or whether the farmer could not remember the amount of input used. To make a rough estimate, missing values were interpreted as zero, which would further underestimate the input costs and overestimate the net income. Considering these limitations of the data and the measurement, the calculated net income should be interpreted with great caution.

Between 2010 and 2012, gross and net income per bush from green leaf production have significantly increased both in nominal¹ values and after adjusting for inflation for trained farmers, and the UTZ-Solidaridad training participants show the highest increase (see Figure 3.5 and 3.6 on the next page). This has been confirmed by both farmers as factory staff in the focus group discussions.

Among the farmers who participated in the UTZ-Solidaridad training, the increase in net income can be explained by lower input costs (in particular, labour costs) and higher prices and bonuses.²

¹ Nominal values of gross or net income are calculated using the nominal price of goods in the related year without adjusting for inflation. When there is inflation, nominal incomes in different years are not directly comparable in terms of purchasing power (i.e., real income). To correct for inflation, nominal income is often deflated so that they can be used for the comparison of real income. When comparing income in two different years, a relative inflation rate between these two years is used to deflate the price in the later year while setting the inflation rate in the earlier year as zero. To correct for inflation, prices in 2012 are deflated to 2010 prices using an inflation rate of 15% (i.e., prices in 2012 are divided by 1.15). This allows the comparison of real income in different years without it being influenced by the fluctuation of inflation rates.

² The higher bonus level in 2012 could have been influenced by higher tea prices leading to higher returns to the factory and thus the farmers, but could also have been influenced by the devaluation of KSH during 2010 to 2012 (i.e., exchange rate in 2010 (31/12/2010): 1000KSH = 12.4dollar; exchange rate in 2012 (28/12/2012): 1000KSH = 11.7dollar.

Source: <http://www.exchangerates.org.uk/USD-KSH-exchange-rate-history.html>

Figure 3.5 Changes in gross income in nominal and inflation-adjusted values among farmers who participated in UTZ-Solidaridad training

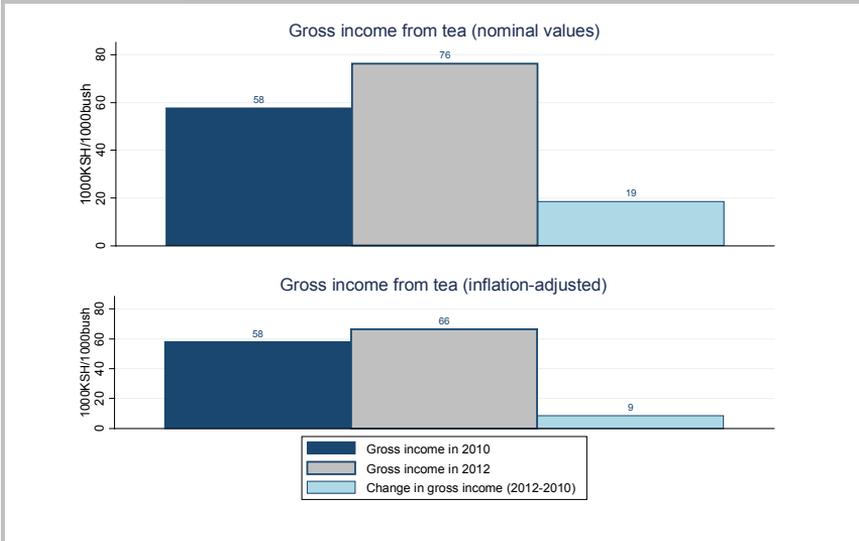
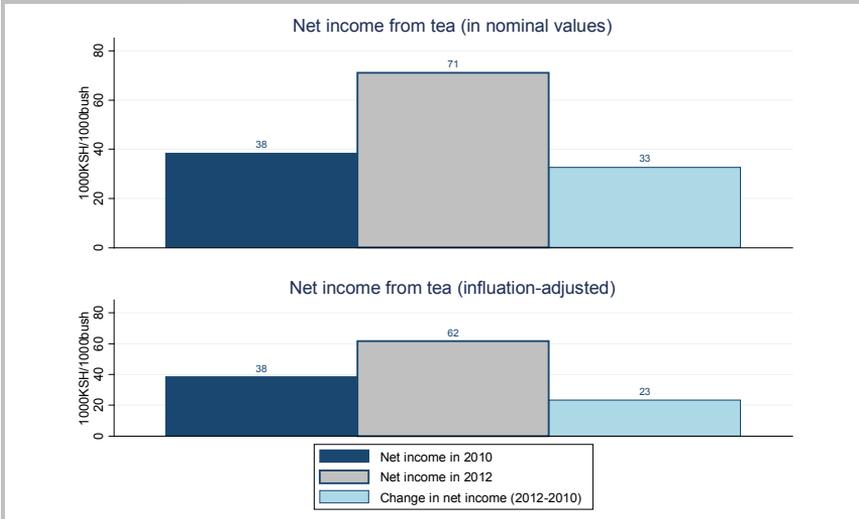


Figure 3.6 Changes in net income in nominal and inflation adjusted values among participants of UTZ-Solidaridad training



3.3.11 Increase in investment and savings

The theory of change expects that increase in net income will lead to increase in investments and savings. To obtain insights into the realisation of this outcome, the farmers were asked whether they spent their income on investments in their farm or business (investments do not include variable costs such as labour). About 77% of the respondents in the survey who participated in UTZ-Solidaridad training said they had invested the income from their tea farm in farm management (including other crops than green leaf) and business. Among all farmers who were trained, the percentage was about 64%. Since no information was available on investment in the baseline, it is unclear whether investments have increased. Savings, on the other hand, seemed to have increased as most farmers (about 75% among farmers who were UTZ-Solidaridad trained and about 70% among all trained farmers) agreed to the statement that the amount of their savings had increased compared to two years ago.

3.3.12 Perceptions of changes by the farmers

To see how farmers perceive the changes that have or have not taken place, the questionnaire also contained a number of statements on which the farmers could indicate whether they agree or disagree and in some cases why they disagree. These statements are made on a number of outcome indicators such as production, productivity, income, record keeping, and savings. Overall figures can be found in Appendix 10 but it should be noted that there is a high degree of variation in the responses to the statements in all five groups.

The biggest changes perceived by most farmers (about 75% among all farmers who were trained and about 79% among farmers who participated in UTZ-Solidaridad trainings) was a higher productivity than two years ago as well as a higher income from green leaf. The perception is confirmed by the quantitative data. Community relationships also significantly improved according to 88% of the trained farmers, and a similar percentage of UTZ-Solidaridad trained farmers.

We also analysed perceived changes in impact indicators (see Table 3.4 on the next page and Appendix 10): The overall 'perception of livelihood quality' indicator showed a significantly positive change between 2010 and 2012 among farmers who were trained. In particular, the score increased by 0.94 on a scale of 1-5 among farmers who participated in UTZ-Solidaridad training.

All livelihood indicators showed a positive significant change between 2010 and 2012. The following livelihood indicators specifically improved (change

>0.80): satisfaction with i) Knowledge on good tea management practices, ii) diversification of income, iii) the homestead (house, access to water/electricity etc.), and family welfare. Other indicators showed an significant increase of less than 0.50: i) The relation with neighbours, ii) The relation with your family members, iii) Family income.

Table 3.4		Changes in the level of satisfaction with livelihood indicators for participants in the UTZ-Solidaridad programme	
Change between 2010 and 2012		Total	
The relation with neighbours		0.46	
The relation with your family members		0.49	
The relationship with the tea factory		0.58	
Knowledge on good tea management practices		0.87	
Leadership skills		0.70	
Access to information on agriculture commodity prices		0.72	
Access to self-help activities like Merry-go-rounds		0.50	
Diversification of income/number of income sources		0.94	
Your homestead (house, access to water/electricity etc.)		0.91	
Possibility to send children to school		0.58	
Family welfare		0.81	
Family income		0.48	
Total		0.94	
Satisfaction is measured on a scale between 1 and 5, with 1 = very unsatisfied and 5 = very satisfied.			

We also investigated whether the number of farmers who borrowed money changed over time, and whether the amount borrowed changed. About 54% of the respondents who were trained had loans in the year before the mid-term survey, which is significantly higher than in the baseline situation (40%). In particular, among the UTZ-Solidaridad training participants, the percentage has increased from 36% to about 63%. 53% of them, who did not borrow money in 2010 borrowed money in 2012 (see Appendix 8 for more details). Furthermore, among the UTZ-Solidaridad-trained respondents who borrowed money in 2012, 56% said that the amount increased, 18% said it decreased, and 14% said that it remained the same. The rest of the respondents either said that they did not know or they did had any loans 2010. It seems that the number of farmers borrowing money increased compared to the baseline situation and that the amount borrowed also increased over time.

3.3.13 Conclusion

Looking at the question 'to what extent have the objectives (outcome level) of the programme been realised as a result of the output', it can be concluded that positive changes on outcome level have been observed. Most of the overall immediate outcome indicators (73%) have changed significantly in a positive way between 2010 and 2012 for farmers who participated in trainings generally and in the UTZ-Solidaridad programme: i) their knowledge on sustainable tea production increased significantly, ii) they improved record keeping, iii) they make better informed decisions on farm management, iv) they diversified their income, v) they improved their implementation of sustainable practices, vi) they improved the implementation of resource management and conservation practices, vii) they have healthier and safer working and living conditions, and viii) the relationship between farmers and tea factory managers improved. It needs to be mentioned here that even though the overall scores for knowledge and the implementation of practices increased, the study did observe unexpected neutral and significant negative changes for some of the underlying scores of individual knowledge questions and individual questions related to the implementation of practices.

With regard to the ultimate outcome indicators, 63% of them have changed significantly and in a positive way between 2010 and 2012: the generally trained and UTZ-Solidaridad trained farmers improved the use of personal protective equipment, the use of crop protection products, their productivity, income and farm efficiency.

Green leaf quality, investments and savings did not change over time as expected, and farmers also did not show a more correct use of fertilisers compared to the baseline situation. Change could not be established for the indicators 'more transparent processes', 'groups are better organised', 'better services to group members' and 'no child labour (in line with International Labour Organisation standards)'.

3.4 To what extent are the different target groups reached?

The target group of the UTZ-Solidaridad programme in Kenya consists of the 33.000 farmers connected to the five factories that partake in the programme. No division within this target group was made apart from the plan to make sure that at least 33% of all participants of the activities should be women, as in Solidaridad's experience attracting women to a training programme is difficult while

it is important to train them as they play a role in green leaf production. This target has been reached as female participants made up almost half of all training participants (42% of the promoter farmers and 44% of the other farmers who participated in trainings).

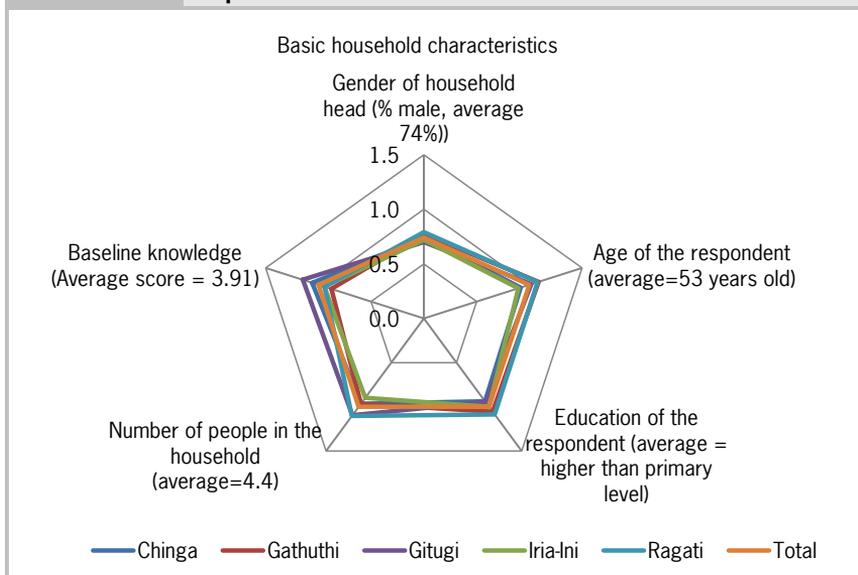
According to information from the farmers and extension staff, at least 45% of all targeted farmers have been reached by the UTZ-Solidaridad programme through training activities. As indicated in Section 3.2, it is uncertain, however, how many farmers have been reached exactly due to a lack of information on training activities and their participants.

To describe the target groups, five basic characteristics of the sample households and the respondents are summarised in a spider diagram (see Figure 3.7) for each factory and for all sample households (Total). With the exception of gender of the household head, the diagram shows the ratio of each indicator compared to the average value of the whole sample (i.e., the average value is set to 1). Detailed information on these characteristics can be found in Appendix 4.

As can be seen in Figure 3.7 on the next page, farmers supplying green leaf to the five companies are similar in most aspects. One exception is the baseline knowledge level of farmers supplying green leaf to Gitugi, they have a higher score. The average education level of the farmers is between primary level and secondary level, with about 43% above secondary level, and 85% beyond primary level. About 14% of the respondents said they had a level of education below the primary level. About 70% of the respondents were also interviewed in the baseline. The participants of the validation workshop confirmed that these indicator values are representative for the farmers in their factory catchment. Thus, the sampled farmers in this mid-term evaluation study are representative for the whole target group.

Among all the respondents, about 53% are female. There are however more females among respondents supplying green leaf to Gitugi (62%) and Chinga (56%) and less (about 38%) among respondents supplying green leaf to Gathuthi. This could have an influence on the knowledge and implementation scores since, on average, women have less responsibilities for tea than men (see Table 2 on farm responsibilities in Appendix 4). Among both male and female respondents, about 45% participated in UTZ training.

Figure 3.7 Basic characteristics of the sample households and respondents



When looking at the extent in which the different target groups were reached it can be concluded that more than 45% of the households participated in the UTZ-Solidaridad programme. Due to a lack of information, it is unclear exactly how many households were reached. The programme was very effective in attracting women to the trainings: women participants counted for almost half of all the training participants, which is an unexpectedly high share according to SECAEC as they usually experience difficulties in getting women to participate in their trainings.

3.5 What are the main factors influencing the results of the actors?

According to the theory of change, the tea programme is built around the training of technical staff (TESAs) and promoter farmers, who in their turn train other farmers. Farmers appear to be in need of more training, as many of them indicated out of their own initiative to be in need of more training at the end of the questionnaire. The UTZ-Solidaridad programme thus addresses a problem of inadequate knowledge of and implementation of practices by farmers through training. Another major issue that influences farmers' results, mentioned by fo-

cus group farmers, is fertiliser costs. This has been partly addressed by the programme through teaching farmers on the correct application of fertilisers as farmers over applied fertilisers (the programme could not influence fertiliser prices).

However, knowledge and improved implementation of practices are not the only factors influencing the results of the actors. External factors such as weather, inflation and bonuses are beyond the scope of the programme, but influence the results (see 3.4 and 3.9). The following main external challenges in green leaf production have been mentioned by farmers and factory staff during focus group discussions:

1. Labour availability in the peak season
2. Input costs (PPE and fertilisers)
3. Logistics in green leaf collection
4. Over-commitment of income from green leaf leading to a 'loan-spiral'¹.

According to the farmers we spoke to who deliver to Gathuthi factory in a Focus Group discussion, the most important challenge for them is labour availability. There are simply not enough people available (relatives or hired labour) in the high season to pluck tea. This is confirmed by Field Services Coordinators (FSCs²) as the major challenge, even though the wages for pickers increased because the price for green leaf went up the last two years. Another major challenge they mentioned is that PPE for plucking tea is too expensive resulting in the farmers not buying such items (overall, cap, boots).³ Also, the fertiliser costs are very high. A solution with regard to their price could be that fertilisers would be taxed lower.

Another challenge for the farmers is that they wish for a faster rate of green leaf collection. Sometimes they bring their green leaf to the leaf collection centre and have to wait hours for it to be weighed and picked up. This results in a decrease of green leaf quality and a loss of time that could be used for other activities, which is especially important during the high season when labour is scarce.

¹ A loan spiral is a situation in which a farmer borrows money when income from green leaf production is not sufficient to pay back the loan and cover farm and family expenses before the next green leaf income comes in. This leads to farmers paying back their loan but afterwards borrowing a new amount before new tea income is earned with an interest rate of sometimes 24%.

² Field Services Coordinators are the agriculture extension managers employed by KTDA and posted one for each factory to manage agricultural services and transportation of green leaf from leaf collection centres to the factories.

³ Some statements on PPE made by the focus group participants do not seem to be correct according to the UTZ Code of Conduct. In this study, the statements of the farmers are reported as they made them, as they reflect the farmers' perceptions.

Sometimes they even have to wait a whole night before their leaves are picked up. The reason for this is that at such times there is a lot of green leaf while not enough trucks are available. TESAs confirm this and explain that sometimes there is more green leaf than expected and the schedule cannot be met.

FSCs gave their own view on problems in green leaf production: 'Farmers over-commit tea revenues.' Farmers borrow a lot of money for school items and food, and pay it back when green leaf revenue comes in. But then money is spent in one go to pay back the loan, and shortly later, they borrow again, sometimes with 24% interest rate. Diversification could help to ease this 'burden of tea'.

3.6 To what extent is the UTZ-Solidaridad tea programme appropriate to the needs among the target group?

To answer the research question 'to what extent is the programme with regard to the training of UTZ certification of smallholder tea farmers in Kenya appropriate to the needs among the target group', we asked farmers how they value the training and why they value it as they do, and whether they would recommend the training to a neighbour. Farmers were also asked whether they would like to see something changed in the organisation of UTZ certification training activities or UTZ certification. Next to asking the farmers, we also asked TESAs and FSCs to give their opinion on whether some training needs were not met yet by the UTZ-Solidaridad programme.

3.6.1 Farmer satisfaction with the UTZ-Solidaridad programme

More than 94% of the respondents who participated in UTZ certification training was satisfied with the training¹, mentioning a range of benefits which can be found in section 3.8. About 78% would recommend the UTZ certification training to other tea farmers.

Participants of the UTZ-Solidaridad trainings were very satisfied with the trainings, 46 of them (45%) made suggestions for changes to the programme. 33 farmers would like to see more trainings to be provided, for them as well as the farmers that did not participate yet. The other recommendations were divided between: i) training expenses to be reduced (including reimbursement for

¹ Two respondents were unsatisfied with the training; one of them gave the following reason: 'The promised t-shirts were not delivered.'

participation), ii) more assistance in waste management and the prevention of frost damage; iii) the provision of clones and PPE. One farmer indicated that farmers should be paid for certification.

Farmers thus seem very satisfied with the UTZ-Solidaridad trainings and at the same time indicate that they would like to be offered more training.

We also spoke to farmers in the focus group discussion about their training needs. These focus group farmers are connected to a factory which is not UTZ certified yet and they claim not to have been trained in the programme. These farmers said that they want to learn about the following topics:

- How to negotiate with pickers about their salary and how to keep good relationships with pickers. The payment of labourers differs according to negotiation skills of both parties. The farmers suggest payment rates be standardised. This is not part of the UTZ-Solidaridad training programme
- Training on GAPs. Examples are fertiliser and manure application, plucking standards, weeding. Training on GAPS is part of the UTZ-Solidaridad training programme so it was surprising to hear farmers mentioning this. The farmers in the focus group kept mentioning that they received training on environmental conservation, and that they did not receive training on GAPs. It appears that the focus group farmers indeed did not participate in the UTZ-Solidaridad training (some said that they did not visit a baraza because they had other engagements) or that they did not perceive the 2 TESA visits per year as training
- Growing food crops to improve their production methods as also a topic the focus group farmers want to learn on. This includes fertiliser types that can best be used, manure application, planting, etc. They want to grow more local foods so they have enough to eat and sell. Now they often buy food from the market. Diversification was part of the UTZ-Solidaridad training programme. It seems that the farmers we spoke to did indeed did not participate in trainings from the UTZ-Solidaridad programme.

3.6.2 Extension agents' views on whether training needs are met

According to TESAs (Tea Extension Services Assistants), there is also need for training on health and safety: HIV aids, stress management and first aid at farm level. This has not been part of the trainings yet, but they find it important to address.

Even though FSCs (Field Services Coordinators) said that training needs were met quite well, they still recognise some training needs: farmers still need more training on financial management for them to start saving and investing

and for them to stop spending what they earn from green leaf sales directly after receiving the amount, which leads to money being borrowed to continue consumption. A specific note is made that training should be continuous and should not stop after four years. This also counts for extension staff and specifically for TESAs. When FSCs are placed in another factory (which happens regularly, and is an external factor potentially influencing the results), the TESAs should be able to keep things going with a new FSC. When the Code of Conduct changes, the TESAs need to be trained again.

3.6.3 Conclusion

We conclude that the UTZ-Solidaridad programme has been valued positively by the farmers, and even included issues related to fertiliser costs (through fertiliser application) which is partly an external factor (fertiliser prices). Additional training topics which farmers would like to see included in the future would be: how to negotiate with pickers and how best to grow food crops next to green leaf production and the implementation of GAPs. TESAs stress the need for training on health and safety (HIV aids, stress management and first aid). FSCs think that, even though financial management was part of the training programmes, it is important to continue training farmers on this topic as much can still be improved in this regard.

3.6.4 Other needs than training needs

Some major challenges, which can be seen as external factors because they have no direct link with a training programme but are indicated by farmers and extension officers to impact on farmers' effectiveness, have not been addressed by the programme (see 3.5 for a list with such challenges). It is recommended to review the programme and see if these external factors can be taken into account in the future.

3.7 To what extent are the methods and activities well chosen to attract the target group?

The farmers in the Focus Group indicated that they like farmer to farmer training best, especially in a small group. This does not match the way the UTZ-Solidaridad trainings are implemented as those trainings are usually implemented through farm visits and large group gatherings. The farmers like to learn

from others, even from farmers connected to other factories. But they only like to learn from other farmers when they do better than them and are qualified in teaching. When being asked whether it is better to learn from other farmers than from a TESA they mentioned that TESAs are good teachers and that they can remind them of what they learnt better than other farmers.

TESAs reflected on the value of Farmer Field Schools (FFS) over other types of training. They find that FFS implementation takes a lot of time, and some farmers have never heard of FFS because few have participated yet. Farmers learn and practice but it takes a lot of time to reach all farmers. The UTZ-Solidaridad programme is implemented in a much faster pace and thus reaches more farmers in a certain period of time. Also in an FFS there may be all kinds of members from different background which may hamper effectiveness of the training. In such a situation, they think that promoter farmers (who are knowledgeable and have teaching skills) can disseminate information much better to the farmers, compared to discussions within an FFS.

As to the use of promoter farmers without remuneration for teaching other farmers, the TESAs indicated that the morale of promoter farmers is high, even though they have been working for two years and see that leader farmers for RA (who started later) get a small reward for their work. The TESAs suggest, however, to give the promoter farmers a compensation otherwise their motivation may decrease because the RA leader farmers are paid a small token for their services. Some of the promoter farmers left because they had better things to do ('greener pastures'). In the validation workshop, the Solidaridad representative mentioned that financial payments would not be good for the sustainability of the trainings, as promoter farmers would stop the training after the programme, and payments for their activities, would end.

We conclude that it is not entirely clear yet how farmers are best to be trained: farmers prefer to be taught in small groups of farmers led by well-trained, experienced and knowledgeable farmers. TESAs indicate that promoter farmers can disseminate information to other farmers in a better way than when the information would be disseminated in an FFS when it includes farmers with different backgrounds. In the current promoter farmer system as it is implemented in Kenya, promoter farmers either visit individual farmers, or farmers meet in big groups (e.g. 200 or more farmers), which does not correspond to farmers' view of the 'perfect training method' profile. It is recommended to further investigate which type of training is the most (cost)effective in the dissemination of information to smallholder tea farmers. Furthermore, the effectiveness of the promoter farmer system depends on the motivation of the promoter farmers to train other farmers. A compensation of some kind may need to be

necessary to keep promoter farmers motivated to train other farmers for a longer period of time.

3.8 What, if any, is the added value for the various actors going through the certification process or being certified?

To answer this research question, farmers were asked about whether they experienced benefits because of participating in the programme and of their factory being certified. In focus group discussions, TESAs and FSCs were also asked to reflect on the added value of going through the certification process or being certified for the farmers and the factory, and on whether the interventions of training and certification influence or strengthen each other.

More than 94% of the respondents who participated in UTZ-Solidaridad trainings experienced benefits from the training. Many respondents mentioned multiple benefits. The most mentioned benefit was increased production and yield (more than 54% of the responses), followed by improved knowledge on good farm management and farming practices (about 20%), of which improved knowledge on pruning, plucking, application of fertiliser and agrochemicals were specifically mentioned.

In about 15% of the responses, increased income was mentioned as a benefit, mainly due to increased yield and/or bonus. The use of PPE to protect their health, the benefit of improved farm management skills, and clean environment are each mentioned by about 10% of the responses. A number of respondents mentioned the benefit of keeping records. A detailed list of benefits mentioned by the respondents can be found in Appendix 5 in which also detailed information from the validation workshop is placed on how these results were reached through the UTZ-Solidaridad programme (workshop participants confirmed the cascade of the theory of change).

Most of the respondents in the survey (more than 75% of those who responded) thought that it is good that their factory is UTZ certified. Only one respondent answered that it is not good without giving reason why. Among the respondents who think it is good that their factory is UTZ certified, more than 60% think that the factory will provide a bonus/premium to them. About 40% of these respondents think that the factory will provide more information to them. About 30% think they will benefit as that the factory will provide more services¹.

¹ These figures do not add up to 100% as the respondents gave multiple reasons.

A better market for their product and high quality production were considered as other benefits. Most farmers see two or more of aforementioned benefits.

Besides in the survey, the same question was asked in the focus group discussion. Even though the Gathuthi farmers are not certified yet, they say that they do know about the certification process they think 'it is a good thing'. But when asking for reasons why they think this is a good thing they had many difficulties in giving further explanations. They finally resulted in the statement that the certification process can lead to more knowledge and skills.

TESAs and FSCs indicated that the ICS improved the management system. It now works well and farmers are better serviced in leaf collection and education of producers. They say that it was not clear how processes are done and who was doing what exactly in the past, and that clarity in processes and responsibilities has improved over time due to the ICS and the UTZ requirements that have been taken up in the bylaws. Also, ways to solve disputes are clear now because of the ICS, which makes their work easier as it reduces the severity of problems. Finally, there is more peace and cooperation between KTDA and the farmers because of the ICS.

TESAs and FSCs also say that certification motivates farmers as a certificate shows that a farmer is a good farmer. Because of that, farmers are motivated to comply with the requirements. Farmers also have to follow the bylaws as otherwise they cannot sell to the factory, which also provides them with a motivation to implement the Code of Conduct.

TESAs and FSCs indicate that accessing markets and not losing markets is an important motivation to get certified:

- When a farmer learns that a buyer wants something, this is a motivation for him to implement it. The trainings would be less effective without the goal of obtaining certification
- Certification is also expected to ensure tea to be sold on the market and thus is thought to lead to a higher probability of a buyer buying the tea. This motivates the farmers to get certification.
- Another motivation to become certified is the chance of getting a premium for certified tea (the chance is expected to be 50% by the TESAs and FSCs, no premium has been paid yet).

We conclude that the training would probably be less effective if there were no certification to obtain; certification is a motivation for farmers to implement the required practices. Certification is also expected to maintain markets and increase the probability of buyers to buy their tea, which motivates the farmers to obtain certification. A final added value of certification is the potential to ob-

tain a premium for certified tea (the chance is expected to be 50% by KTDA extension staff, no premium has been paid yet).

3.9 Can the changes observed this study be attributed to the UTZ-Solidaridad programme?

We used information on different combinations of trainings and information on external factors such as rainfall data for answering the attribution question. The effect of the different training combinations on the outcomes indicators was assessed through multi-level regression analysis in which, while assessing the effect of UTZ-Solidaridad training, random effects at the factory level were assessed. We found that (See Appendix 12 for more information):

1. The combination of UTZ-Solidaridad trainings and all other trainings has had a significant impact on the changes in knowledge score compared to farmers who did not participate in any training. Although not significant, other combinations of training including UTZ-Solidaridad trainings showed both positive and negative effects on the increase of knowledge. Considering the uncertainty about the exact type of training the farmers have received, the interpretation of this result is that training was seldom given alone and farmers who indicated to have had only one type of training were probably untrained or only incidentally participated in training which makes their knowledge change almost the same as farmers who had no training at all.
2. Most training combinations including UTZ-Solidaridad had a significantly positive impact on changes in the overall implementation of practices. In particular, the combination 'UTZ-Solidaridad+ FFS + Other training' had the highest impact.
3. The combination of trainings 'UTZ-Solidaridad+ FFS +Other training', 'UTZ-Solidaridad + RA + Other training' and 'UTZ-Solidaridad + Other training' had a significant positive impact on the increase of productivity.
4. The training combination 'UTZ-Solidaridad+ RA+ Other training' had a significant positive impact on gross real income from green leaf (per bush). The effect can however be offset by factory-level random effects.
5. The training combination 'UTZ-Solidaridad+ RA+ FFS+ Other training' has a positive significant impact on net real income (per bush).

It is possible that the 'other trainings' also include topics addressed in the UTZ-Solidaridad programme as KTDA extension work usually combines topics.

However, since no specific information is available, it is not possible to include this part in the attribution.

Furthermore, the regression analysis showed that changes in outcomes were significantly influenced by factory-specific factors as shown by large random effects at the factory level. For example, the increase of knowledge and implementation of sustainable practices was the most significant among farmers associated to the factories Gitugi and Ragati. This may be explained by the fact that more farmers associated to these two factories had combined trainings, which is expected to have increased knowledge and implementation. Unlike other farmers, farmers who supply green leaf to Ragati experienced a significant decrease in their productivity. This is possibly due to the frost and drought in the factory-catchment during 2011-2012.

Besides using information from the survey, we have also used information from the TESAs, FSCs and farmers on the foci of the training and certification programmes (more information can be found in Appendix 5.5) to assess the attribution and contribution of the UTZ-Solidaridad programme. The problem with getting information from the farmers themselves was that the farmers in the focus group did not recognise the name of UTZ or Solidaridad, and thus it was very difficult to ask them questions about the programme. Their answers seemed to be related to the RA programme, more than the UTZ-Solidaridad programme because they only referred to environmental practices. It seems that the respondents in the survey had the same problem, e.g. because too many of them said to be promoter farmers, and probably too few of them said that they received training in the UTZ-Solidaridad programme. This makes it difficult to connect their statements on the benefits of the UTZ-Solidaridad programme to the programme. Furthermore, we did receive information on the implementation of the programme by the factories but such information was patchy and incomplete; some factories sent us more information in a much more elaborated way than others and not all requested information was available or given.

In conclusion, the changes observed were positively influenced by the UTZ-Solidaridad trainings in combination with other trainings. This makes it difficult to attribute the effects to the UTZ-Solidaridad programme alone. Similar results were found in an impact assessment study on RA and FFS training among smallholder tea farmers in Kenya (Waarts et al., 2012).

3.10 External factors influencing mid-term review results

In this study, external factors which may influence farmer performance have been taken into account in the analyses as explanatory variables, or through qualitative explanations by farmers and extension staff. The following external influencing factors have been found in this study:

- Adverse weather conditions (the combination of frost and drought) have resulted in a decrease of productivity of farmers supplying green leaf to Ragati and Iria Ini, while overall productivity for all trained farmers increased significantly
- Other training and certification programmes influenced knowledge levels, the implementation of practices, productivity and income levels, in combination with the UTZ-Solidaridad tea programme activities
- Based on the focus group discussions and interviews, labour availability is an important challenge for farmers during the peak season, decreasing their production and income potential
- Lower input costs have positively influenced net income in this study
- Higher prices and bonuses, which reflect market prices as tea quality did not improve over time, positively influenced gross and net income levels, while inflation negatively influenced real incomes (adjusted for inflation)
- There was no market demand for UTZ certified tea from the factories involved in this study at the time of the mid-term survey as their tea was not sold as such
- Education levels positively influences farmers' knowledge scores (the higher the education, the higher the scores) but not their scores for the implementation of practices.

It is not clear to which external factors are the most important and which are less important in influencing smallholder tea producer performance in Kenya, as most of these factors are interdependent.

4 Conclusions, lessons learnt and recommendations

This concluding chapter follows the three areas addressed by this research: the effectiveness of the UTZ-Solidaridad tea programme in Kenya, the appropriateness and relevance of the UTZ-Solidaridad tea programme in Kenya, and lessons learnt and recommendations.

4.1 The effectiveness of the tea programme in Kenya

4.1.1 To what extent have the activities led to the planned outputs?

The first evaluation question was addressed by investigating whether promoter and other farmers were trained, and whether all factories had become UTZ certified at the time of the mid-term survey. With regard to the training of promoter and other farmers, all promoter farmers had been trained as planned and at least 45% of the farmers had been trained on UTZ although the exact percentage is not clear. Four out of five factories became UTZ certified before the mid-term evaluation was carried out, which means that 80% of this output was reached. A reason that not all farmers participated in training could be the inclusion of so-called 'telephone farmers' (between 20-30%) who are often absent from their farms.

With respect to the impact logic of cascading trainings through promoter farmers, it is difficult to assess to what extent the logic was indeed followed, i.e. whether promoter farmers replicated training to common farmers because factory staff said that promoter farmers did not always train other farmers in a busy season. Since records on the promoter farmers and their training activities were not available, this point is recommended to be addressed in the next stage of the programme because for impact measurement such information is vital.

4.1.2 To what extent have the objectives of the programme been realised as a result of the outputs?

Looking at the question 'to what extent have the objectives (outcome level) of the programme been realised as a result of the output', it can be concluded that

positive changes on outcome level can be seen. Most of the immediate overall immediate outcome indicators (73%) have changed significantly in a positive way between 2010 and 2012 for farmers who participated in trainings generally and in the UTZ-Solidaridad programme: i) their knowledge on sustainable tea production increased significantly, ii) they improved record keeping, iii) they make better informed decisions on farm management, iv) they diversified their income, v) they improved their implementation of sustainable practices, vi) they improved the implementation of resource management and conservation practices, vii) they have healthier and safer working and living conditions, and viii) the relationship between farmers and tea factory managers improved. It needs to be mentioned here that even though the overall scores for knowledge and the implementation of practices increased, the study did observe unexpected neutral and significant and negative changes for some of the underlying scores of individual knowledge questions and individual questions related to the implementation of practices.

With regard to the ultimate outcome indicators, 63% of them have changed significantly and in a positive way between 2010 and 2012: the generally trained and UTZ-Solidaridad trained farmers improved the use of personal protective equipment, the use of crop protection products, their productivity, income and farm efficiency.

Green leaf quality, investments and savings did not change over time, and farmers also did not show a more correct use of fertilisers compared to the baseline situation. Change could not be established for the indicators 'more transparent processes', 'groups are better organised', 'better services to group members' and 'no child labour (in line with International Labour Organisation standards)'.

4.1.3 To what extent are different target groups reached?

The target group of the UTZ-Solidaridad programme consists of all farmers connected to five factories that were to become certified. More than 45% of the targeted farmers have been reached but there is a high degree of uncertainty about the actual percentage due to the lack of reliable information. In the programme setup, a specific objective was made with regard to the participation of women, as in Solidaridad's experience women usually hardly participate in training programmes even though they are involved in green leaf production. About half of all training participants (both promoter farmers and other farmers) were women, which is well over the objective of 33% female participants.

4.1.4 What are the main factors influencing the results of the actors?

This study identified that important factors that influence farmers' results are training, high fertiliser costs and costs for personal protective equipment. The UTZ-Solidaridad programme has addresses the problem of inadequate knowledge and the implementation of practices by farmers through implementing a training programme, while high fertiliser costs have been partly addressed by the programme through teaching farmers on the correct application of fertilisers, as farmers over applied fertilisers in the baseline situation.

External factors such as weather, inflation and bonuses are beyond the scope of the programme, but also influence smallholder farmer performance, as do labour availability in the peak season, fertiliser costs, logistics in green leaf collection and an over-commitment of income from green leaf leading to farmers ending up in a loan-spiral. It is not clear which of these factors has the biggest influence on the performance of smallholder tea producers in Kenya.

4.1.5 Conclusion

Following the theory of change, this study has found that, halfway its implementation, the UTZ-Solidaridad tea programme has trained all promoter farmers and has reached at least 45% of the targeted farmers. The training was effective in attracting women to the trainings, and having four out of five factories reach UTZ certification by June 2012. Furthermore, 13 out of 20 outcome indicators showed significant positive changes since the baseline situation: trained farmers have improved their knowledge on sustainable tea production, record keeping, improved decision-making on farm management, improved their implementation of sustainable practices, improved the implementation of resource management and conservation practices and have healthier and safer working and living conditions. In addition, the trained farmers also improved the use of personal protective equipment, the use of crop protection products, their productivity, income and farm efficiency and they also diversified their income sources. Last but not least, also the relationship between farmers and tea factory managers improved.

Despite the UTZ-Solidaridad training programme, quality of green leaf, and investments and savings did not increase as expected and farmers also did not show a more correct use of fertilisers compared to the baseline situation. Change could not be established for the indicators 'more transparent processes', 'groups are better organised', 'better services to group members' and 'no child labour (in line with International Labour Organisation standards)'.

Finally, this study identified that important factors that influence farmer performance are training and high fertiliser costs, both of which are addressed by the UTZ-Solidaridad programme, and costs for personal protective equipment. But the study also found that external factors, which were not part of the training programme, influence farmer performance. It is not clear which of the identified influencing factors has the biggest influence on the performance of smallholder tea producers in Kenya.

4.2 Appropriateness and relevance of the tea programme in Kenya

4.2.1 To what extent is the UTZ-Solidaridad tea programme appropriate to the needs among the target group?

Many training needs of the farmers who participated in UTZ training were met as almost all participants said they were satisfied with the training and most of them would recommend the training to other farmers. Farmers would like to see some training topics to be addressed in the future; e.g. how to negotiate with pickers and how best to grow food crops next to tea production and learn more about the implementation of GAPs. Factory staff stress the need for training on health and safety and financial management (although the latter was part of the training already). Some major challenges, which can be seen as external factors because they have no link with training activities but nevertheless impact on farmers' effectiveness, have not been addressed by the programme. Among these are: labour availability in the peak season, input costs for PPE and fertilisers, logistics in green leaf collection and over-commitment of income from green leaf leading to loan spirals.

4.2.2 To what extent are the methods and activities well chosen to attract the target group?

With regard to the methods and activities chosen in the training programme, we conclude that it is not entirely clear yet how farmers are best to be trained: farmers prefer to be taught in small groups of farmers led by well-trained, experienced and knowledgeable farmers while TESAs indicate that promoter farmers can disseminate information to other farmers in a better way than when the information would be disseminated in an FFS with farmers from different backgrounds. In the current promoter farmer system as it is implemented in Kenya, promoter farmers either visit individual farmers, or farmers meet in big

groups (e.g. 200 or more farmers), which does not correspond to farmers' view of the 'perfect training method' profile. It is recommended to further investigate which type of training is the most (cost)effective in the dissemination of information to smallholder tea farmers.

For the promoter farmer system to work, the motivation of promoter farmers to teach other farmers is key. The promoter farmers are still active in their role, even though they have been training other farmers for two years. However, factory extension staff suggest giving the promoter farmers a compensation because otherwise their motivation may decrease as leader farmers working for RA get a remuneration and they do not. Solidaridad mentions that financial payments would run the risk of promoter farmers stopping training after the programme and such payments end. It thus needs to be verified whether the voluntary promoter farmer system is a sustainable way of training farmers in the future.

4.2.3 What, if any, is the added value for the various actors going through the certification process or being certified?

At most all farmers who participated in UTZ training was satisfied with the training. The most frequently mentioned reasons were increased productivity, increased knowledge on farm management and farm practices. But the trainings would probably be less effective if there was no certification to be obtained as certification is seen a motivation for farmers to implement the required practices. Certification is also seen as a means to maintain markets and increase the probability of buyers buying their tea, which also motivates the farmers to obtain certification. A final added value of certification is the potential to obtain a premium for certified tea; the chance is expected to be 50% by factory extension staff (no premium has been paid yet).

4.2.4 Can the changes observed this study be attributed to the UTZ-Solidaridad programme?

Farmers who have received more training on farming practices scored better with regard to knowledge, the implementation of practices, productivity and real gross and net income, than farmers who received less or no trainings. The changes observed were influenced by the UTZ-Solidaridad training in combination with other trainings. This, and the fact that no detailed information was available on the training programmes, makes it difficult to attribute the effects to the UTZ-Solidaridad training alone. For some factories, the possibly positive effects of knowledge and practices on productivity and income have however

been offset by adverse effects of external factors (drought, frost, high inflation). To better attribute the changes in productivity and income to the programme, it is advisable to collect more complete information on training activities and define indicators that are less prone to external factors such as weather and inflation (for instance 'real income' instead of 'income').

4.2.5 Conclusion

Overall, we can conclude that combinations of training activities, of which the programme was one element, have positively influenced knowledge levels, implementation of good agricultural practices, productivity and gross and net real income, but that the observed changes cannot be attributed to the UTZ-Solidaridad programme alone. Furthermore, the UTZ-Solidaridad tea programme in Kenya has met most training needs of the target group. But also other, non-training related, factors which are not addressed in the programme influence farmers' performance. With regard to training methodology, it is unclear yet whether the UTZ-Solidaridad training matches the 'perfect training method' profile, as farmers and extension officers have different opinions.

4.3 Major lessons learnt

Following the theory of change of the UTZ-Solidaridad programme, we describe the major lessons learnt during this study.

First, even though the UTZ-Solidaridad programme appears to address some of the challenges of the smallholder farmers, many challenges mentioned by the farmers and field staff during the mid-term survey were not addressed in the programme, while they constitute important challenges to the target group. It could be that these challenges arose after the baseline situation. These challenges could be addressed in the next phase of the programme to improve farmers' performance.

Second, changes in overall implementation score showed a significant positive correlation with changes in knowledge. This confirms the basic assumption underlying the theory of change that improved knowledge on sustainable practices would lead to better implementation of these practices.

Third, when other things are equal, the increase of knowledge level and the level of implementation of practices is significantly higher among farmers who had a lower knowledge score or implementation score in the baseline situation.

Fourth, many positive changes cannot be attributed to the UTZ-Solidaridad programme alone as the trainings participated in were usually a combination of different topics, and activities undertaken within the programme were not well recorded. Such records were required as the respondents probably did not recognise the UTZ-Solidaridad programme even though they did participate in the trainings.

Last but not least, the factories appear to have a lot of data and other information which has not entirely been tapped into for this mid-term evaluation.

4.4 Recommendations to the current tea programme in Kenya and in the development and execution of future other programmes

For the next phase in the programme, it is recommended to focus next programme activities on those knowledge and implementation topics that have a low score in the mid-term situation. This can be done based on the scores applicable to the whole target group, the trained farmers, the UTZ-Solidaridad training participants, or the scores for farmers connected to each of the five factories. Furthermore, the needs of the farmers with regard to training topics and methodologies, indicated in this report, can also be used to adapt the programme.

From this research, it has not become clear how information can best be disseminated to smallholder tea growers as farmers and extension officers have different opinions. It is recommended to further investigate which type of training is the most (cost)effective in the dissemination of information to smallholder tea farmers.

An important success factor for the training cascade is the willingness of promoter farmers to train other farmers. As it is not clear if promoter farmers need some kind of reimbursement to continue training other farmers, it is recommended to discuss how to keep promoter farmers motivated in the future and to take action when required.

With regard to the training activities, promoter farmers appeared to be in need of follow up trainings during the mid-term survey. LEI understood that such trainings have already been organised after the validation workshop took place.

As no detailed information was available on the training activities, it is recommended that in the next phase such activities are monitored, especially to make sure that all targeted farmers participate in UTZ-Solidaridad trainings. This includes an indication of the time frame of the outcomes to be expected and the interdependencies of different outcome indicators. Such information could also be used for other training programme assessments.

From a strategic programme point of view, it is recommended to revisit the theory of change and critically review the underlying assumptions, output and outcome indicators in light of the findings in the mid-term assessment. And specifically focus on external factors and their potential influence on the outcomes and how they will be addressed when they arise. For potential future assessments, it is also recommended to more specifically define some of the outcome indicators (e.g. 'income') so they can be measured in a better way.

For potential future assessments, we recommend to increase awareness-raising activities to better communicate the programme and UTZ Certification to the farmers, so that the farmers know who is involved in the implementation and for which certificate they receive training. This can be done through posters, leaflets with the logo's and pictures about the training topics etc. at leaf collection centres. This will enable farmers to connect to the programme, and will also enable them to answer in a better way to queries on programme activities and impacts. Also, it is recommended to use factory data when of good quality, for parts of the analyses and cross validation. When available, accessible and of good quality, such factory data could assist in the analysis of changes in core production and income figures for the whole population and the assessment costs could be decreased.

There is a scope to improve the logistics of green leaf collection by the factory companies. Smallholder tea producers can benefit at least in two ways from reduced waiting time at collection centres: improved green leaf quality and more time for other productive activities. This could be taken up in the next phase of the programme, or other future programmes.

For the development and execution of future other programmes, it is recommended to:

- When a needs assessment is conducted prior to the development of a programme, to update it during the implementation of the programme and to adjust the programme's intervention strategy if required
- Critically review the theory of change with relevant stakeholders and potential evaluators prior to implementing the programme. This includes an assessment of how external factors may influence programme outcomes, and how to address such factors when they arise
- Set up a monitoring system at the start of the programme and record activities in the field throughout the programme duration. This can be relatively simple through an excel spread sheet although it does takes time to monitor and record the activities. Based on such monitoring data, evaluations can be conducted in a much better way than without such data

- When an evaluation takes place, assess the availability of data at various value chain actors for the purpose of evaluation as this could potentially decrease the assessment costs.

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Appendix 1 Theory of change

Detailed information on the Theory of Change

Demarcation of the Theory of Change in this report

There are several aspects left out in the theory of change figure in this report (Figure 1), which were discussed during the meeting because the mid-term review focuses on deriving information on farm level impacts. These aspects are explained below in the text. Examples of such aspects are issues which will not be addressed in the mid-term review (e.g. training of factory staff on processing, hygiene etc.). The tea programmes in Kenya and Malawi thus encompass more than just the farmer trainings and ICS establishment and management depicted in the theory of change. We also discussed detailed impact logics of how improvement of various practices are expected to lead to certain impacts on farm-level. These detailed impact logics on practices are captured in the 'improvement of practices' box in Figure 1, and are described below in more detail.

External factors may influence programme outcomes as well. Examples could be: climate, rainfall patterns, development programmes in the same region as the intervention, etc. Since they are not explicitly a part of the rationale behind the theory of change (why a certain impact is reached through the programmes), they are not displayed in it. However, in the workshop, we derived a list with such external factors, which are described in section 2.2.6 below. We will try as much as possible to gather data on these factors, to use in the mid-term review analyses. Usually, such external factors are accounted for by conducting an impact assessment with a treatment and control group. As this is not the case in this research, however, we hope to be able to find easily accessible data to back up our assessments.

Detailed description of the impact logic of the improvement of practices

In a workshop, the implementation of practices and their expected outcomes and impacts were discussed in detail. These details are described below.

The following practices to be improved by the programme were identified

1. Record keeping
2. Regular plucking
3. Fertiliser application
4. Pruning
5. Infilling

6. Weeding
7. Less application and safe handling of crop protection products and fertilisers
8. Relationship between management and farmers.

Record keeping, of inputs and yields, is expected, together with discussing gross margins of different crops during the trainings, to lead to informed decision making on farming and then to farmers farming as a business. This is expected to lead to farm efficiency (economic and agronomic).

Regular plucking leads to farmers spending more time on plucking but it also leads to better table maintenance, better leaf quality and higher productivity. This is expected to lead to an increase in the net income of farmers.

Fertiliser application is improved by the factories/estates, as they conduct soil and leaf analyses and give advice to farmers which fertiliser to apply and how and when to apply it. Application of fertiliser ensures nutrients to be added back to the soil (plucking extracts nutrients) and leads to an increase in the quality of green leaf and a increase in productivity. Both are expected to lead to an increase in gross income and finally also to net income.

Pruning leads to even tables (ensure easy plucking), making sure tables will not increase in height and leading to an increase in productivity and quality. Such an increase in productivity and quality is expected to lead to an increase in gross and finally also to net income.

Infilling and weeding leads to less infestation of weeds and thus less time needed for weeding. This is expected to lead to less use of labour, and thus a higher farm efficiency, increasing the net income of the farmers.

Better relationship between farmers and management/leaders is expected to lead to better interaction and make it easier for farmers to ask for services and thus lead to better services.

Other activities mentioned were

1. Planting indigenous trees
2. Removing harmful trees and crops from river banks

Nurseries at factory level are established, to facilitate the planting of indigenous trees by farmers who receive seedlings for free and by factories themselves. This may lead to soil conservation when planted on areas that are too steep for tea production, but also leads to the preservation of indigenous tree species (avoid extinction) and thus biodiversity preservation and increase.

Farmers also remove harmful trees from river banks to protect these river banks. Removing such trees encourages growth of natural vegetation and pro-

tects river beds and the water catchment area. This is expected to lead to soil and water conservation.

Impact logic of ICS establishment and management

Before the ICS (Internal Control System) could be established, training material was developed to be able to train estate outgrowers managers and association leaders (in Malawi) and factory company staff (in Kenya). Training materials consisted of ICS manual and Applicable Checklist for smallholder farmers. Training materials needed to be developed to facilitate understanding of the ICS.

After the training has been given, the organisation leaders approve the ICS and the bylaws¹ agreed upon (in Kenya). Through the ICS management, the groups (in Malawi, the associations) have a better administration, become better organised and organisational structures and finances become more transparent. Groups that have a better and transparent administration and better access to markets and information are expected to be more financially healthy and have better access to credits and services. This leads to the groups delivering better services to the group members and an improvement of the relationship between farmers and managers (albeit indirectly). Implementation and enforcement of the bylaws and awareness raising also lead to a situation where child labour (defined according to the International Labour Organisation standards and the UTZ Code of Conduct) is prevented and monitored.

When the ICS is established and managed well, and producers comply with the requirements of the code, this is expected to lead to passing internal inspections, the external audit and obtaining certification of the producer group. Certification is expected to lead to market rewards for certified products, which contributes to increasing the net income of farmers.

Impact of training factory staff

After the factories/estates have agreed to participate in the programme, training materials are developed to train factory staff on a variety of topics (hygiene, health and safety, quality, waste management, energy use, in line with the UTZ Code of Conduct for the factory). Training factory staff leads to an increased awareness and knowledge of factory staff on these topics which in turn leads to improved management practices in the factory.

Improved factory management practices are expected to lead to:

¹ Bylaws are a set of regulations governing the relations between members of a group and the sanctions and penalties to be subjected to members who violate the regulations. The bylaws are agreed by members together and approved by the leadership of the group. In some cases, they are registered with the court to become legally abiding.

1. Workers benefit from labour rights and basic services (housing, water, sanitation, healthcare)
2. Equitable distribution of roles and income between men and women
3. Increase in tea quality
4. More efficient processes;
5. efficient energy use; use of wood and energy from sustainable sources (reduced deforestation)
6. Improved health and safety of factory staff
7. Reduction in volumes of waste and treatment of wastewater
8. Better relationships between workers and management.

Access of more and a consistent quality of green leaf, the increase in tea quality, more efficient processes, less work related accidents, a better trained and more motivated workforce, and reduction of waste are expected to lead to an increased and long term economic viability of the estate/factory. This is expected to contribute to the security of income of farmers, and could improve the price and/or services the farmers receive and then to the impacts described in section 2.2.2.

The improvement of working conditions and management of waste and waste water is expected to contribute the following impact: a more healthy living environment and improved health of farmers and workers.

External factors potentially influencing programme outcomes

In the research setup, it was important to identify external factors that can potentially influence programme outcomes. As the mid-term review cannot compare treatment groups (the programme groups) with comparison groups, we cannot use such a comparison to account for external influencing factors. Thus the LEI research team wanted to gather additional data on such potentially influencing external factors, to use in the analysis as explanatory variables.

Appendix 2 Indicators

Indicators used in the mid-term review

Table A2.1 Indicators for mid-term review tea programmes from the theory of change		
Outcomes	Indicator for MTR	Baseline study
Improved farm efficiency	Input - output ratios (agro/economic)	-
	Number and volume of rejects	-
Improved green leaf quality	Yield per bush/hectare/yr	Yield per bush
Improved productivity	Knowledge, child labour as input used	-
No child labour	Perception on working conditions (qualitative)	-
Improved working conditions	Price premium, volumes certified tea sold	
Market rewards for certified products		
Improved use of PPE	Knowledge, implementation, input use	Idem
	Knowledge, implementation, input use	
Safe handling and storage of agrochemicals	Knowledge, implementation, input use	idem
Correct use of CCPsand fertilisers	Satisfaction with services	Knowledge, implementation
Better services to group members		-
Ultimate outcomes		
Increase in net incomes from tea of farmers	Gross income, input costs, net income	Gross/net income, costs
Increase in investments and savings by farmers	Questions on farm investments/ savings (change with 2 years ago)	Loans
Increased resilience and economic viability of farmers	Trend in net income (tea/household)/time	Trend in net income over time
	Use of farm records and market information for decisions	
	Other income sources + income earned	
	Perception of farmers (qualitative)	

Increased workers' pay a)	Labour costs per person/day	Labour cost person/day
Improved health of farmers and workers	Number of injuries on the farm	Number of injuries on the farm Illness from agro-chemicals (farmer/family members)
Improved livelihoods: Children go to school, meeting the needs of children, less stress and wellbeing, housing, water, sanitation, access to healthcare, food security. Improvement of the environment, natural resources and biodiversity.	Qualitative questions, potentially based on self-assessment indicators from baseline Implementation of practices (e.g. efficient water use, water sources) Soil quality/soil fertility (when possible)	Self-assessment livelihood Implementation of practices
Better community relationships	Perception Perception	
a) In the smallholder context not expected as an direct impact of the programmes, but interesting to analyse.		

Table A2.2 Indicators for mid-term review tea programmes from the research questions + external factors

Evaluation questions	Indicator for MTR	Indicators base-line study
1 Activities lead to outputs?	Do farmers think they have been adequately trained?	-
	Quality of training	-
2 Realisation of objectives?	Incentives for promoter farmers to teach	-
3 Reaching target groups?	See outcome and impact indicators above	Farmer characteristics
4 Factors influencing results?	Farmer characteristics Factors influencing results (qualitative explanation by farmers/factory/group staff, data on external factors)	-
5 Needs target group met?	Training needs met/Usefulness of training (qualitative) Proposed improvement for training (qual.)	-
6 Method good for target group?	Incentive for farmers to implement practices +reinforcement of continuation of practices (qualitative)	-
7 Added value certification process	Qualitative questions on added value/benefits of certification Questions on if certification aspects of the programme affect the implementation, such as ICS, inspections and peer pressure Info other training + certification	-
8 Contribution/attribution	Evaluation by farmers/producer group (qualitative)	
9 Lessons learnt	Conclusions of research	

External factors	Indicators for MTR	Indicators base-line study
Other trainings	Other training participated in	Other trainings
Rainfall and rainfall patterns/climate change	Rainfall and rainfall patterns	
Market prices	Trend in market price over time (2008-2012)	Prices for 2008 - 2010
Governmental stability	Information from project staff Info from questionnaire + project staff	-
Other certification programmes		Info from project staff
Labour availability (incl. health of farmers & family)	Qualitative questions to farmers	-
Relationship between farmers and factory	Qualitative questions to farmers/factory staff	Perception on relationship
Market demands for certified products	Information from UTZ	-
Services or subsidies by the government	Information from project staff	-
Access to credit	Info from questionnaire	Info from questionnaire
Plagues, diseases in tea	Info from project staff/questionnaire	-
Input costs	Info from questionnaire	Info from questionnaire
Age and education of farmers	Info from questionnaire	Info from questionnaire
Land ownership/tenure issues	Info from questionnaire	Info from questionnaire

Appendix 3A: The mid-term questionnaire

Mid-term questionnaire for Kenya

UTZ training for sustainable tea production

Instruction for enumerators: Interview the person who is mentioned on your list, or his or her spouse. When both are not available, come back later for the interview. **Thank you!**

Remember to write down -990 when a farmer does not know and thus does not give an answer!

A: Household identification

01 Date of interview (dd-mm-yyyy)

02 Name of enumerator

1 KTDA Growers number (2 letters, 3 numbers of collection centre, 4 numbers of grower number)

.....

2a To which factory do you sell your green leaf?

2b What is your name?

2c Did you sell tea in the period July 2011 - June 2012 financial year?

0 No

1 Yes

If the answers to question 2c is NO, then stop with the interview and go to another farmer on your list

3 Which persons have responsibilities for tea? (tick, multiple ticks in a row are possible)

	1	2	3	4
Responsibilities for tea	Household head	Spouse	Respondent (tick only when the respondent is neither household head nor spouse)	Other, please specify (child, other family member, farm worker)
Management/Supervision of work in the tea plot	1a	1b	1c	1d
Highest workload in tea (plucking)	2a	2b	2c	2d
Owns the land/tea plot	3a	3b	3c	3d
Receives the tea income/payment	4a	4b	4c	4d

4 How many people are part of your household?

5 Please provide us with information on the members of the household:
(Enumerators: -999 is I do not know)

#	1	2	3
Person in household	Household head	Spouse	Respondent (Fill in only when the respondent is neither household head nor spouse)
Is he/she the respondent? (0=No; 1=Yes)	1a	1b	1c
Full name	2a	2b	2c
Gender (0 =Female; 1 =Male)	3a	3b	3c
Year of birth	4a	4b	4c
Education level (/certificate reached) 0 = I do not know, 1 = below primary level, 2 = primary level, 3 = secondary level, 4 = college level, 5 = university level 6 = never went to school 7 = adult education	5a	5b	5c

C: Tea production

1. Tea production

Enumerators: please note -999 when the farmer does not know!

Note down -888 when the farmer does not want to tell.

Year (1a)	What is the area in acre on which you grow tea?	What is the total number of bushes owned?	What is the total amount of green leaf you produced in the last 12 months in kilograms?	Average Price paid by the factory per kilogram in the last 12 months in KShs (without bonus)	Bonus paid by the factory per kilogram?
July 2011 - June 2012 (last 12 months)	1a.....	1b.....	1c.....	1d.....	1e.....
July 2010 - June 2011	2a.....	2b.....	2c.....	2d.....	2e.....

1b How many times was your tea rejected by the buying centre the last 12 months, 2011/2012?

0 Never → **Please skip question 1d**

1 Less than 3 times

2 More than 3 times

3 I do not know

- 1c How many times was your tea rejected by the buying centre 2 years ago, 2010/2011?
- 0 Never → **Please skip question 1e**
 - 1 Less than 3 times
 - 2 More than 3 times
 - 3 I do not know
- 1d How many kilograms of your tea was rejected by the buying centre in the last 12 months, in the 2011/2012 period?
-
- 1e How many kilograms of your tea was rejected by the buying centre 2 years ago, in the 2009/2010 period?
-
- 1f Indicate whether you agree or disagree with the following statement:
- I think my farm has higher productivity than two years ago:
- 0 I agree
 - 1 I do not agree, my farm has lower productivity than two years ago
 - 2 I do not agree, my farm has average productivity
 - 3 I don't know

2. Labour for tea

- 1) *How much time was spent on tea production? This can be both family and hired labour. We ask these questions for the following four activities. The unit is different per activity. Example: for weeding we ask the days per year. **Please not down the number of days the family or hired labour spent on weeding, the number of bushes pruned by family/workers and the number of bags applied last year by family/workers.***
- 2) *Costs of hired labour are in different units. Tea plucking is cost per kg of green leaves, while for other activities the costs per day should be stated. You do not have to state costs of family labour.*

Please write down -999 when the farmer does not know the amount or cost!

2a Activity	Quantity hired labour	Quantity family labour	Unit	Cost for hired labour per unit	Per unit:
Plucking				1b.....	Kg green tea leaves
Weeding	3a.....	3aa.....	Man days per year last year	3b.....	Per day
Pruning	4a.....	4aa.....	Number of bushes pruned last year	4b.....	Per bush
Applying fertiliser	5a.....	5aa.....	Number of bags applied last year	5b.....	Ksh/bag applied

- 2b. Do you hire more people than 2 years ago for plucking, weeding, pruning, fertiliser application?
- 0 Yes, I hire more people than 2 years ago
 - 1 No, I hire less people than 2 years ago
 - 2 No, I hire the same number of people as 2 years ago
 - 3 I do not hire people now, and did not hired people 2 years ago either
 - 4 I do not know
- 2c. Do you, your family and/or your workers spend more time on fertiliser application last year than two years ago?
- 0 Yes, I/my family and/or my workers spent more time on fertiliser application last year than two years ago
 - 1 No, I/my family and/or my workers spent less time on fertiliser application last year than two years ago
 - 2 No, I/my family and/or my workers spent the same time on fertiliser application last year as two years ago
 - 3 I do not know
 - 4 I do not apply fertiliser

- 2d Has a child/children (<18 years old) assisted you or your workers in tea production activities last year?
- 0 No → **Please go to question 3 below**
 - 1 Yes → **Please go to question 2d**
 - 2 I do not know → **Please go to question 3 below**
- 2e If yes, what did they do? (**Enumerators: multiple options are possible, but do not read the options aloud to the farmers**)
- a) Plucking
 - b) Weeding
 - c) Pruning
 - d) Carrying green leaf to the Buying Centre
 - e) Pesticide application
 - f) Fertiliser application
 - g) Land preparation
 - h) I do not know
- 2f If the child/children (<18 years old) carried green leaf to the Buying Centre, how far did they walk?
- a) N/A (they did not carry green leaf to the Buying Centre last year)
 - b)kilometres
 - c) I do not know

Questions 3 until 5: Inputs used for tea production

- 1) *Please state the inputs used for your total tea area in the 2011/2012 financial year. If the respondent has difficulties answering this question ask him/her how much of these inputs they have bought and if they finished all these inputs.*
- 2) *As different people might use different measures this question allows for different units in question 5 and 6: for example quantity 1, unit kg or quantity 0,5, unit litre.*
- 3) *Write down the cost for one unit*
- 4) *Give respondent time to think about any other inputs used for tea*
- 5) ***Write down -999 when the farmer does not know***

3. Fertiliser (chemical) List common/trade names incl. composition (N,P,K):	Quantity used in last 12 months 1, 2, 3, ½, ¼, ¾ etc.	Unit:	Cost per unit input in Ksh. (this may be a cost of zero: if so fill out 0)	Number of bushes receiving input
1a	1b	Bag	1d	1e
2a	2b	Bag	2d	2e
3a	3b	Bag	3d	3e
4a	4b	Bag	4d	4e
...				
4. Organic fertilisers, compost, manure List types, if any:	Quantity used in last 12 months 1, 2, 3, ½, ¼, ¾ etc.	Unit:	Cost per unit input in Ksh. (this may be a cost of zero: if so fill out 0)	Number of bushes receiving input
1a	1b	1c	1d	1e
2a	2b	2c	2d	2e
3a	3b	3c	3d	3e
4a	4b	4c	4d	4e
...				
5. Other chemicals (pesticides/herbicides/insecticides), if any: List common/trade names:	Quantity used in last 12 months 1, 2, 3, ½, ¼, ¾ etc.	Unit:	Cost per unit input in Ksh. (this may be a cost of zero: if so fill out 0)	Number of bushes receiving input
1a	1b	1c	1d	1e
2a	2b	2c	2d	2e
3a	3b	3c	3d	3e
4a	4b	4c	4d	4e
...				

6. New tea plants, if any List the name of the variety	Number of plants bought last year		Cost per plant (last year)	
1a	1b		1d	
2a	2b		2d	
3a	3b		3d	
4a	4b		4d	
...				
7. Other input used on tea:				
1a	1b	1c	1d	1e

- 9 Do you use bio-pesticides/organic pesticides?
0 No → **Please go to question 11**
1 Yes
- 10 Do you use bought or home- made bio-pesticides?
1 Bought bio pesticides (include pesticide in question above)
2 Home-made
- 11 Have you bought any Personal Protective Equipment for your tea or other production in the 2011/2012 financial year?
→ **Enumerators; if the answer is NO, please go to question 12b**

Please fill out -999 when the farmer does not know.

If yes, what did you buy?	How many?		Cost per piece
1 Overall	1a.....	Piece	1d.....
2 Hat	2a.....	Piece	2d.....
3 Mask/respirator	3a.....	Piece	3d.....
4 Gumboots	4a.....	Piece	4d.....
5 Goggles	5a.....	Piece	5d.....
6 Apron/plucking cape/nylon bags/raincoat	6a.....	Piece	6d.....
7 Full PPE set	7a.....	Piece	7d.....

- 12 If you **bought** protective equipment (PPE) last year, why did you buy it?
(Instruction to the enumerator: multiple answers are possible but do not read aloud to respondent)
- 0 I was taught in training that I can benefit from it
 - 1 I need it for required practises for UTZ Certification
 - 2 I have seen my neighbour/colleague farmer using it
 - 3 I wanted to buy it for a long time but just recently got the required funds
 - 4 It increases my status as a farmer
 - 5 Other
- 13 Deleted from impact assessment questionnaire
- 14 Do you have any loans at this moment?
- 0 No → **Please go to question 17**
 - 1 Yes
 - 2 I do not want to tell → **Please go to question 17**
- 15 Deleted from the impact assessment questionnaire

16a If yes, did the amount of money your household borrowed change between now and 2 years ago?

- 0 The amount decreased
- 1 The amount stayed the same
- 3 The amount increased
- 4 I did not borrow money 2 years ago
- 3 I don't know

16b For what do you use the money you borrowed?

(Instruction to the enumerator: ask all options and tick the relevant answer box).

Nr	Item	Yes	No
0	Buying inputs/equipment for tea production		
1	Buying inputs/equipment for other crops/animals		
2	Hire labour for tea production		
3	Hire labour for other crops/animals		
4	Buy food		
5	Medical bills for family		
6	Education fees for children		
7	Investment in business		
8	Mobile phones		
9	Buy home use items e.g. Radio/TV/sofa set		
10	Other, please specify		

16c Is it easier for you to access credits NOW compared to 2 years ago?

(Instruction to the enumerator: multiple answers are possible but do not read aloud to respondent)

- 0 No, nothing changed
- 1 No, it is more difficult now to access credits than 2 years ago
- 2 Yes, it improved because our tea production has gone up
- 3 Yes, it improved, because my records shows my production and costs
- 4 Yes, it improved because the project's staff assists us in gaining access to credits
- 5 Yes, it improved because I am part of a tea certification programme
- 6 Yes, because of other reason:
- 7 I don't know

- 17 How did you use the income from your tea farm last year?
(Instruction to the enumerator: ask all options and tick the relevant answer box).

Nr	Item	Yes	No
0	Buying inputs/equipment for tea production		
1	Buying inputs/equipment for other crops/animals		
2	Hire labour for tea production		
3	Hire labour for other crops/animals		
4	Buy food		
5	Medical bills for family		
6	Education fees for children		
7	Investment in business		
8	Mobile phones		
9	Buy home use items e.g. Radio/TV/sofa set		
10	Other, please specify		

D: Other sources of income

Can you state your families' most important sources of income, starting with the most important income generation activity (excluding tea)? Can you give an approximation of the yearly income from this activity?

Enumerator can use the bottom of the sheet to take notes before filling the table.

Help respondents with possible sources of income: vegetables, fruit, grain, dairy, calves, pigs, rabbit, chicken. Remittances, retirement, business, employment, teaching, and more.

Enumerators: write down -999 when the farmer does not know. And -888 when the farmer does not want to answer!

1	Income generating activities from most to least income generating activity	Harvest/sale (amount/ number)	Yearly gross income from this activity (last 12 months)	Yearly costs from this activity (last 12 months)
1.	a.....	b	c	d
2.	a.....	b	c	d
3.	a.....	b	c	d
4.	a.....	b	c	d
5.	a.....	b	c	d
6.	a.....	b	c	d
7.	a.....	b	c	d
8.	a.....	b	c	d
9.	a.....	b	c	d
10.	a.....	b	c	d

2a. Has the area of your farmland used for tea production changed between now and 2 years ago?

- 0 The area used for tea production decreased → **Please go to question 2b**
- 1 the area used for tea production stayed the same → **Please go to question 3**
- 2 the area used for tea production increased → **Please go to question 2b**
- 3 I don't know → **Please go to question 3**

2b If there was a change in area of farmland used for tea production, why did it change?

.....

3 Please indicate whether you agree or disagree with the following statements:

3a I earn more income from tea production now than two years ago:
0 I do not agree, I earn less income from tea now than 2 year ago
1 I do not agree, I earn the same amount from tea now as 2 years ago
2 I agree
3 I don't know

3b I earn more income from other sources of income than tea production than two years ago
0 I do not agree, I earn less income from other sources now than 2 year ago
1 I do not agree, I earn the same amount from other sources as 2 years ago
2 I agree

3c I have more savings now than two years ago:
0 I do not agree, I have less savings now than 2 year ago
1 I do not agree, I have a similar amount of savings now as 2 years ago
2 I agree

Now we would like to ask you some questions about training and certification.

A UTZ CERTIFICATION

- 6a Have you been trained for UTZ **as a** promoter farmer by Solidaridad?
0 No → **Please go to question 7**
1 Yes → **Please go to question 6b**

6b What was your motivation to be a promoter farmer?
.....

- 7 Have you, or any person from your household attended UTZ certification training?
0 Nobody → **Please continue with question 8f**
1 Yes, me → **Please continue with question 8b**
2 Yes, somebody else → **Please continue with question 8f**
3 I do not know → **Please continue with question 8f**

- 8a If you participated in UTZ certification training, how do you value the training?
0 Unsatisfied → **Please go to 8b**
1 Neutral → **Please go to 8d**
2 Satisfied → **Please go to 8c**
3 I did not participate in UTZ certification training → **Please go to question 8e**
4 I do not know → **Please go to question 8d**

8b If you are not satisfied, why not?
.....

8c If you are satisfied, why are you satisfied?
.....

- 8d Would you recommend the UTZ Certification training to other tea farmers?
0 No
1 Yes
2 I don't know

- 8e Do you think it is good that your factory/company is UTZ certified?
- 0 No → **Please go to question 8f**
 - 1 Yes → **Please go to question 8g**
 - 2 I don't know → **Please go to question 8h**
 - 3 I do not know if my factory/company is UTZ certified → **Please go to question 8o**

8f Why don't you think that it is good that your factory/company is UTZ certified?

.....

Enumerators, please go to question 8h

- 8g What are the benefits of your factory company to be UTZ certified?
(Enumerators: multiple answers are possible!)
- 1 The factory will provide bonus/premium to us
 - 2 The factory will provide more information to us
 - 3 The factory will provide more services to us
 - 4 Other reasons, please specify.....
 - 5 I do not know

- 8h Have you or your household benefitted from participating in the UTZ certification training or UTZ certification?
- 0 No → **Please go to question 8i**
 - 1 Yes → **Please go to question 8j**
 - 2 I do not know → **Please go to question 8k**

8i If you have not benefitted from participating in the UTZ certification training or UTZ certification, why not?

.....

8j What benefits have you or your household realised from participating in UTZ certification training or UTZ certification?

.....

.....

.....

8k Have you improved your net income through participation in the UTZ certification training or UTZ certification?

- 0 No → **Please go to question 8m**
- 1 Yes → **Please go to question 8l**
- 2 I do not know → **Please go to question 8m**

8l What did you do with the additional income?
(Instruction to the enumerator: read aloud all answers to respondent and tick relevant box)

Nr	Item	Yes	No
0	Buying inputs/equipment for tea production		
1	Buying inputs/equipment for other crops/animals		
2	Hire labour for tea production		
3	Hire labour for other crops/animals		
4	Buy food		
5	Medical bills for family		
6	Education fees for children		
7	Investment in business		
8	Mobile phones		
9	Buy home use items e.g. Radio/TV/sofa set		
10	Other, please specify		

8m Would you like to see something changed in the organisation of the UTZ certification training activities or UTZ certification?

- 0 No → **Please go to question 8o**
- 1 Yes → **Please go to question 8n**
- 2 I do not know → **Please go to question 8o**

8n What would you like to see changed in the organisation of UTZ certification training activities or UTZ certification to improve on its functioning in the future? **(Enumerator: write down maximum 3 changes)**

.....

.....

.....

8o Apart from information provided in the trainings, does your extension staff provide you with information or services that helps you with your tea production?

- 0 No → **Please go to question 9a**
- 1 Yes → **Please go to question 8p**
- 2 I don't know → **Please go to question 9a**

8p Can you name the services the producer group provides you and if you are satisfied with it/them?

(Instructions for enumerators: please read the options to the farmers and tick the boxes applicable for their answers)

Services of the producer group				I do not know	Not applicable
	Satisfied	Neutral	unsatisfied		
Training					
Market information on inputs					
Market information on sales and prices (e.g. also of other crops than tea)					
Providing information about inspection results and corrective actions after Internal Inspections (ICS)					
Providing information about the external Inspections (audit)					
Providing access to fertiliser					
Providing access to seedlings, planting material					
Providing access to pesticides					
Providing access to credits					
Insurance					
Commercial activities; sales and marketing					

We also would like to ask you some questions on how you make decisions about tea production activities and how you made such decisions two years ago **(Enumerator: multiple options are possible, read the options aloud to the farmers and tick the relevant box).**

9a How do you generally make decisions on tea production activities?

Nr	Way for decision-making	Yes	No
0	Based on advice from my parents/friends/neighbours		
1	Based on what I did last year		
2	I do the same each year		
3	Based on the state of my tea bushes/field(s)		
4	Based on recommendations by the TESA/FSC/factory		
5	I regularly check my records to see whether my farm is doing well		
6	I compare my records with the records of my neighbours/friends/other farmer to see how my farm is doing		
7	I use what I learnt from the training to make my decisions		
8	Based on information on prices for tea and other crops		
9	I compare my production with figures on tea production in Kenya to see how my farm is doing		
10	Own experience		
11	Other, please specify		
12	I do not know		

9b How did you generally make decisions on tea production activities *two years ago*?

Nr	Way for decision-making	Yes	No
0	Based on advice from my parents/friends/neighbours		
1	Based on what I did last year		
2	I do the same each year		
3	Based on the state of my tea bushes/field(s)		
4	Based on recommendations by the TESA/FSC/factory		
5	I regularly check my records to see whether my farm is doing well		
6	I compare my records with the records of my neighbours/friends/other farmer to see how my farm is doing		
7	I use what I learnt from the training to make my decisions		
8	Based on information on prices for tea and other crops		
9	I compare my production with figures on tea production in Kenya to see how my farm is doing		
10	Own experience		
11	Other, please specify		
12	I do not know		

9c **If the answers are not the same for questions 9a and 9b above:**
Why did you change the way you make decisions since two years ago?

.....
.....

10a How do you decide how much fertiliser to apply?

Nr	Way for decision-making	Yes	No
0	I do not apply fertilisers		
1	I apply the same amount per bush/hectare as my parents/neighbours do		
2	I apply the same as last year		
3	I always apply the same amount		
4	On basis of the state of the tea bushes		
5	On the basis of recommendations by the factory		
6	On the basis of recommendations obtained in the training		
7	On the basis of the records that I kept last year (analysed fertiliser input and yield relations)		
8	On the basis of my own experience		
9	Other, please specify		
10	I do not know		

10b How did you decide how much fertiliser to apply *two years ago*?

Nr	Way for decision-making	Yes	No
0	I do not apply fertilisers		
1	I apply the same amount per bush/hectare as my parents/neighbours do		
2	I apply the same as last year		
3	I always apply the same amount		
4	On basis of the state of the tea bushes		
5	On the basis of recommendations by the factory		
6	On the basis of recommendations obtained in the training		
7	On the basis of the records that I kept last year (analysed fertiliser input and yield relations)		
8	On the basis of my own experience		
9	Other, please specify		
10	I do not know		

11a How do you decide how often to pluck (plucking frequency)?

Nr	Way for decision-making	Yes	No
0	I pluck as often as my parents/neighbours/friends do		
1	My plucking frequency is the same as last year		
2	On the basis of the state of the tea bushes		
3	On the basis of recommendations by the factory		
4	On the basis of recommendations obtained in the training		
5	On the basis of the records that I kept last year		
6	On the basis of my own experience		
7	Other, please specify		
8	I do not know		

11b How did you decide how often to pluck (plucking frequency) *two years ago*?

Nr	Way for decision-making	Yes	No
0	I pluck as often as my parents/neighbours/friends do		
1	My plucking frequency is the same as last year		
2	On the basis of the state of the tea bushes		
3	On the basis of recommendations by the factory		
4	On the basis of recommendations obtained in the training		
5	On the basis of the records that I kept last year		
6	On the basis of my own experience		
7	Other, please specify		
8	I do not know		

12a How do you decide how to handle (apply, store etc.) agro-chemicals?

Nr	Way for decision-making	Yes	No
0	I do not handle/apply/store agro-chemicals		
1	Based on advice from my parents/friends/neighbours		
2	Based on what I did last year		
3	I do the same each year		
4	Based on recommendations by the TESA/FSC/factory		
5	Based on requirements for UTZ certification		
6	I use what I learnt from the training to make my decisions		
7	On the basis of my own experience		
8	Other, please specify		
9	I do not know		

12b How did you decide how to handle (apply, store etc.) agro-chemicals *two years ago*?

Nr	Way for decision-making	Yes	No
0	I do not handle/apply/store agro-chemicals		
1	Based on advice from my parents/friends/neighbours		
2	Based on what I did last year		
3	I do the same each year		
4	Based on recommendations by the TESA/FSC/factory		
5	Based on requirements for UTZ certification		
6	I use what I learnt from the training to make my decisions		
7	On the basis of my own experience		
8	Other, please specify		
9	I do not know		

Other training and certification

- 13 Are you a member of a Farmer Field School (FFS)?
- 0 No
 - 1 Yes
 - 2 Not anymore
 - 3 I do not know
 - 4 I never heard about FFS/Famer Field School
- 14 Have you been trained for Rainforest Alliance certification **as a lead farmer** by Rainforest Alliance?
- 0 No
 - 1 Yes → **Please go to question 15b**
- 15 Have you been trained for Rainforest Alliance certification **by a lead farmer**?
- 0 No
 - 1 Yes
 - 2 N/A (trained as lead farmers by Rainforest)
- 15b Have you or any member of your household participated in any **non-certification** scheme training or workshops over the past 12 months (trainings defined as educational events; for instance, one-on-one training, group training, workshop, demonstration, field day, field visit, training during TESA visit)?
- 0 No → **Please go to question 15c**
 - 1 Yes → **Please go to question 16**
- 15c If **no**, what was the reason?
- a) No training offered
 - b) Offered, but could not get to training, no transportation or resources
 - c) Offered, but other reasons for not attending (no time, not interested in topic).
 - x) Other, specify
- **Go to section B (skip question 16 and 17)**

- 16 If **yes**, how much training (trainings defined as educational events; for instance, one on one training, group training, workshop, demonstration, field day, field visit, training during TESA visit) have you attended in the past 12 months?
- a) 1 training
 - b) Between 1-5
 - c) More than 5 trainings
 - d) I do not know

- 17 Did the person(s) that participated in training follow the following topics?
(Enumerators, fill in -999 when farmer does not know the answer)

Topics	Attended training on this topic? [1 = Yes; 0 = No; 2= Do not know]	Who gave the training? (mention organisation name)	Name the type of organisation (see below for options)
Crop production (for instance new crops)	a1.....	a2.....	A3.....
Health and safety (for instance HIV/AIDS, house-keeping, food)	b1.....	b2.....	b3.....
Farm management skills (for instance record keeping, economic decision making)	c1.....	c2.....	c3.....
Chemical application (chemicals used for all farm activities)	d1.....	d2.....	d3.....
Others/combination of topics	e1.....	e2.....	e3.....
	0 = no 1 = yes 2 = I do not know		1= factory 2= government 3= NGO 4= input supplier 5= Local individual (e.g. neighbour) 6= others 7 = I do not know

B: Implementation of sustainable practices

1. *Answering options should not be read out to the households, options are for enumerators' convenience only!*
2. *Select one answer option per question by circling the corresponding letter.*
3. *Do not give any additional information about the 'right' answers as we will be questioning knowledge alter on.*

- 1 How many times do you pluck the same plot of tea per month (this refers to a normal month- when there is no drought and it is not very cold)?
 - a) 4 times (every 7-8 days)
 - b) 3 times (every 10 days)
 - c) 2 times (every 2 weeks)
 - d) Less than twice (less than once every 2 weeks)
 - x) I don't know

- 2 Do you experience leaf spillage at the farm, during transport to buying centre or at the buying centre?
 - a) No spillage at all places
 - b) Spillage in all three places
 - c) Spillage at home only
 - d) Spillage at buying centre only
 - e) Spillage during transport
 - y) Spillage at 2 places
 - x) I don't know

- 3 Do you use a plucking stick/wand? Is the table even? **(Enumerator to ask & if possible observe)**
 - a) Use stick & table even
 - b) Use stick table not even
 - c) No stick table even
 - d) No stick table not even
 - x) I don't know

- 4 If you raise your own planting material what is the success rate in your nursery.
- a) High (More than 80% success rate)
 - b) Mediate (Between 80% and 50% success rate)
 - c) Low (Less than 50% success rate)
 - d) N/A - i.e. I do not have a nursery/I do not raise my own planting material
 - x) I do not know
- 5 If you planted clones, what clones have you planted in the nursery last year?
- a) N/A, I did not plant clones last year → **Please go to question 7**
 - b) 6/8
 - c) 31/8
 - d) 303/577
 - e) SFS 15/10
 - f) Any other/mixed clones
 - x) I do not know which clones
- 6 When do you plant the tea VP plants?
- a) During heavy rains
 - b) During moderate/light rains
 - c) During dry season
 - d) N/A
 - x) I don't know
- 7 What is the % crop cover (absence of gaps in the tea) on the farm (Interviewer to observe)?
- a) 100%
 - b) From 90% to 100%
 - c) From 75% to 90%
 - d) Less than 75%
 - x) I don't know
- 8 At what height do you prune mature tea (from the ground)?
- a) 20 inches and above
 - b) Below 20 inches
 - x) I do not know

- 9 In which period do you prune your tea bushes?
- a) Dry season (January - March)
 - b) Wet season (April - May/October - December)
 - c) Cold season (June - August)
 - d) Warm season (September)
 - y) Any time/I do not prune in a specific period
 - x) I don't know
- 10 How often do you prune the same tea plot/block?
- a) Prune every 5 (or more) years
 - b) Prune every 3-4 years
 - c) Prune every 1 or 2 years
 - d) Never
 - x) I don't know
- 11 What tools are used to prune your tea?
- a) Use pruning knife
 - b) Use pruning machine
 - c) Other tools
 - x) Panga (ordinary)
 - y) Modified panga
- 12 Who prunes the tea bushes and have they been trained?
- a) Untrained Family member.
 - b) Trained family member.
 - c) Untrained non family member.
 - d) Trained non family member
 - x) Experienced family member
 - y) Experience non-family member
- 13 At what height do you tip in?
- a) More than 6 inches above pruning height (leaving 3 leaves)
 - b) 4 to 6 inches above pruning height (leaving 2 - 3 leaves)
 - c) Less than 4 inches above pruning height (leaving less than 2 leaves)
 - d) I do not tip in
 - x) I do not know

- 14 How frequently do you apply composted manure?
- a) Never
 - b) Less than once every three years
 - c) Every three years
 - d) More often than once every three years
 - x) I do not know
- 15 How frequently do you apply fertiliser?
- a) Once per year
 - b) Twice a year
 - c) More than twice per year
 - d) Never
- 16 Do you keep records on input use and production (besides the payslip)?
- a) Only records on production/sales
 - b) Only records on inputs
 - c) Records on input use and production
 - d) I do not keep records → **Please go to question 17**
 - x) I keep records in my mind/memory, not on paper → **Please go to question 17**
- 16a Indicate whether you agree or disagree:
- I regularly look at my records on input use and/or production to see whether I need to change farm management:
- 0 I do not agree, I don't keep records
 - 1 I do not agree, I only keep records for the inspections (internal/external/audit)
 - 2 I agree
- 16b Two years ago, I regularly looked at my records on input use and/or production to see whether I needed to change farm management:
- 0 I do not agree, I did not keep records
 - 1 I do not agree, I only kept records for the inspections (internal/external/audit)
 - 2 I agree

- 17 Who plucks your tea?
- a) Family members
 - b) Regular workers
 - c) Casual workers
 - d) Mixture of family and regular workers
 - e) Mixture of family and casual workers
- 18 Do you have a fixed agreement with hired workers about pay and timing of payment?
- a) Yes
 - b) No
 - c) N/A (I do not hire workers)
- 19 Do your workers and family members have access to good quality drinking water and latrines?
- a) Access to good quality drinking water
 - b) Access to latrines
 - c) Access to both
 - d) Neither
- 20 How often did your family or any of your workers need medical attention after injury *on the farm* for example fractures or wounds requiring stitches, in the last 12 months?
- a) More than three occasions
 - b) On one or two occasions
 - c) No occasions
- 20b How often were you, your family or any of your workers ill because of use of or contact with agro-chemicals in the last 12 months?
- a) More than three occasions
 - b) On one or two occasions
 - c) No occasions
 - x) I do not know
 - y) Never (also not more than 12 months ago) → **Please go to question 21**

- 20c Indicate whether you agree or disagree with the following statement:
The number of people (you, family members, workers) that fell ill because of use or contact with agro-chemicals was lower last year than *two years ago*.
- a) I do not agree, more people became ill last year than 2 year ago
 - b) I do not agree, the same number of people became ill as 2 years ago
 - c) I do not agree, no-one fell ill two years ago
 - d) I agree
- 21 Which personal protective equipment (PPE) does your family or your workers use?
- a) All PPE (Mask, gloves, boots, overall, goggles)
 - b) Some of the above PPE
 - c) No PPE
 - x) Not applicable, I do not use any chemicals
- 22 Do you group together with other farmers to carry out certain activities?
- a) Yes
 - b) No
- 23 Do you turn to KTDA extension staff if you experience any problems in your tea production?
- a) Yes
 - b) No
- 24 If you have children, do they go to school?
- a) N/A, farmer has no children, or children are too young or too old to go to school
 - b) No, some children are not going to school although they have the age to attend primary or secondary school
 - c) Yes, all children in the age to attend primary or secondary school are attending school
 - d) Yes, all children in the age to attend primary or secondary school are attending school and/or one or more children are following college or university
- 25 Deleted from impact questionnaire
- 26 Deleted from impact questionnaire

- 27 Do you collect prunings from the tea field?
- a) No
 - b) Yes - use as mulch elsewhere on farm
 - c) Yes - use as fuel
- 28 Do you infill open areas in your tea?
- a) Yes
 - b) No
 - c) N/A (I do not have gaps/open areas in my tea)
- 29 When did you apply fertiliser to your tea in the last 12 months?
- a) Apply fertiliser during moderate rains
 - b) Apply fertiliser during heavy rains
 - c) Apply fertiliser during dry periods
 - d) Other moment
 - e) I do not use fertiliser
 - x) In the month **(Enumerator: try to probe whether the farmer means answer options a, b or c!)**
- 30 In case of chemical control in your tea (pesticides/herbicides/insecticides) how do you apply?
- a) Blanket spraying
 - b) Edges/spot spraying
 - c) Other
 - d) Do not use chemical control
- 32 Do you have indigenous trees on your farm? If so how many in total on your land?
- a) From 10 native trees
 - b) From 5 to 10
 - c) Less than 5
 - d) No native trees
 - x) I do not know

- 31 Does your farm border a river or water body? If so, do you have a Riparian strip covered by indigenous/perennial vegetation and how wide is it (Interviewer to ask and observe)?
- a) No; farm does not border a river or water body → **Please go to question 35 below!**
 - b) Yes, farm borders a river/water body, but no Riparian strip/strip < than 10 meter.
 - c) Riparian strip wider than 10 meters, but smaller than 30 meters
 - d) Riparian strip wider than 30 meter
 - x) I don't know what a Riparian-strip is
- 33 If your farm borders a water stream, how many eucalyptus trees are growing within 10 meters of the water stream?
- a) More than 50 trees
 - b) From 20 to 50 trees
 - c) From 5 to 20 trees
 - d) 1 to 5 trees
 - e) Zero
 - f) N/A farm does not border river
- 34 If your farm borders a water body, what distance do you leave out without applying agrochemicals and fertiliser;
- a) No area is left
 - b) 0 - 5 metres
 - c) 5 - 15 metres
 - d) Over 15 metres
 - e) N/A farm does not border a river
- 35 How much area of the total farm is conservation area (area under indigenous trees/vegetation)?
- a) More than 10%
 - b) Between 2% and 10%
 - c) 0.1 to 2%
 - d) Zero
 - x) I do not know

36-40 Deleted from the questionnaire

- 41a What do you do with empty containers of agro-chemicals (pesticides, herbicides, insecticides)?
- a) N/A: I do not use agro-chemicals
 - b) Dispose by burying in the ground
 - c) Dispose by burning
 - d) Throw into garbage pit
 - d) Throw into pit latrines
 - e) Return to the supplier of chemical
 - f) Return to factory
 - g) Re-use (e.g. for storage)
 - h) Any other (specify).....
- 41b What did you do with empty containers of agro-chemicals (pesticides, herbicides, insecticides) *two years ago*?
- a) N/A: I did not use agro-chemicals two years ago
 - b) Dispose by burying in the ground
 - c) Dispose by burning
 - d) Throw into garbage pit
 - d) Throw into pit latrines
 - e) Return to the supplier of chemical
 - f) Return to factory
 - g) Re-use (e.g. for storage)
 - h) Any other (specify)
- 42a What do you do with excess agro-chemicals that were already mixed (diluted) e.g. in the application tank (pesticides, herbicides, or insecticides)?
- a) N/A: I do not use such agro-chemicals
 - b) N/A, I do not have excess chemicals (I always make just enough)
 - c) I store the left over agro-chemicals (diluted in water) for later use
 - d) Dispose by burying in the ground
 - e) Throw into pit latrines
 - f) Throw into water stream/water body
 - g) Return to supplier of chemical
 - h) Return to factory
 - i) Apply on fallow land or untreated part of the crop
 - j) Any other (specify)

- 42b What did you do with excess agro-chemicals that were already mixed (diluted) e.g. in the application tank (pesticides, herbicides, or insecticides) *two years ago?*
- a) N/A I do not use such agro-chemicals
 - b) N/A, I do not have excess chemicals (I always make just enough)
 - c) I store the left over agro-chemicals (diluted in water) for later use
 - d) Dispose by burying in the ground
 - e) Throw into pit latrines
 - f) Throw into water stream/water body
 - g) Return to supplier of chemical
 - h) Return to factory
 - i) Apply on fallow land or untreated part of the crop
 - j) Any other (specify)

E: Knowledge and skills learnt

1. *Answering options should not be read out to the households, options are for enumerators' convenience only!*
2. *In this part it is encouraged that the enumerators stimulate the farmers to give more options (time to think), but never mention the options!*
3. *Select the given option by circling the corresponding letter, more answer options can be selected*

- 1 Can you mention some benefits of leaving prunings in the field?
 - a) To suppress weeds
 - b) To prevent soil erosion
 - c) To improve soil structure
 - d) Releases nutrients into the top soil at decomposition
 - e) Reduces loss of water by evaporation (mulch)
 - f) Reduces pests
 - x) Other
 - z) I do not know

- 2 Can you mention the best height to prune mature tea?
 - a) Never below 20 inches
 - b) 2 inches above the former height
 - c) After reaching 28 inches, the bush should be down pruned to 21 inches
 - x) Other
 - y) I do not know

- 3 Can you mention reasons to prune tea?
 - a) To maintain a manageable plucking table
 - b) To rejuvenate the bush/increase the yield
 - c) To remove diseased, dead and knotted branches
 - x) Other,
 - y) I do not know

- 4 Can you mention some recommended methods to handle weeds in tea?
 - a) Slashing using panga
 - b) Use of plain jembe
 - c) Uprooting using hands
 - d) Use of round up for perennial weeds such as couch grass (new fields and young tea only)
 - x) Other
 - y) I do not know

- 5 Can you mention benefits of fertiliser application to tea?
 - a) Get better yields of green leaf.
 - b) Get better quality of green leaf
 - c) Maintain the tea bush for a long time
 - d) Increase nutrients to soil/improve soil fertility.
 - x) Other, (specify)
 - y) I do not know

- 6 Can you mention any benefits of plucking tea every 7 to 8 days (during normal weather)?
- a) To maintain good quality (older tea is of less quality; more than 2 leaves per bud)
 - b) To maintain enough yield (if leaves are plucked frequently, high yield; 2 leaves per bud)
 - c) To maintain good plucking table
 - x) Other,(specify)
 - y) I do not know
- 7 Can you mention any benefits of maintaining a plucking table?
- a) Yields increase when shoots can grow because they are not hindered by shade
 - b) Shoots are not missed during plucking
 - c) plucking goes faster with a even plucking table
 - x) Other
 - y) I do not know
- 8 Can you mention benefits from infilling?
- a) Maximises the yield of land in tea production/increases yield
 - b) Reduces weeding efforts
 - x) Other,(specify)
 - y) I do not know
- 9 Can you mention the best height for tipping-in tea?
- a) 4 inches above pruning height
 - x) Other
 - y) I do not know
- 10 A Riparian strip is a strip of indigenous vegetation between rivers or other water bodies and cultivated field. Can you mention benefits of a Riparian strip?
- a) A riparian strip helps protect and conserve wetlands
 - b) A riparian strip helps prevent soil erosion
 - c) A riparian strip enriches biodiversity
 - d) A Riparian strip forms a buffer so that pollution cannot reach the water
 - x) Other
 - y) I do not know

- 11 What are the benefits of personal protective equipment (PPE)?
- a) Protects your skin from being in contact with chemicals
 - b) Protects you from inhaling chemicals
 - c) Protects your feet from chemicals
 - d) Prevents illness
 - x) Other
 - y) I do not know
- 12 What are the potential dangers of applying agrochemicals and fertiliser near the natural water bodies like rivers, streams, pools, ponds etc?
- a) Kill the aquatic life (water plants and animals)
 - b) Kill the plants growing near the water body
 - c) Poison the people drinking water downstream
 - x) Other
 - y) I do not know
- 13 Why is application of agrochemicals discouraged in tea?
- a) High cost of agrochemicals
 - b) Harmful effect on people
 - c) Risk of getting into made tea
 - d) Loss of market of tea
 - e) Harmful effect on environment
 - x) Other
 - y) I do not know
- 14 What methods can you use to improve the yield and quality of tea in your farm?
- a) Application of the right fertiliser at the right time.
 - b) Regular plucking rounds
 - c) Maintaining the plucking table.
 - d) Training of pluckers
 - x) Other
 - y) I do not know

- 15 What are the benefits of applying soil conservation measures?
- a) Preserve soil fertility
 - b) Prevent loss of soil
 - c) Get high production
 - d) Prevent contamination of water bodies
 - x) Other
 - y) I do not know
- 16 Can you mention activities that are *not appropriate* for children to implement?
- (Enumerators: farmers should mention as many options as possible but do not read them aloud to the farmer)**
- a) Carrying heavy loads
 - b) Carrying loads for long distances
 - c) Pesticide application
 - d) Chemical fertiliser application
 - e) Using dangerous tools or equipment
 - f) Doing heavy work
 - g) Work on the farm during school hours
 - h) Working without company of an adult
 - x) Other, namely(please specify)
 - y) I do not know

F: Experiments

- 1 Have you experimented (or started) with any new agricultural practices or tools on your land (for example new crops, other fertiliser) in the last 12 months?
- 0 No → **skip question 2, continue from question 3**
- 1 Yes
- 2 What did you experiment?
- 1) Fill in any practices the farmer has experimented with, for instance new crop varieties, other fertiliser, more/less frequent maintenance, new tools, and new income generating activities). Begin with tea-related experiments, then not tea related.*
- 2) Fill in if the farmer experimented alone or in a group.*

What did the farmer experiment?	0=Alone or 1= in group	Reason (e.g. learnt from neighbour, training or because of certification)
Tea related		
1a	1b	1c
2a	2b	2d
3a	3b	3b
4a	4b	4b
Not tea-related		
5a	5b	
6a	6b	
7a	7b	

3a Did you share information on good agricultural practices that you or your household member were taught during the training (UTZ training) over the last year?

0 No → **Please go to question 5**

1 Yes

3b Did any of your friends, relatives or neighbours that you shared information with (on UTZ training) change their tea production practices due to information they got from you?

0 No

1 Yes

2 I do not know

- 4 How often did you share information on good practices with your neighbours last year?
- 1 Daily
 - 2 Weekly
 - 3 Monthly
 - 4 Yearly
 - 5 Never
 - 6 Half yearly
 - 7 Quarter yearly
 - 8 I do not know
- 5 How often did your neighbours share information on good practices with you last year?
- 1 Daily
 - 2 Weekly
 - 3 Monthly
 - 4 Yearly
 - 5 Never
 - 6 Half yearly
 - 7 Quarter yearly
 - 8 I do not know

G: Social indicators

1 Can you indicate to what extent you are satisfied with the following issues.

How satisfied are you with:	 Very satisfied	 Satisfied	 Neutral	 Unsatisfied	 Very unsatisfied	I do not want to answer
a) The relation with your neighbours						
b) The relation with your family members						
c) The relation with the tea factory						
d) Knowledge on good tea management practices						
e) Leadership skills						
f) Access to information on agriculture commodity prices						
g) Access to self-help activities like Merry-go-rounds						
h) Diversification of income/number of income sources						
i) Your homestead (house, access to water/electricity etc)						
j) Your families health						
k) Possibility to send children to school						
l) Family welfare						
m) Family income						

Please indicate whether you agree or disagree with the following statement

- 2 Community relationships have improved compared to 2 years ago.
- 0 I do not agree, community relationships are not different from two years ago
 - 1 I do not agree, community relations are worse than two years ago
 - 2 I agree
 - 3 I do not know

Enumerators, please finalise the questionnaire by saying to the farmer: That was the last question in this questionnaire. Thank you very much for your time and effort to help us understand more about tea production. Is there anything else you would like to tell us or ask us?

Comments

.....

.....

Appendix 3B: Scores methods

Scores for implementation (Part B)

Table A3.1		Scores assigned to each answer given						
Implementation questions	Answers							
	a	b	c	d	e	f	x	y
b1	1	0.7	0.2	0	0	0	0	0
b2	1	0	0.3	0.3	0.3	0	0	0.2
b3	1	0.5	0.8	0	0	0	0	0
b4	1	0.5	0	N/A	0	0	0	0
b6	0.5	1	0	N/A	0	0	0	0
B7	1	0.8	0.4	0	0	0	0	0
B8	1	0	0	0	0	0	0	0
b9	0	0	1	0	0	0	0	0
b10	0.4	1	0.6	0	0	0	0	0
b11	0.6	1	0	0	0	0	0.4	0.6
b12	0	1	0	1	0	0	1	1
b13	0.2	1	0.2	0	0	0	0	0
b14	0	0.4	1	0.6	0	0	0	0
b15	1	0.5	0	0	0	0	0	0
b16	0.5	0.5	1	0	0	0	0	0
b17	1	1	0	1	0.5	0	0	0
b18	1	0	N/A	0	0	0	0	0
b19	0.5	0.5	1	0	0	0	0	0
b20	0	0.2	1	0	0	0	0	0
b21	1	0.5	0	0	0	0	0	0
b22	1	0	0	0	0	0	0	0
b23	1	0	0	0	0	0	0	0
b24	0.5	0	0.8	1	0	0	0	0
b27	1	0.5	0	0	0	0	0	0
b28	1	0	0.5	0	0	0	0	0
b29	1	0	0	0	0	0	0	0
b30	1	0	0.5	0.5	0	0	0	0
b31	N/A	0	0.8	1	0	0	0	0
b32	1	0.6	0.3	0	0	0	0	0

b33	0	0	0.2	0.5	1	N/A	0	0
b34	0	0.2	0.8	1	0	0	0	0
b35	1	0.8	0.4	0	0	0	0	0
N/A: The answer is not included in the calculation of the implementation score.								

Appendix 4 Basic Characteristics

Basic Characteristics of the sample farmers

Table A4.1 Overview of basic characteristics					
Factory to which the respondent sells green tea	Gender of the household head (% male)	Age of the respondent	Number of people in the household	Knowledge score in baseline	Gender of the respondent (% female)
Chinga	74%	48.4	4.3	4.14	57%
Gathuthi	77%	57.2	4.3	3.43	39%
Gitugi	70%	53.7	4.8	4.49	62%
Iria-Iri	72%	47.2	4.0	3.69	52%
Ragati	79%	56.8	4.9	3.68	53%
Total	74%	52.7	4.4	3.91	53%

Table A4.2 Percentage of respondents having the responsibility			
Responsibilities for tea	Gender of the respondent		Total
	Male	Female	
Management/Supervision	37%	41%	77%
Highest workload	36%	39%	76%
Owns the land/tea plot	34%	27%	61%
Receives the tea income/payment	35%	30%	65%

Appendix 5 UTZ certification

Status and lists of benefits realised from participating in UTZ certification training or UTZ certification

Table A5.1		Status of UTZ certification									
Company to which you supply tea	Whether smallholders UTZ Certified	Date of UTZ Certification day-month-year	Start date training for UTZ certification	Number of UTZ training	Premium for UTZ certified tea	Total acreage with tea production (acre)	Total acreage with tea production (ha)	Total kilograms of green leaf	Total number of FFS graduates (only in Kenya)		
Chinga	1	1-3-2012	1-7-2010	143	0	3701	1497.8	13,726,093.50	112		
Gathuthi	0	N/A	1-7-2011	165	N/A	3,151	1275.0	12,583,481	0 (120 on training)		
Gitugi	1	1-5-2011	13-3-2010	147	N/A	2,481	1004.0	11,020,943.80	143		
Iria Iri	1	1-3-2011	1-7-2010	142	N/A	3031.41	1226.8	12,662,520.59	180		
Ragati	1	1-4-2012	1-5-2010	156	N/A	3303.76	1337.0	12,973,991.90	357		

Table A5.2 Overview of different combinations of training a)

	Percentage of all respondents	Percentage of sub-group
No training	22%	
Trained	78%	
Affirmed UTZ-Solidaridad trained		51%
Other trained		49%
Affirmed UTZ-Solidaridad trained (including promoter farmers)		
UTZ only	2.8%	3.6%
UTZ+Other training	3.5%	4.5%
UTZ+FFS	0.4%	0.4%
UTZ+FFS + Other training	0.4%	0.4%
UTZ+RA	7.0%	9.0%
UTZ+RA+Other training	13.6%	17.5%
UTZ+RA+FFS	1.8%	2.2%
UTZ+RA+FFS+Other training	10.8%	13.9%
Total	40%	51%
Other trained		
Other training only	7.3%	9.4%
FFS only	0.7%	0.9%
FFS + Other training	0.4%	0.4%
RA only	11.5%	14.8%
RA + Other	15.4%	19.7%
RA + FFS	0.4%	0.4%
RA + FFS + Other training	2.5%	3.1%
Total	38%	49%
a) Based on the answers by the respondents of the survey. When the answer to the question with regard to the specific training was missing, it is assumed that the respondent did not receive the training.		

Table A5.3	Benefits realised from participating in UTZ certification training or UTZ certification
	List of benefits realised from participating in UTZ certification training given by the respondents (N=151)
	Ability to manage & maintain tea, tea farm records & implement appropriate methods of fertiliser application
	Able to get higher tea yields; improved plucking; maintaining good tea plucking table; improved cleanliness
	Acquired a proper management of the environment, no burning in the farm area
	Added productivity
	Additional production, tea is more firm than before
	Be a good farmer and have a lot of experience
	Been able to save money
	Benefited in health and safety (PPE kits); good management of the farm
	Better agricultural practices, chemical application increase yields due to proper management, leaving prunings on the farm
	Better farm maintenance, higher production
	Better farm management
	Better farm management and tea husbandry
	Better farming methods, higher productivity
	Better fertiliser application
	Better fertiliser application leading to higher yields
	Better yields, income and relationship between farmer and factory
	Bonus increased compared to last year
	Broader diversification in farming practices, increased safety issues by use of PPEs, and maintaining of a clean environment
	Can manage my tea farm better
	Can now protect the environment and acquired new agricultural practices
	Care when handling chemicals
	Diversification of income generating projects
	Diversified sources of income
	Easier to apply fertiliser
	Educated on how to administer chemicals on other crops & not tea. There is price increment in tea production/bonus
	Education on PPEs; good management; increase in yields

Table A5.3 (continued)	Benefits realised from participating in UTZ certification training or UTZ certification
Environmental awareness	
Good farm management has increased my productivity	
Good farm management, better living	
Good farm management, knowledge on pruning, plucking and storage	
Good farming hence improved result and improved farm management.	
Good farming methods	
Good farming practices, increased yields	
Good hygiene in tea farming.	
Good management of the farm; protection of health (PPE)	
Good plucking cycle hence high yields, improvement of management practices	
Good plucking techniques; better management practices of tea	
Good production good management of farm and farming of other crops.	
Good tea farming hence better or high tea income	
Good tea husbandry	
Has helped on education about agro-chemicals and other protection measures when plucking tea	
Has increased my yields due to good practices carried out	
Have increased production; improved my business	
Have increased production; increase in profits	
Helped improve production	
Helped increase tea production. Helped lower costs. More access to information tea production.	
Higher income	
Higher income from tea production, improved living standards of the farmer	
Higher production, better pay, safer handling of chemicals, improved farm management	
I can now do mixed farming which i never used to do	
I can now prune well	
I can now prune my tea well	
I have gained knowledge on tea production	
I have increased productivity	
I have taught my children on proper chemical application, i have my farm (tea) clean.	
I know how to handle chemicals	
I live in a clean environment and do not kill essential microbes	

Table A5.4**Information from the validation workshop on how the UTZ-Solidaridad training lead to the results**

1. Explaining why farmers should do something (reasons), a deeper understanding of changes required, learning in a participatory way and sharing success stories helped in the uptake of innovations which lead to higher productivity and social interactions
2. GAP and farm management was taken up in UTZ training. Including reasons why they should do something: e.g. quality leaf. Management of factories is now more effective because supplied with better quality leaf
3. Training on GAP improved plucking rounds which improved production
4. Infilling programmes increased the number of bushes per acre, increased yield, increased income
5. Improved plucking rounds lead to higher productivity (new generations) and income
6. Fertiliser application (timing and amount - reducing the application rate) lead to higher productivity
7. Environment: training encouraged farmers to planting of shade trees, + reduce erosion by using cover crops. Also better fertiliser application lead to less residues and less water pollution. Less burning of crop residues, less air pollution and better manure (which increased productivity)
8. Most farmers cannot afford PPE or build storage rooms, so were recommended not to use chemicals, + use PPE when applying fertiliser (smart solutions: apron and plastic bags instead of gloves). There is almost no use of chemicals. Knowledge on good use of chemicals lead to better use of chemicals which protects health
9. Increased knowledge on nurseries, now they can manage to have their own nurseries.
10. Diversification: UTZ encourages to diversify, pineapples, bananas and avocados, so farmers do not only rely on tea. This has increased income and resulted in less dependency on tea. Taught not to over rely on tea. BUT not only UTZ is working on this. Diversification and food security was a topic the promoter farmers were trained on. Promoter farmers were supposed to put it into practice and then teach others.
11. Child labour is applicable for both UTZ and RA. Farmers were trained on it. The farmers really understand the issue now. During school hours: children should not work, in holidays, children can help out but not for payment. This is part of Bylaws in ICS, so there are sanctions when a farmer does not comply. And farmers check on one another.
12. The increased income led to improved social lives at household level: sending children to school etc. Also increase in interactions and sharing experiences between farmers.
13. Quality tea: Kenya: secondary grades decreased.
14. Services by the factory/company: management have easy time since farmers know what is required of them. Managers used to go to farmers with the 'same gospel', now they have a broader agenda (market, certification, how it can help them, diversification).
15. Services: chain of custody: traceability. in Kenya, the factories are farmer owned and managed through farmer directors, so farmers have more to say.

Information from the discussions with factory staff and farmers

The discussions with TESAs, FSCs and focus group farmers partly confirm the information from the survey, although the farmers in the focus group discussion focus more on the environmental benefits than farmers from the survey.

The benefits mentioned by the farmers in the focus group discussion are:

- Waste water management (they now use soak pits)
- Hygiene and cleanliness has improved
- Chemicals: they do not keep them anymore in their bedrooms and they do not inhale the fumes anymore (which is more healthy)
- They use PPE (although some farmers do not); those who do are insured their hands are protected from chemicals.
- Plucking good quality tea: they learnt from the factory how to use a plucking stick and that they should pluck 2 leaves and a bud. Even though they already knew this 2 years ago, they were reminded, and now realise it is beneficial so they have adopted these practices.

These topics mentioned can also be attributed to RA certification activities. Impacts mentioned by the farmers where the following:

- Livelihood: they now have more money and can accomplish pressing issues because the price they receive for their tea is higher than two years ago.
- They planted trees (indigenous, and eucalyptus but not near rivers) to attract rain, as they purify the air. And the farmers indicate that there is more rain. The latter impact cannot be verified by our survey data.
- Income has increased which has reduced social issues, they can now help each-other while formerly they did not have the means to help each-other.

TESAs indicated that the following changes are seen amongst the farmers

- Farmers used to be too busy on tea, now they also look at other options, for instance having a vegetable patch. This lead to some areas to have cows and poultry which they did not have before (the TESAs attribute this to the UTZ-Solidaridad training). Diversification was part of the trainings as a way to spread risks (produce more than one crop) and increase food security (grow food crops).
- Improvement of waste separation and disposal (TESAs attribute this to the UTZ-Solidaridad training and RA certification)

- The tea quality has improved through better plucking (attributed to UTZ, RA does not emphasise on tea, they see tea as a good soil cover but that's the only emphasis with regard to tea production). Our quantitative data does not say that tea quality has increased in the last 2 years.
- Increase in tea yield: management practices were adopted (this was attributed to the UTZ-Solidaridad training)
- RA lead to improvement in the use/storage/application of agrochemicals and the environment, although these are aspects that UTZ treats too.

TESAs indicated also quite some impacts of the UTZ-Solidaridad project:

- The management board thinks differently. They are now socially responsible and become more involved and want to act with benefits to society.
- Workers rights are properly addressed; payments are made in time, workers get higher wages, through the collective agreement CBA (attributed to the UTZ-Solidaridad training and RA certification)
- Cutting invasive tree species (UTZ-Solidaridad training and RA certification)
- Planting more trees (UTZ-Solidaridad training and RA certification)
- Dried streams are now flowing again (UTZ-Solidaridad training and RA certification)
- Factories are cutting eucalyptus on river banks after consent by government (attributed to RA certification. They did not know whether this could also be a result of UTZ-Solidaridad training).

TESAs described that the bonus increased from 10-20 ksh to 30-40 ksh in two years' time and that return has improved. They think that higher prices are paid because of UTZ certification, and that improved quality and increased quantity have resulted in these outcomes. The TESAs are not totally convinced that the certification benefits outweigh the costs. When farmers keep on improving and the price in the market improves, then they expect a positive balance. The FSCs expect that in the long term the benefits will outweigh the costs. In the short term this is not the case as the upstart investment is quite high.

FSCs indicated that the training needs with regard to fertiliser application were met: reduced fertiliser application has led to lower input costs. Diversification also increased because of the training. Furthermore, farmers were trained on record keeping and financial management. They have also explained during the training how the tea value chain works which improved communication be-

tween KTDA and the farmers and led to more realistic expectations of incomes to be received. Also, the increase of productivity lowered the costs relatively.

Appendix 6 Knowledge on sustainable practices

Knowledge questions	Changes (2012-2010) * =significant at 0.05 level	2012 (mid-term)	2010 (base-line)
E1 Why not to remove prunnings from field	1.18*	4.72	3.54
E2 What is the best height to prune tea	0.27	3.21	2.94
E3 What are the reasons to prune tea	0.26	4.70	4.43
E4 What are the recommended methods to handle weeds	0.15	4.20	4.04
E5 What are the benefits of fertiliser application to tea	0.26	4.19	3.93
E6 What are the benefits plucking frequency 7-8 days	0.96*	5.50	4.53
E7 What are the benefits of maintaining a plucking table	0.86*	5.39	4.52
E8 What are the main benefits from infilling	1.02*	6.24	5.22
E9 What is the best height for tipping-in tea	0.46	8.61	8.15
E10 What is the benefit of a Riparian strip	1.10*	3.49	2.39
E11 What are the benefits of PPE	1.46*	4.93	3.48
E12 What are the potential dangers agro-chemicals and water	1.23*	5.47	4.23
E13 Agro-chemicals discouraged in tea	0.44	3.26	2.81
E14 Methods to improve yield and quality	0.77*	4.93	4.16
E15 Benefits of soil conservations methods	0.91*	4.27	3.36
Total (knowledge)	0.78*	4.88	4.10

Table A6.2 Knowledge scores among all trained respondents

Knowledge questions	Changes (2012-2010) * =significant at 0.05 level	2012 (base- line)	2010 (mid- term)
E1 Why not to remove prunnings from field	1.09*	4.52	3.44
E2 What is the best height to prune tea	0.34	3.07	2.73
E3 What are the reasons to prune tea	0.38	4.70	4.32
E4 What are the recommended methods to handle weeds	-0.12	3.79	3.92
E5 What are the benefits of fertiliser application to tea	0.23	4.05	3.82
E6 What are the benefits plucking frequency 7-8 days	0.82*	5.12	4.30
E7 What are the benefits of maintaining a plucking table	0.82*	4.97	4.15
E8 What are the main benefits from infilling	1.16*	6.07	4.91
E9 What is the best height for tipping-in tea	0.37	8.70	8.33
E10 What is the benefit of a Riparian strip	1.24*	3.28	2.04
E11 What are the benefits of PPE	1.04*	4.39	3.35
E12 What are the potential dangers agro-chemicals and water	0.94*	4.96	4.02
E13 Agro-chemicals discouraged in tea	0.52	3.19	2.68
E14 Methods to improve yield and quality	0.61*	4.53	3.92
E15 Benefits of soil conservations methods	0.67*	4.08	3.40
Total (knowledge)	0.68*	4.63	3.95

Appendix 7 Implementation of sustainable practices

Question on sustainable practices		Changes (= 2012-2011)	2012 (mid-term)	2010 (baseline)
No.	Implementation question	*=significant at 0.05 level		
B1	How often pluck per month?	0.13*	0.80	0.67
B2	Experience leaf spillage at farm or buying centre?	-0.13*	0.52	0.65
B3	Use plucking stick/wand, table firm?	0.17*	0.61	0.44
B4	Success rate of your nursery?	-0.18	0.53	0.71
B6	When do you plant VP plants?	-0.43*	0.15	0.58
B7	What is the % of crop cover?	-0.09	0.50	0.59
B8	At what height do you prune?	0.17*	0.78	0.61
B9	At what period do you prune	-0.08*	0.91	0.99
B10	How often do you prune same tea plot/block?	0.02	0.97	0.95
B11	What tools are used to prune your tea?	0.06*	0.61	0.55
B12	Who prunes the tea and have they been trained?	0.37*	0.96	0.58
B13	At what height do you tip in?	-0.15*	0.69	0.84
B14	How often apply composted manure t?	0.04	0.19	0.15
B15	How frequently do you apply fertiliser	0.03	0.93	0.90
B16	Do you keep records?	0.11*	0.45	0.34
B17	Who plucks your tea?	-0.03	0.74	0.77
B18	Do you have a fixed agreement with employees?	0.01	0.74	0.73
B19	Do your workers have access to potable water and latrines	0.13*	0.93	0.80

Table A7.1 (continued)		Implementation scores of sustainable practices among UTZ-Solidaridad trained respondents		
Question on sustainable practices		Changes (= 2012-2011)	2012 (mid- term)	2010 (baseline)
No.	Implementation question	*=significant at 0.05 level		
B20	How often did your family or workers need medical attention	0.12*	0.88	0.76
B21	Do you use any personal protective equipment (PPE)?	0.20*	0.68	0.48
B22	Do you group together with others farmers to carry out activities	0.20*	0.73	0.53
B23	Do you turn to KTDA if you experience problems in tea production?	0.01	0.90	0.89
B24	Do your children go to school?	-0.21*	0.78	0.99
B27	Do you collect pruning's from the field?	0.03	0.98	0.95
B28	Do you infill open areas	0.05	0.60	0.55
B29	When do you apply fertiliser to your tea?	0.02	0.95	0.93
B30	How do you spray?	-0.04	0.45	0.49
B31	Does your farm border a river or water body? If so, do you have a Riparian strip	0.05	0.55	0.50
B32	Do you have indigenous trees on you farm; if so how many	0.28*	0.55	0.27
B34	If your farm borders a water body, distance spray from water?	-0.17*	0.45	0.62
B35	How much area of the total farm is conservation area?	0.18*	0.58	0.40

Table A7.2 Implementation scores of sustainable practices among trained respondents

Question on sustainable practices		Changes (= 2012-2011)	2012 (base- line)	2010 (mid- term)
No.	Implementation question	*=significant at 0.05 level		
B1	How often pluck per month?	0.14*	0.79	0.65
B2	Experience leaf spillage at farm or buying centre?	-0.14*	0.49	0.63
B3	Use plucking stick/wand, table firm?	0.20*	0.59	0.39
B4	Success rate of your nursery?	-0.17*	0.57	0.74
B6	When do you plant VP plants?	-0.45*	0.14	0.58
B7	What is the % of crop cover?	-0.04	0.52	0.56
B8	At what height do you prune?	0.18*	0.76	0.58
B9	At what period do you prune	-0.06*	0.94	1.00
B10	How often do you prune same tea plot/block?	0.01	0.97	0.96
B11	What tools are used to prune your tea?	0.07*	0.60	0.53
B12	Who prunes the tea and have they been trained?	0.42*	0.95	0.53
B13	At what height do you tip in?	-0.04	0.72	0.76
B14	How often apply composted manure t?	0.03	0.15	0.13
B15	How frequently do you apply fertiliser	0.02	0.91	0.89
B16	Do you keep records?	0.06	0.36	0.29
B17	Who plucks your tea?	0.03	0.75	0.73
B18	Do you have a fixed agreement with employees?	0.04	0.74	0.70
B19	Do your workers have access to potable water and latrines	0.08*	0.92	0.84
B20	How often did your family or workers need medical attention	0.16*	0.89	0.74
B21	Do you use any personal protective equipment (PPE)?	0.16*	0.65	0.48
B22	Do you group together with others farmers to carry out activities	0.22*	0.70	0.48

Table A7.2 (continued)		Implementation scores of sustainable practices among trained respondents		
Question on sustainable practices		Changes (= 2012-2011)	2012 (base- line)	2010 (mid- term)
No.	Implementation question	*=significant at 0.05 level		
B23	Do you turn to KTDA if you experience any problems in your tea production?	0.06	0.90	0.84
B24	Do your children go to school?	-0.19*	0.79	0.98
B27	Do you collect prunnings from the field?	0.02	0.99	0.96
B28	Do you infill open areas	0.06	0.60	0.53
B29	When do you apply fertiliser to your tea?	0.05*	0.95	0.89
B30	How do you spray?	-0.07*	0.43	0.50
B31	Does your farm border a river or water body? If so, do you have a Riparian strip	0.11 *	0.52	0.41
B32	Do you have indigenous trees on you farm; if so how many	0.23*	0.52	0.29
B34	If your farm borders a water body, distance spray from water?	-0.17*	0.50	0.67
B35	How much area of the total farm is conserva- tion area?	0.16*	0.55	0.39

Appendix 8 Production, input use, and Income

Productivity and farm efficiency information

Table A8.1		Basic production and indicators among UTZ-Solidaridad trained respondents				
Indicators	Mean		Standard deviation		Number of Observations a)	
	2012	2010	2012	2010	2012	2010
Production area per household (acre)	0.8	-	0.6	1,819	85	0
Number of tea bushes	2,035	2,037	1,569	2,401	100	113
Tea production per household (kg green leaf)	2,538	2,491	2,549	0.0	77	114
Factory price (KSH/kg)	14.0	12.0	0.0	1.8	115	115
Bonus (KSH/kg)	40.8	38.5	2.0	107	115	115
Gross income (in 1000KSH per household) b)	140	112	141	88	77	114
Net income (in 1000KSH per household) b)	120	84	122	1,819	75	111

- Information not available.

a) In the comparison, only observations from respondents with information on both years were used; b) Calculated as tea green leaf production x (factory price +bonus); c) Calculated as gross income minus costs for fertiliser costs and labour, assuming no cost when no information was given. The net income is therefore likely to be an overestimation of the actual net income.

Table A8.2 Labour use and costs among UTZ-Solidaridad trained respondents

Labour activities	Mean		Standard deviation		Number of observations a)	
	2012	2010	2012	2010	2012	2010
Plucking (KSH/kg green tea leaves)	8.6	6.6	1.7	0.9	68	80
Weeding (days hired labour)	4.0	.	5.7	.	52	0
Weeding (days own labour)	2.9	.	6.1	.	72	0
Weeding cost (KSH/day)	205.2	161.6	69.0	43.7	55	65
Pruning (bushes pruned by hired labour)	166.7	.	485.2	.	67	0
Pruning (bushes pruned by own labour)	139.7	.	457.4	.	49	0
Pruning cost (KSH/bush)	2.7	2.6	0.7	1.2	61	81
Application of fertiliser (bags applied by hired labour)	1.7	.	1.4	.	30	0
Application of fertiliser (bags applied by own labour)	1.5	.	1.1	.	81	0
Cost for applying fertiliser (KSH/day)	103.7	.	98.5	.	29	0
Total labour costs (KSH/household) a)	15,891	22,204	49,178.2	20,816.9	115	115

- No information.

a) In the comparison, only observations from respondents with information on both years were used; b) When no information was provided by the respondent, the cost was assumed to be zero.

Table A8.3 **Estimated productivity and efficiency indicators among
UTZ-Solidaridad trained respondents**

	Difference	2012		2010	
	*= significant at 0.05 level	Mean	Standard Error	Mean	Standard Error
Productivity (kg tea green leaves/bush)	0.17 (p=0.18)	1.34	0.10	1.17	0.07
Gross income from tea (1000KSH/1000bush)	20.9*	73.8	5.7	52.9	2.9
Net income from tea (1000KSH/1000bush)	23.6*	61.8	5.4	38.2	2.5
Total labour cost per bush (KSH/bush)	-2.3*	8.4	1.2	10.7	0.5
Total fertiliser cost per bush (KSH/bush)	-0.4	3.6	0.4	4.0	0.6
Total fertiliser use per bush (kg/bush)	-0.01	0.07	0.01	0.08	0.01
Economic input/out ratio (= Net income/Gross income)	0.11*	0.84	0.02	0.72	0.01
Agronomic ratio (kg nitrogen/bush)	0.000	0.004	0.000	0.004	0.001
Agronomic ratio (kg phosphorus/bush)	-0.002	0.018	0.002	0.020	0.003
Agronomic ratio (kg potassium/bush)	-0.001	0.004	0.000	0.004	0.001

Table A8.4 Use of agro-chemicals other than fertiliser among UTZ-Solidaridad trained respondents		
Name of the other chemicals	Frequency per survey year	
	2010	2012
Brigade	1	1
Karate	1	0
Osho Chemical	1	0
Round-up	20	2
Tifix	1	0
Washing Detergent	1	0
Total	25	3

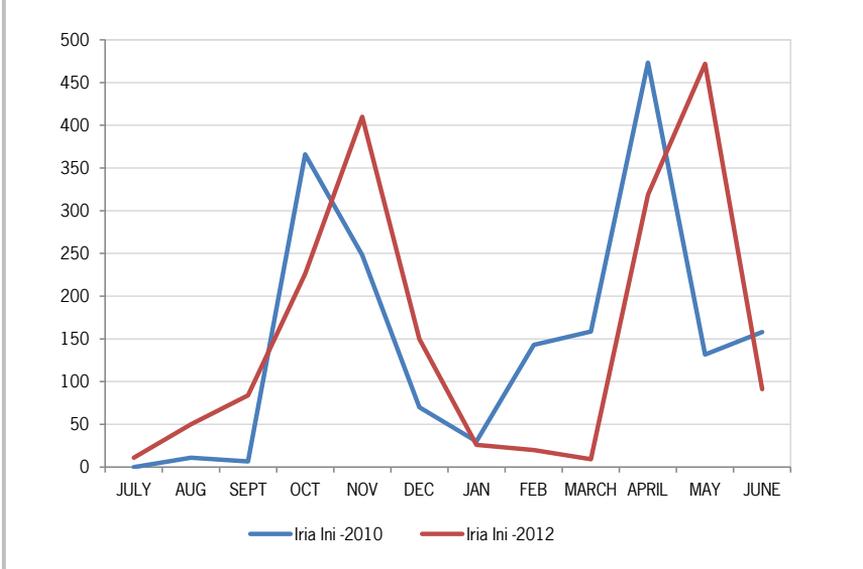
Table A8.5 Purchase of Personal Protection Equipment (PPE) items								
PPE Items	Percentage among UTZ-Solidaridad trained respondents (N=115)		Number of PPE items bought					
	2012	2010	2012			2010		
			Mean	Min	Max	Mean	Min	Max
Full PPE set	37%	3%	1.8	1	6	1.0	1	1
Overall	10%	17%	1.3	1	4	1.2	1	5
Hat	12%	19%	1.2	1	4	2.0	1	2
Mask/respirator	3%	10%	1.0	1	1	1.2	1	6
Gumboots	39%	69%	1.5	1	4	1.3	1	10
Goggles	3%	6%	1.0	1	1	2.3	1	6
Apron/plucking cape/ nylon bags/raincoat	30%	68%	1.5	1	4	1.4	1	1

Table A8.6 Activities assisted by children in tea production a)		
Activities done by children	Percentage among UTZ-Solidaridad trained respondents	Percentage among all trained respondents
Plucking	13%	15%
Weeding	11%	11%
Pruning	0%	1%
Carrying green leaf to the Buying Centre	8%	10%
Pesticide application	1%	1%
Fertiliser application	0%	0%
Land preparation	0%	0%

a) Percentage of farmers who indicated that they are assisted by children for the activity.

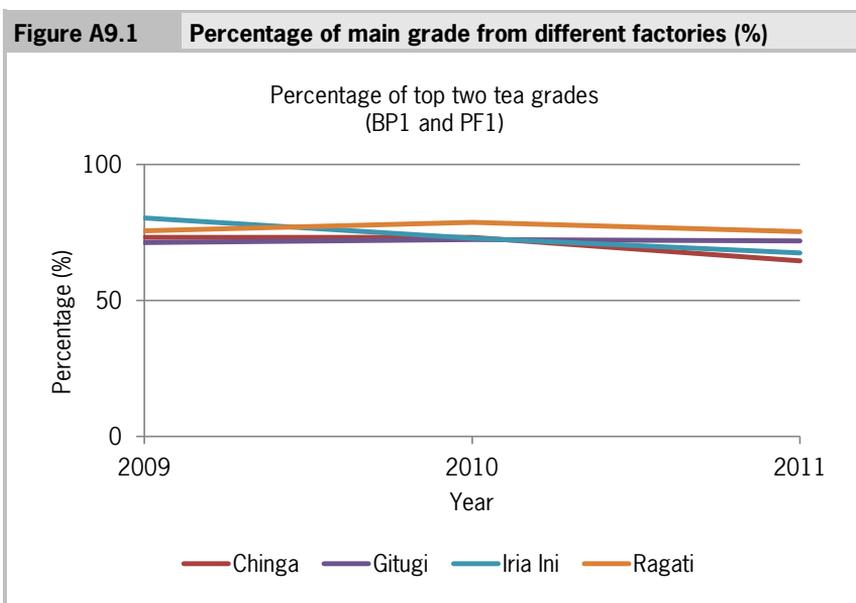
Table A8.7 Percentage of farmers who have income other than tea production among trained respondents						
Number of sources	Among UTZ-Solidaridad trained farmers (N=115)			Among all trained farmers (N=224)		
	Change	2012	2010	Change	2012	2010
0	-10%	20%	30%	-10%	24%	34%
1	-1%	37%	38%	0%	38%	38%
2	11%	29%	17%	9%	26%	17%
3	3%	12%	10%	3%	11%	8%
>4	-3%	2%	4%	-2%	1%	4%
Maximum number of sources	0	5	5	-2	5	7

Figure A8.1 Rain fall patterns in factory Iria Ini in 2010 and 2012



Appendix 9 Quality of tea

Factory	Year		
	2009	2010	2011
Chinga	97.3	98.7	96.9
Gathuthi	98.8	98.4	98.4
Gitugi	97.7	99.4	98.0
Iria Ini	99.3	99.5	96.4
Ragati	97.4	99.0	98.6



Appendix 10 Perceived changes and decision-making

Statement with regard to the changes	Agree	Disagree: the opposite is true	Disagree: no change	I don't know/ N/A	Number of Observations
The farm has higher productivity than two years ago	79%	11%	10%	1%	113
The farmer hires more people than 2 years ago	29%	12%	32%	27%	113
The household spends more time on fertiliser application	20%	17%	60%	4%	111
The area of the farm has increased	14%	6%	72%	8%	111
Income from tea has increased	90%	6%	2%	3%	114
Income from other sources has increased	43%	44%	14%	0%	108
Saving has increased	75%	17%	8%	0%	107
Community relationships have improved	88%	6%	3%	3%	111

a) Percentages are rounded off to whole numbers.

Nr	Way of decision-making	Two years ago		Now		Change (Now-Past) * = significant
		Total answers	Yes (%)	Total answers	Yes (%)	
0	Based on advice from my parents/friends/neighbours	103	31%	107	15%	-16%*
1	Based on what I did last year	112	64%	109	37%	-27%*
2	I do the same each year	109	65%	109	36%	-29%*
3	Based on the state of my tea bushes/field(s)	111	72%	112	68%	-4%
4	Based on recommendations by the company	111	67%	114	92%	25%*
5	I regularly check my records to see whether my farm is doing well	110	37%	109	61%	24%*
6	I compare my records with the records of my neighbours/friends/other farmer to see how my farm is doing	109	16%	111	33%	17%*
7	I use what I learnt from the training to make my decisions	110	47%	112	79%	32%*
8	Based on information on prices for tea and other crops	108	31%	108	38%	7%
9	I compare my production with figures on tea production in Kenya to see how my farm is doing	107	20%	110	24%	4%
10	Own experience	101	71%	102	66%	-5%
11	Other	15	7%	19	16%	9%
12	I do not know	9	0%	8	0%	0%

Nr	Way of decision-making	Two years ago		Now		Change (Now-Past) * = significant
		Total answers	Yes (%)	Total answers	Yes (%)	
0	I do not apply fertilisers	89	10%	87	7%	-3%
1	I apply the same amount per bush/hectare as my parents/neighbours do	108	41%	103	23%	-18%*
2	I apply the same as last year	108	75%	106	52%	-23%*
3	I always apply the same amount	108	74%	108	55%	-19%*
4	On basis of the state of the tea bushes	110	62%	106	55%	-7%
5	On the basis of recommendations by the company	112	64%	111	83%	19%*
6	On the basis of recommendations obtained in the training	112	50%	106	87%	37%*
7	On the basis of the records that I kept last year (analysed fertiliser input and yield relations)	110	29%	103	35%	6%
8	On the basis of my own experience	108	64%	104	54%	-10%
9	Other	18	0%	14	0%	0%
10	I do not know	9	0%	10	0%	0%

Table A10.4 Decision making on plucking frequency among UTZ-Solidaridad trained respondents						
Nr	Way of decision-making	Two years ago		Now		Change (Now-Past) * = significant
		Total answers	Yes (%)	Total answers	Yes (%)	
0	I pluck as often as my parents/neighbours/friends do	111	27%	111	4%	-23%*
1	My plucking frequency is the same as last year	110	49%	109	32%	-17%*
2	On the basis of the state of the tea bushes	114	80%	112	66%	-14%*
3	On the basis of recommendations by the company	113	58%	111	83%	25%*
4	On the basis of recommendations obtained in the training	111	47%	113	86%	39%*
5	On the basis of the records that I kept last year	111	32%	111	46%	14%*
6	On the basis of my own experience	111	70%	110	62%	-8%
7	Other	14	0%	15	0%	0%
8	I do not know	9	0%	9	0%	0%

Nr	Way of decision-making	Two years ago		Now		Change (Now-Past) * = significant
		Total answers	Yes (%)	Total answers	Yes (%)	
0	I do not handle/apply/store agrochemicals	87	47%	93	45%	-2%
1	Based on advice from my parents/friends/neighbours	82	30%	83	10%	-20%*
2	Based on what I did last year	82	49%	84	26%	-23%*
3	I do the same each year	81	47%	84	24%	-23%*
4	Based on recommendations by the company	83	35%	85	64%	29%*
5	Based on requirements for UTZ certification	81	26%	82	66%	40%*
6	I use what I learnt from the training to make my decisions	82	29%	84	65%	36%*
7	On the basis of my own experience	82	56%	82	38%	-18%*
8	Other	8	25%	10	20%	-5%
9	I do not know	10	10%	11	9%	-1%

Table A10. 6 Scores on the social indicators among UTZ-Solidaridad trained respondents			
Social indicators	Changes (2012-2010)	2012	2010
	*=significant at 0.05 level	Mid-term	Baseline
The relation with neighbours	0.46*	4.52	4.06
The relation with your family members	0.49*	4.74	4.25
The relationship with the tea factory	0.58*	4.27	3.69
Knowledge on good tea management practices	0.87*	4.26	3.39
Leadership skills	0.70*	4.30	3.60
Access to information on agriculture commodity prices	0.72*	3.83	3.10
Access to self-help activities like Merry-go-rounds	0.50*	4.15	3.65
Diversification of income/number of income sources	0.94*	3.88	2.95
Your homestead (house, access to water/electricity etc.)	0.91*	4.09	3.18
Possibility to send children to school	0.58*	4.39	3.81
Family welfare	0.81*	4.17	3.36
Family income	0.48*	4.26	3.79
Total	0.94*	3.86	2.92

Appendix 11 Services of the producer group

Unsatisfied with service provided on:	Percentage among UTZ-Solidaridad trained respondents (N= about 105)	Percentage among all trained respondents (N =about 200)
Market information on sales and prices (e.g. also of other crops than tea)	19%	19%
Providing information about the external Inspections (audit)	19%	17%
Providing information about inspection results and corrective actions after Internal Inspections (ICS)	15%	14%
Providing access to fertiliser	15%	12%
Insurance	13%	10%
Providing access to seedlings, planting material	13%	12%
Market information on inputs	13%	12%
Commercial activities; sales and marketing	13%	13%
Providing access to pesticides	11%	10%
Providing access to credits	8%	7%
Training	2%	1%

Appendix 12 Regression analysis

Table A12.1		Regression analysis on the change of knowledge score and explanatory variables	
Explanatory variables	Description of the explanatory variable	Coefficients (Standard errors in parentheses)	
_ltraining_2	Other training only	0.0894	(0.36)
_ltraining_3	FFS only	-0.216	(0.88)
_ltraining_4	FFS+ Other training	0.635	(1.23)
_ltraining_5	RA only	-0.105	(0.35)
_ltraining_6	RA+ Other	-0.387	(0.28)
_ltraining_7	RA+FFS	1.676	(1.25)
_ltraining_8	RA+FFS +Other training	0.0423	(0.59)
_ltraining_9	UTZ only	0.256	(0.53)
_ltraining_10	UTZ+ Other training	1.476 c)	(0.49)
_ltraining_11	UTZ+FFS	0.241	(1.25)
_ltraining_12	UTZ+FFS + Other training	-1.840	(1.22)
_ltraining_13	UTZ+RA	-0.274	(0.35)
_ltraining_14	UTZ+ RA+ Other training	-0.278	(0.31)
_ltraining_15	UTZ+RA+FFS	0.517	(0.63)
_ltraining_16	UTZ+ RA+ FFS+ Other training	0.471	(0.32)
L. knowledge	Knowledge level in the baseline	-0.963 c)	(0.088)
Education	Level of education	0.316 b)	(0.13)
Constant	Constant	4.150 c)	(0.46)

a) $p < 0.1$; b) $p < 0.05$; c) $p < 0.01$.

Table A12.2 Regression analysis on the change of implementation score and explanatory variables			
Explanatory variables	Description of the explanatory variable	Coefficients (Standard errors in parentheses)	
_ltraining_2	Other training only	0.0454 b)	(0.022)
_ltraining_3	FFS only	0.110 b)	(0.055)
_ltraining_4	FFS+ Other training	0.161 b)	(0.077)
_ltraining_5	RA only	0.0167	(0.020)
_ltraining_6	RA+ Other	0.0830 c)	(0.017)
_ltraining_7	RA+FFS	0.210 c)	(0.078)
_ltraining_8	RA+FFS +Other training	0.124 c)	(0.037)
_ltraining_9	UTZ only	0.0211	(0.033)
_ltraining_10	UTZ+ Other training	0.0831c)	(0.029)
_ltraining_11	UTZ+FFS	0.137 a)	(0.077)
_ltraining_12	UTZ+FFS + Other training	0.195 b)	(0.077)
_ltraining_13	UTZ+RA	0.0644 c)	(0.022)
_ltraining_14	UTZ+ RA+ Other training	0.0838 c)	(0.018)
_ltraining_15	UTZ+RA+FFS	0.0342	(0.039)
_ltraining_16	UTZ+ RA+ FFS+ Other training	0.102 c)	(0.020)
L.bscores_sustain	Implementation score in the baseline	-0.970 c)	(0.068)
Education	Level of education	0.00589	(0.0076)
Constant	Constant	0.574 c)	(0.045)

a) $p < 0.1$; b) $p < 0.05$; c) $p < 0.01$.

Table A12.3		Regression analysis on the change of productivity and explanatory variables	
Explanatory variables	Description of the explanatory variable	Coefficients (Standard errors in parentheses)	
_ltraining_2	Other training only	0.372 b)	(0.16)
_ltraining_3	FFS only	0.229	(0.35)
_ltraining_4	FFS+Other training	-0.376	(0.48)
_ltraining_5	RA only	0.115	(0.17)
_ltraining_6	RA+Other	0.250 b)	(0.12)
_ltraining_7	RA+FFS	1.513 c)	(0.49)
_ltraining_8	RA+FFS +Other training	0.0802	(0.22)
_ltraining_9	UTZ only	0.347	(0.21)
_ltraining_10	UTZ+Other training	0.321 a)	(0.19)
_ltraining_11	UTZ+FFS	-0.0262	(0.49)
_ltraining_12	UTZ+FFS + Other training	0.860 a)	(0.48)
_ltraining_13	UTZ+RA	0.0970	(0.20)
_ltraining_14	UTZ+RA+Other training	0.303 b)	(0.14)
_ltraining_15	UTZ+RA+FFS	0.531a)	(0.28)
_ltraining_16	UTZ+RA+FFS+Other training	0.0920	(0.13)
L.prod	Productivity in the baseline	-0.775 c)	(0.071)
Constant	Constant	0.782 c)	(0.12)
	Observations	167	
	Number of groups	5	

a) $p < 0.1$; b) $p < 0.05$; c) $p < 0.01$.

LEI Wageningen UR develops economic expertise for government bodies and industry in the field of food, agriculture and the natural environment. By means of independent research, LEI offers its customers a solid basis for socially and strategically justifiable policy choices.

Together with the Department of Social Sciences and the Wageningen UR, Centre for Development Innovation, LEI Wageningen UR forms the Social Sciences Group.

More information: www.wageningenUR.nl/en/lei

