

# The Influence of the MERET Programme on Resilience to the 2015 El Niño-Induced Drought in Ethiopia: Adapting to Climate Change



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## Acronyms

BRACED	Building Resilience and Adaptation to Climate Extremes and Disasters
C-ADAPT	Climate Adaptation, Management and Innovation Initiative
CCA	Climate change adaptation
CCC	Community care committees
CFW	Cash for work
CO	Country office
CSI	Coping Strategies Index
DA	Development agent
DID	Difference-in-differences
DRR	Disaster risk reduction
FANTA	Food and Nutrition Technical Assistance
FEWSNET	Famine Early Warning Systems Network
FFW	Food for work
FG	Focus groups
FGD	Focus group discussions
HDDS	Household Diet Diversity Score
HFIAS	Household Food Insecurity Access Scale
HHS	Household Hunger Scale
IE	Impact evaluation
IPC	Integrated Food Security Phase Classification
KII	Key informant interview
MAHFP	Months of Adequate Household Food Provisioning
MERET	Managing Environmental Resources to Enable Transitions to More Sustainable Livelihoods
MoA	Ministry of Agriculture
NDVI	Normalized Difference Vegetation Index
PCA	Principle components analysis
PRIME	Pastoralist Areas Resilience Improvement and Market Expansion
PSNP	Productive Safety Net Programme
RBN	Regional Bureau Nairobi
SNNPR	Southern Nations, Nationalities, and Peoples' Region
SWC	Soil and water conservation
TOC	Theory of Change
WFP	World Food Programme

## Executive Summary

Ethiopia is experiencing the worst drought in 50 years. In 2015, El Niño-related drought contributed to the failure of both Belg and Meher harvests in much of central and eastern Ethiopia, low pasture regeneration, livestock deaths, and reduced household income, all of which continued into 2016. According to FEWSNET, the most affected regions were Tigray, Amhara, Oromia, and SNNPR, which were facing Emergency to Crisis food security outcomes (IPC Phase 3 and 4) as of February 2016.

The Swedish Government's fast-track climate finance mechanism, Climate Adaptation, Management and Innovation (C-ADAPT) Initiative, supports WFP's recent prioritization of climate change adaptation and disaster risk reduction in its 2014-2017 Strategic Plan. As part of C-ADAPT, the WFP Regional Bureau Nairobi initiated an assessment of livelihood and food security outcomes for households in sites that participated in WFP's Managing Environmental Resources to Enable Transitions to More Sustainable Livelihoods (MERET) programme and those that did not (i.e., non-MERET sites). The MERET programme was designed to reduce vulnerability and chronic food insecurity through natural resources rehabilitation and land productivity enhancement. Evolving over time, MERET's community-based participatory watershed development approach emphasizes:

- A participatory watershed approach, targeting households living within relatively small watersheds;
- Community planning, participation and ownership;
- Capacity building of community members, government partners, and field staff; and
- Targeting chronically food insecure households and communities in highly degraded environments.

In light of the 2015 El Niño event, the overall objective of the study reported here is to examine whether household participation in MERET's sustainable resource management programme (i.e., MERET watersheds) contributed to strengthened resilience capacity and better resilience outcomes (i.e., food security) compared to households who did not participate in the programme (i.e., Control watersheds). Sampled watersheds were selected from four regions in which MERET operated (i.e., Tigray, Amhara, Oromiya, SNNPR) and were identified by WFP as having been most heavily affected by the 2015 El Niño event. Sampling involved purposively selecting paired MERET and Control sites in 10 woredas that had been sampled in the 2012 MERET IE.

According to the data, MERET and Control households were very similar in terms of overall demographic characteristics, educational level, ownership of assets, livestock, or livelihood strategies. This suggests there was no significant selection bias that could explain observed differences between the MERET and Control groups other than the effect of participation in the MERET programme. Overall, households in both sites relied on similar livelihood strategies as their main source of income, but non-agricultural labor was a more commonly reported source of primary income for households in Control sites than MERET sites.

Households in both sites experienced shocks/stresses in the same ways – the same types of shocks/stresses were reported and they had the same types of effects. Overall, crop production was dramatically reduced (or failed completely), many livestock died, household assets (including livestock)



were depleted, income was dramatically reduced, and water for household and livestock use became scarce, which increased the time burden on women. However, there is also some indication that the magnitude of the impacts is less for MERET households than for Control households. MERET activities were perceived to have resulted in better soil fertility and conserved soil moisture, enabling households to produce even small amounts of crops or fodder when others produced nothing. Such advantages are likely to contribute to their ability to recover and suggest that the soil and water conservation (SWC) and land rehabilitation practices promoted through MERET help mitigate the negative impacts of and promote household recovery from drought.

Households tended to respond to the El Niño-influenced drought the same way. In particular, most households reported selling their livestock, often eliminating herds. Other common strategies included reducing the quantity and quality of foods consumed, engaging in FFW/CFW, receiving government food aid, reducing expenses, using savings, and looking for work (e.g., casual labor). Social capital (e.g., food, labor) was also important, but households generally agreed there was less to share as a result of the drought. Remittances from relatives living elsewhere were more common for households in MERET sites.

Despite the general similarities in basic household characteristics, exposure to shock, and coping strategies, households who participated in MERET tended to be “better off” than households that did not. They were more food secure and less severely food insecure than households in Control sites. They also consumed more fruits and meat, and had a slightly smaller food gap, than households in Control sites. Households in MERET sites were less likely to perceive themselves as poor and were more likely to share food or labor with family or friends in need than households in Control sites.

Households that participated in the MERET programme were more resilient than households in Control sites, due in part to their better adaptive capacity. In particular, more and/or higher value assets and the awareness and use of certain SWC practices appear to underlie their capacity to better adapt to drought. FGD participants clearly understood the basic MERET logic that healthy landscapes (gained through good SWC and NRM practices) lead to better productivity, which can create assets and increase household income, both of which contribute to improved household food security and other well-being outcomes.

Multivariate analysis showed that households who participated in MERET continue to be better off after programming ended. That is, the benefits accrued to them at the time of the MERET IE in 2012 did not erode over time (after four years) or in response to drought. Thus, MERET activities provided some buffer against – and contributed to better recovery from – the El Niño-influenced drought in 2015.

It should be noted that certain limitations in interpretation exist, based on the study design. That is, the results are only representative of the conditions characterizing the sampled clusters used in this analysis, which had been identified as having been highly affected by the drought. Even so, the results presented here strongly suggest that the MERET programme contributed to the ability of households to cope with and recover from the El Niño-induced drought. That is, MERET activities contribute to building

household resilience to drought, at least in the types of communities surveyed as part of this assessment.

## Recommendations

The MERET approach has previously been shown to have a positive influence on livelihood and food security for rural Ethiopians through better soil conservation and land management practices that provide long-term benefits.<sup>1</sup> The current assessment supports this finding and provides evidence that suggests MERET activities contribute to strengthened resilience capacity and improved household ability to adapt to changing climate events. Given recent – and likely continuing – reductions in available donor resources, a number of recommendations for expanding the reach and sustainability of MERET principles are provided below.

**Integrate MERET principles into existing Government mechanisms.** In general, the findings presented in this study suggest that the underlying TOC used in the MERET programme is sound. That is, activities that promote natural resources rehabilitation and enhanced land productivity lead to healthier landscapes, which in turn enhance livelihoods security in rural Ethiopia (given the heavy reliance on the natural resource base as a key livelihood strategy), and which ultimately contributes to improved household well-being outcomes such as food security and/or increased income.

MERET principles should be integrated into existing government and donor-supported strategies that involve NRM, SWC, and food security activities. Transitioning MERET principles and approach into the GoE's SLMP and PSNP initiatives, for example, takes advantage of and enhances the impact of these already operational donor-supported programmes. This would help enshrine MERET principles within GoE SLM activities in high-potential areas and GoE food security activities in food insecure areas.

For example, MERET's participatory watershed approach uses watershed planning teams whose members are from that watershed. In contrast, PSNP watershed planning teams include members from outside the watershed. The MERET approach promotes a sense of ownership because improvements help the members themselves and increases the likelihood of built assets being maintained. The sense of ownership and ultimate success of MERET also results from its use of a watershed development approach that includes private as well as communal land. A watershed will not be successfully rehabilitated unless the entire watershed is treated.

**Scale-up MERET better practices to more watersheds.** MERET has been somewhat limited in scope; it has operated in a relatively small number of woredas, and in some cases for many years, with little phasing out of existing watersheds and expansion into new ones. Given the soundness of its TOC and proven success, MERET should be scaled-up to reach more watersheds, beginning with expansion into catchment areas where SLMP and PSNP are already operating and that are adjacent to existing MERET watersheds.

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<sup>1</sup> TANGO. 2012.

**More emphasis on diversifying into non-climate-sensitive livelihoods.** Adaptive capacity is improved through livelihoods diversification, in terms of both the quantity and quality of activities by which households earn income. In general, households spread risk or gain income by engaging in a wide diversity of livelihood activities, especially if those activities are not vulnerable to the same type of risk(s). Although MERET activities can help reduce risks to livelihood activities that are sensitive to climate shocks, improved opportunities for diversifying livelihoods – particularly into activities that are not vulnerable to climate risks – may further enhance households’ ability to cope with and recover from climate-related shocks/stresses without negatively impacting their well-being.

**Improve monitoring and evaluation.** Results-Based Monitoring was successfully used to monitor performance of the MERET programme. However, more emphasis should be placed on documenting programme impact. Although the study reported here was not sufficiently funded to allow for an assessment of impact, it nonetheless suggests MERET activities are having positive effects on household livelihood and food security. An M&E system that will capture programme impact should be designed and fully funded, including training field staff and government personnel at the woreda and national levels, and should include baseline surveys in every new watershed in order to properly document NRM, food security and livelihood improvements and impact.

**Transfer the MERET model to other countries.** WFP should use the success of and lessons learned from MERET and encourage adoption of its principles and approach in other countries in which it operates. As previously noted, there is sufficient evidence to show that MERET’s approach and activities result in positive gains for households vulnerable to climate shocks/stresses. WFP’s RBN and Ethiopia CO should continue to fund these types of studies in order to strengthen learning and knowledge management among other COs.

## 1. Introduction

Climate change could exacerbate existing threats to food security and livelihoods through a combination of factors such as increasing magnitude and frequency of climate-related hazards, diminishing agricultural yields, degradation of rangelands in vulnerable regions, rising human health and sanitation risks, increasing water scarcity, animal diseases, and intensifying conflicts over scarce resources.

### 1.1 Background

Climate change adaptation and disaster risk reduction were prioritized in the World Food Programme's (WFP) Strategic Plan (2014-2017). WFP has been piloting analytical frameworks on climate change at a global and regional level, and implementing climate-related adaptation programmes at a country level. Funded by the Swedish Government's fast-track climate finance, the C-ADAPT (Climate Adaptation, Management and Innovation Initiative) has provided a strategic opportunity for strengthening WFP's capacities in adaptation planning and climate risk management.

As part of the C-ADAPT Initiative, the WFP Regional Bureau Nairobi (RBN) seeks to assess livelihood and food security outcomes for households in sites that participated in the Managing Environmental Resources to Enable Transitions to More Sustainable Livelihoods (MERET) programme and for households in sites that did not participate in MERET (i.e., non-MERET sites). The MERET programme was designed to reduce vulnerability and chronic food insecurity of households living in degraded environments through natural resources rehabilitation and land productivity enhancement. Evolving over time, MERET's community-based participatory watershed development approach emphasizes:

- A participatory watershed approach, targeting households living within relatively small watersheds;
- Community planning, participation and ownership;
- Capacity building of community members, government partners, and field staff; and
- Targeting chronically food insecure households and communities in highly degraded environments.

Some non-MERET sites, however, receive assistance through the Productive Safety Nets Programme (PSNP), whose interventions are similar to – and modelled on – the MERET programme. The PSNP provides cash and food transfers to chronically food insecure households, whereby able-bodied members participate in labour-intensive public works activities including rehabilitating land and water resources and developing community infrastructure (e.g., rural roads, schools and clinics).<sup>2</sup> A key difference between MERET and PSNP is that MERET focused on increasing agricultural productivity by improving sustainable land management on individual and communal lands, whereas PSNP activities focus on enhancing communities' long-term ability to manage and recover from shocks by creating productive community assets. Both contribute to strengthened resilience capacity. In addition to focusing on watershed management, the MERET programme built social networks and productive assets, which also contribute to resilience capacity, and ultimately food and livelihoods security. It should be noted that other programmes (e.g., NGO, CBO) may have operated in MERET and non-MERET sites and that not all households in non-MERET sites were necessarily PSNP (or other programme)

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<sup>2</sup> TANGO. 2016.

beneficiaries. Thus, it is not possible to compare the resilience capacities or well-being outcomes of households that participated in MERET to households that participated in PSNP. Rather, the comparison is between households in watersheds that participated in MERET activities and those in watersheds that did not, even though they may have participated in similar types of activities through other programmes or community mobilization campaigns.

## 1.2 MERET Impact Evaluation

In 2012, WFP commissioned a mixed-method impact evaluation to be conducted of the MERET programme, a long-standing programme supported by WFP and managed by the Government of Ethiopia (GoE) through the Ministry of Agriculture (MoA).<sup>3</sup> The IE involved a household quantitative survey of 3,600 households (1,800 in MERET sites and 1,800 in non-MERET sites) and a qualitative component involving focus group discussions (FGDs) with stakeholders in MERET and non-MERET sites, and key informant interviews (KIIs) with WFP, MoA and government officials in Addis Ababa and woreda, zonal and regional offices; donors; and Development Agents (DAs). Needless to say, the 2012 IE and the current study differ (sample size, geographic spread, stakeholders interviewed as part of the qualitative effort), but overlap in some of the modules/questions used in the quantitative survey. Thus, although the two datasets cannot be statistically compared, it is possible to “visually” compare the two, at least for some indicators, providing some sense of trend over time with an eye to future directions for programming.

## 1.3 Resilience and Resilience Capacity

Resilience represents the effective responses used by households and communities to manage or recover from shocks/stresses that result in improved well-being outcomes. A household’s resilience capacity involves the set of conditions that enable households and communities to respond positively to shocks/stresses.<sup>4</sup> Resilience capacities can be classified into three categories:<sup>5</sup>

- *Absorptive capacity* is the ability to minimize exposure to shocks and stresses (*ex ante*) where possible and to recover quickly when exposed (*ex post*).
- *Adaptive capacity* is the ability to make proactive and informed choices about alternative livelihood strategies based on changing conditions.
- *Transformative capacity* relates to governance mechanisms, policies/regulations, infrastructure, community networks, and formal safety nets that are part of the wider system in which households and communities are embedded. Transformative capacity refers to system-level structures that enable households and communities to employ positive strategies in dealing with shocks and stresses.

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<sup>3</sup> TANGO. 2012.

<sup>4</sup> Béné et al. 2015.

<sup>5</sup> The descriptions in the paragraph of absorptive, adaptive, and transformative capacity are from Frankenberger et al. 2012.

Thus, measuring resilience involves measuring the factors that contribute to it, under what contexts and for what shocks, responses employed by households and communities, and ultimately, some measure of well-being.<sup>6</sup> Key factors in measuring resilience include:

- Measuring resilience in relation to a well-being outcome (e.g., poverty, food security);
- Measuring the shocks and/or stresses to which individuals, households, communities and larger systems are exposed, as well as their impact;
- Measuring the absorptive, adaptive and transformative capacities in relation to the shocks/stresses; and
- Measuring the responses of individuals, households, communities and larger systems to the shocks/stresses as well as in relation to well-being outcomes.

## 1.4 Objective

In light of current El Niño conditions, the WFP RBN and Ethiopia Country Office (CO) – under the C-ADAPT Initiative – seeks to assess the influence of MERET programming on household and community resilience capacity in response to the drought. Thus, the overall objective of the study reported here is to examine whether participation in MERET’s sustainable resource management programme contributes to strengthened household resilience capacity and subsequently to better resilience outcomes (i.e., food security).

## 1.5 Organization of the Report

Section 2 describes the household survey data collection and analysis methodologies used in the research. Section 3 describes challenges and lessons learned from the assessment. Section 4 characterizes the households and environment in MERET and non-MERET watersheds. Section 5 provides objective data on how the drought evolved through 2015 and 2016, and Section 6 describes household perceptions of exposure to drought and other shocks/stresses and their impacts. How households responded to shocks/stress is presented in Section 7 and food security outcomes are described in Section 8. Section 9 describes household and community resilience capacities and Section 10 uses regression techniques to understand the links between MERET participation, resilience capacity, and a number of outcome indicators including households’ reported recovery from shocks, household food security, and household dietary diversity. The final section provides conclusions.

## 2. Methodology

This section outlines the methodology used for collection of quantitative and qualitative data under the C-ADAPT initiative and describes how the data collected were analyzed. Additional methodological details regarding training, field work, and data management are presented in Annex 1.

Building on the 2012 MERET Impact Evaluation (IE), a mixed-methods approach was utilized in the current study and includes a review of secondary data (and especially the MERET IE), a quantitative household survey, a community resilience capacity survey, and qualitative interviews with community members and leaders at kebele, community, and watershed levels. Data were collected from

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<sup>6</sup> Conostas et al. 2014.

households in MERET (treatment) and non-MERET (from here on referred to as Control) watersheds. Difference-in-differences estimator techniques were used to compare relative differences in well-being outcomes (e.g., food security) of households in MERET and Control watersheds between 2012 (MERET IE) and 2016. The community survey was designed to provide information on resilience capacity<sup>7</sup> at the community level, and in particular on collective action and social capital, both of which are important elements of resilience as well as the MERET Theory of Change (TOC).<sup>8</sup> The quantitative analysis is supplemented by qualitative data garnered through focus group discussions (FGD) and key informant interviews (KII) at selected watersheds.

## 2.1 Data Collection

### Geographic targeting

According to FEWSNET's short- and medium-term outlook (Feb-Sept 2016) on food security in Ethiopia,<sup>9</sup> the regions of Tigray, Oromiya, and Amhara all face severe food shortages. The sampled watersheds were selected from four regions in which MERET operated (i.e., Tigray, Amhara, Oromiya, SNNPR), and were drawn from watersheds in which the 2012 MERET IE was conducted and that WFP identified as having been most heavily affected by El Niño-induced drought. Selection was done jointly by WFP and TANGO.

### Quantitative data collection

The quantitative data collection has two components: a household survey and a community survey. Quantitative data were collected with two main objectives: i) validate measures of resilience capacity, and ii) validate measures of shock exposure, household responses and well-being outcomes. Descriptive analyses were conducted on the quantitative data to better understand how resilience capacities and household responses, as well as shock exposure and well-being outcomes, vary across watersheds in which MERET-supported activities occurred and watersheds in which they did not (Control). Multivariate regression analysis was used to investigate the structural relationships that are hypothesized to exist between key variables of interest (e.g., shock exposure, household responses, well-being outcomes) and resilience capacities.

**Quantitative survey instruments.** Using the MERET IE household questionnaire as a template, the household and community quantitative survey instruments were developed by TANGO in consultation with WFP. The household survey contains 16 modules. The community survey is designed to capture community attributes that influence resilience at the community level and includes eight modules. A list of survey modules are presented in Annex 2. The household and community survey tools are presented in an accompanying report (Volume 2).

Although questionnaire modules were adapted to the Ethiopian context, most were based on previous surveys developed by TANGO for use in other resilience measurement initiatives (e.g., the BRACED project in Uganda and Kenya, the Southern Somalia Resilience and Stabilization Study, and the

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<sup>7</sup> See sub-Section 9.2 for a more detailed explanation of resilience capacity.

<sup>8</sup> TANGO. 2012.

<sup>9</sup> <http://www.fews.net/east-africa/ethiopia>.

Pastoralist Areas Resilience Improvement and Market Expansion (PRIME) project implemented by Mercy Corps in Ethiopia). Other modules were based directly on techniques described in published manuals for specific indicators, such as the Household Food Insecurity Access Scale (HFIAS), Household Diet Diversity Score (HDDS), and Household Hunger Scale (HHS).

**Sample selection.** Sample selection involved purposively selecting paired MERET and Control sites in 10 woredas that had been sampled in the 2012 MERET IE. A total of 1,454 households from 10 MERET and 10 Control sites were selected, allowing for statistical comparison between the two groups. The main criterion used by WFP to select woredas was that they had been severely affected by the 2015 El Niño-induced drought.

For household level questions, enumerators interviewed the adult household member who self-identified as the primary decision-maker. Household nutrition and hunger modules were asked of adult respondents most familiar with what food was consumed by household members within the specified recall period (e.g., 24 hours, 4 weeks). Enumerators conducted random walks to select individual households within each site.

### Qualitative data collection

In addition to the household and community quantitative components described above, the assessment also involved a qualitative element.

**Qualitative survey instruments.** The qualitative component of the study was designed to better interpret the quantitative findings, in particular *why* some households or communities are resilient and others are not, not just whether they are – or are not – resilient. In particular, the qualitative component helps explain how households and communities deal with shocks/stresses, how communities perceive the key constraints to their livelihoods posed by shocks/stresses and challenges in responding to them, and the role of social capital and collective action in dealing with shocks/stresses. In collaboration with WFP, TANGO developed topical outlines that included questions on shocks/stresses, coping strategies, social capital, collective action, and livelihoods to provide insights into how community resources are used to manage shocks/stresses. Topical outlines are presented in Volume 2.

**Sampling for qualitative data collection.** Qualitative data collection occurred in a sub-sample of communities in which quantitative data was collected. Paired MERET and Control sites were selected in each district, for a total of eight sites. Within each site, separate male and female FGDs were conducted, each involving 6-10 people, on average. Focus group participants were identified through collaboration with community leaders and members, and included groups representative of the primary livelihood systems and wealth categories in the community.

Topical outlines guided discussion, with a focus on the nature of shocks/stresses experienced by the community and how they responded. Emphasis was placed on the role of formal and informal institutions in helping communities deal with shocks/stresses, factors influencing collective action within the community, and the role of women in household decision-making. Where possible, KIIs were conducted immediately following FGDs.



## 2.2 Data Analysis

### Quantitative Data Analysis

The quantitative data analysis was conducted in SPSS and STATA using both descriptive and multivariate analysis techniques. With an eye toward the length of the report, results that are presented in tables and figures within the body of the report are not duplicated in the text as percentages presented in parentheses. Percentages are provided in parentheses for tables and figures from the annexes.

**Descriptive analysis.** Household and community survey data are used to conduct descriptive analysis of indicators describing MERET and Control households (Section 4), shock exposure (Section 6), household responses to shocks/stresses (Section 7), food security outcomes (Section 8), and resilience capacities (Section 9). Indicator values are mainly reported as percentages and means.

- **Percentages.** For values provided in nominal scales (e.g., yes/no responses), percentages were computed using the number of cases that provided a given response as the numerator, and the total number of cases as the denominator. Single-response variables add up to a maximum of 100 percent;<sup>10</sup> multiple response variables may total more than 100 percent.
- **Means.** For variables calculated in a continuous scale format (e.g., number of household members), means were computed using the sum of values as the numerator and the total number of relevant cases as the denominator.

Indicators are reported by MERET and Control sites, and tests for statistically significant differences in the indicators across the two groups are undertaken. Differences are considered statistically significant at the 0.10 level. The sample size was chosen such that the number of observations used in each calculation is in most cases sufficient for calculation of these statistics. Any cases where the number of observations is too small for reliable measurement ( $n \leq 30$ ) are denoted in the tables, and variable values are not reported.

Some variables of interest are composite measures of multiple indicators (e.g., resilience capacities). In many of these cases, Principal Components Analysis (PCA) is used to construct an index. This technique reduces a set of “input” variables that are hypothesized to be related to one another into a single variable by detecting structure in the relationships among the input variables from their correlation matrix. Variables are combined using weights that represent their correlations with the single variable produced. Indexes are constructed using this technique only if the signs of the weights for the input variables are as expected (positive or negative) given our conceptual understanding of the relationships between input variables and the indicator being measured.

For all indexes reported, the first principal component is used to construct the index. This component, which accounts for the most variability in the data, always turns out to be the one for which the input variables enter with the appropriate sign – a positive indication of the conceptual validity of the indicators.

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<sup>10</sup> All results are rounded to a single decimal place. Thus, small rounding errors for single response variables may mean sums are slightly over/under 100 percent.

**Multivariate analysis.** Multivariate regression analysis is used to explore the structural relationships between MERET participation, resilience capacity, and a number of outcome indicators including households' reported recovery from shocks, household food security, and household dietary diversity. Although an overall resilience capacity index is calculated, analysis of the individual components of resilience are used in order to gain more detailed understanding of the impact different components have on household resilience outcomes.

Resilience capacity consists of the following components: number of livelihood activities, social capital (bonding, bridging, and linking), aspirations, exposure to information, savings, access to formal and informal safety nets, access to markets, access to services, access to infrastructure, assets, education, and literacy. Additionally, household characteristics, such as age of household head, female-headed households, and household size are also examined. These multiple regression analyses not only examine the impact of resilience capacity on household food security, dietary diversity and recovery from shocks, but also measure the impact of MERET participation across outcomes while controlling for the effects of these other factors. Results from the multivariate analysis are presented in Section 9.

### Qualitative Data Analysis

Qualitative data was collected from FGDs and KIIs and combined into matrices in order to identify patterns in responses and contextual information that help explain quantitative findings. Specific questions guiding the qualitative analysis included:

1. What are household and community perceptions about the shocks/stresses they are experiencing in terms of frequency, duration, and severity over time?
2. What coping strategies are used at the household and community levels to deal with shocks/stresses?
3. How is social capital used by households and the community to deal with shocks/stresses?

Qualitative data were used to interpret and supplement findings from quantitative data analysis throughout this report. Qualitative data gives voice to individual perceptions, which are difficult to capture through quantitative means.

### 2.3 Limitations to Analysis and Interpretation

Issues related to sampling represent important limitations to the interpretation of the quantitative findings. Due to budget limitations, a small number of clusters were sampled for the current study, along with a large number of households per cluster. This contrasts with the 2012 IE, in which a larger number of clusters and fewer households per cluster were used, and which increases the design effect. A larger design effect increases the standard errors, making statistically significant differences more difficult to capture. This is important in light of the results, which show no statistical difference between MERET and Control sites for many indicators. It should be noted that this apparent lack of significant difference could be attributable to larger standard errors resulting from the design effect.

Additionally, selection of the clusters was not random and therefore the results are not generalizable across a larger population. That is, the results are valid for the conditions characterizing the selected

clusters – and which were selected because they had been identified as having been severely affected by the drought. Although not statistically representative of other contexts (e.g., non-drought conditions), the findings are still generally relevant for designing initiatives to strengthen resilience of vulnerable populations to climate-related shocks/stresses.

### 3. Challenges and Lessons Learned

Significant challenges were encountered over the course of the assessment, from training to data analysis, providing important opportunities for lessons learned. Generally, training was perceived as unorganized, due in large part to a simple lack of clear communication. Better communication with the relevant individuals in the appropriate WFP offices (CO, sub-office, etc.), especially prior to and at the beginning of training, would help eliminate such uncertainty, as would providing email and mobile phone contact information of point persons for logistical and technical support. The team acknowledges that the local WFP office staff were very helpful in dealing with issues that arose. We also acknowledge that WFP support – at both the CO and more local levels – was very good during field work.

Budget constraints meant training was shortened by a day, which had significant and mostly negative impacts on what could be accomplished before enumerators went into the field (e.g., clear understanding of the survey questions, agreement on translations, comfort with operating the tablets). A delay in receipt of fully configured tablets meant that enumerators did not have enough time to practice and become comfortable with the equipment on which they would be conducting the survey. The delay also meant there was no time to test the table-to-server links by uploading completed sample surveys. Testing the uploading process prior to training would have allowed for the technical problems the team experienced in the field to be addressed. Ideally, equipment should be tested and fully functional prior to the beginning of any training, but certainly before field work begins.

Internet connectivity at the training venue and more broadly within Nazareth was unreliable. While beyond WFP's control, internet access is critical to properly training enumerators to conduct surveys on tablets. Where possible, training venues with reliable internet access should be prioritized and budgeted.

Some enumerators had more difficulty than others understanding English and the shortened number of days for training meant they did not have sufficient time to review each question and fully understand what was being asked (in English), or to agree on its best translation into the relevant local language. Budget constraints are simply a reality. However, budgeting sufficient time for training cannot be overemphasized.

Due to considerations beyond WFP's control, data collection was scheduled to overlap both with Ramadan and the beginning of the planting season, which meant many households were not available to be interviewed. Although the actual sample size was reduced relative to what had been planned, it did not ultimately have as negative an impact on analysis as anticipated.

Finally, unfamiliarity with the household questionnaire and how to use the tablets due to the shortened training, combined with quality control issues on the part of some supervisors, all contributed to unnecessary and time-consuming work in cleaning and analyzing the data.

#### 4. Description of MERET and Control Households

As part of assessing the impact of MERET activities on household resilience to the El Niño-influenced drought in 2015, MERET and Control sites were purposively selected in a way to minimize any differences between them except whether they participated in MERET or not. Differences in contextual factors (e.g., housing characteristics, education, age, etc.) could confound results.

Table 1 suggests there is very little practical difference – and no statistical difference – in the mean age, education attainment, and marital status of the household head across households in the MERET sites and those in the Control sites. Overall, household heads tend to be older (e.g., with a mean age of 44), married, literate, and have an average of five members in their households.

Table 1. Household demographics.

% households	All	Intervention	
		MERET	Control
Mean age of household head	44.3	45.2	43.3
Household characteristics			
Female-headed household	24.7	22.0	27.6
Married	87.6	87.9	87.3
Head of household education and literacy			
Literate	56.5	58.5	54.4
No schooling	54.7	53.5	55.9
Primary education	37.8	38.3	37.2
<i>n</i>	1,454	755	699
Household size	4.83	4.96	4.69
<i>n</i>	1,452	755	697

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

Households in both sites tend to rely on the same sources of water during both the rainy and dry seasons (Annex 9, Figure 10 and Figure 11). There are no statistically significant differences between households in MERET and Control sites in terms of where they source water in either season, with most all households relying on surface water (42% in both seasons), followed by a public or neighbor’s tap (22% and 21% in the dry and rainy seasons, respectively). Households rely even less frequently on boreholes (14% in both seasons) and protected public wells (11% in both seasons) for household water.

There are also no differences between households in MERET and Control sites in terms of their sanitation practices, with 80% of all households using traditional latrines/open holes (Annex 9, Table

30), nor in their access to or source of electricity (Annex 9, Table 31). Very few households overall have electricity (14%), but for those that do, it is nearly all sourced from central power lines (99%).

Finally, very few differences exist between MERET and Control households in terms of their sources of income and asset bases. The primary source of household income or food over the 12 months prior to the survey is similar across MERET and Control sites (Annex 9, Table 32). The most common source of income reported by all surveyed households for that time period was from selling cash crops (38%), followed by agricultural daily labor (13%) and FFW and/or safety net support (11%). However, more households in the Control sites (5%) worked as non-agricultural daily laborers compared to households in MERET sites (2%).

MERET and Control households surveyed in Tigray, Amhara, Oromiya, and SNNPR are predominantly agro-pastoralists, although not completely. Most rely on a mix of crop and livestock production/sales as their main source of income and food. In the four years since the 2012 MERET IE, households appear to be relying less on crop and livestock production/sales, and more on agricultural daily labor. In 2012, 56% of MERET and 52% of Control households reported crop sales as their primary source of income, and 29% and 26%, respectively, from livestock sales. In contrast, only 6-7% of all households in 2012 reported agricultural daily labor as their main source of income. While it is not possible to conclude that this apparent shift is due exclusively to the recent drought, it is supported by insights from FGDs that indicate crop harvests were severely reduced – if not entirely wiped out – by the recent drought for many households, animals died in large numbers or were sold off, and that people looked for wage jobs, mostly agricultural.

Most households are asset poor, with no statistically significant differences between MERET and Control sites (Annex 9, Table 33). Fifty-seven percent of all households own cell phones and less than 1% own any form of transportation (e.g., bicycle, motor vehicle). There are no statistically significant differences in livestock ownership between households in MERET and Control sites, with the exception of beehives. Twice as many households in MERET sites than in Control sites report owning beehives (Annex 9, Table 34).<sup>11</sup>

Overall, data show very little difference between households, highlighting the similarities and equivalent matching of the MERET and Control sites.

## 5. Evolution of the Drought

Ethiopia is experiencing the worst drought in 50 years.<sup>12</sup> In 2015, El Niño-related drought contributed to the failure of both Belg and Meher harvests in much of central and eastern Ethiopia, low pasture regeneration, livestock deaths, and reduced household income, which continued into 2016.<sup>13</sup> According to FEWSNET, the most affected regions were Tigray, Amhara, Oromia, and SNNPR, which were facing Emergency to Crisis (IPC Phase 3 and 4) food security outcomes as of February 2016.<sup>14</sup>

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<sup>11</sup> Beekeeping is a MERET income-generating program activity.

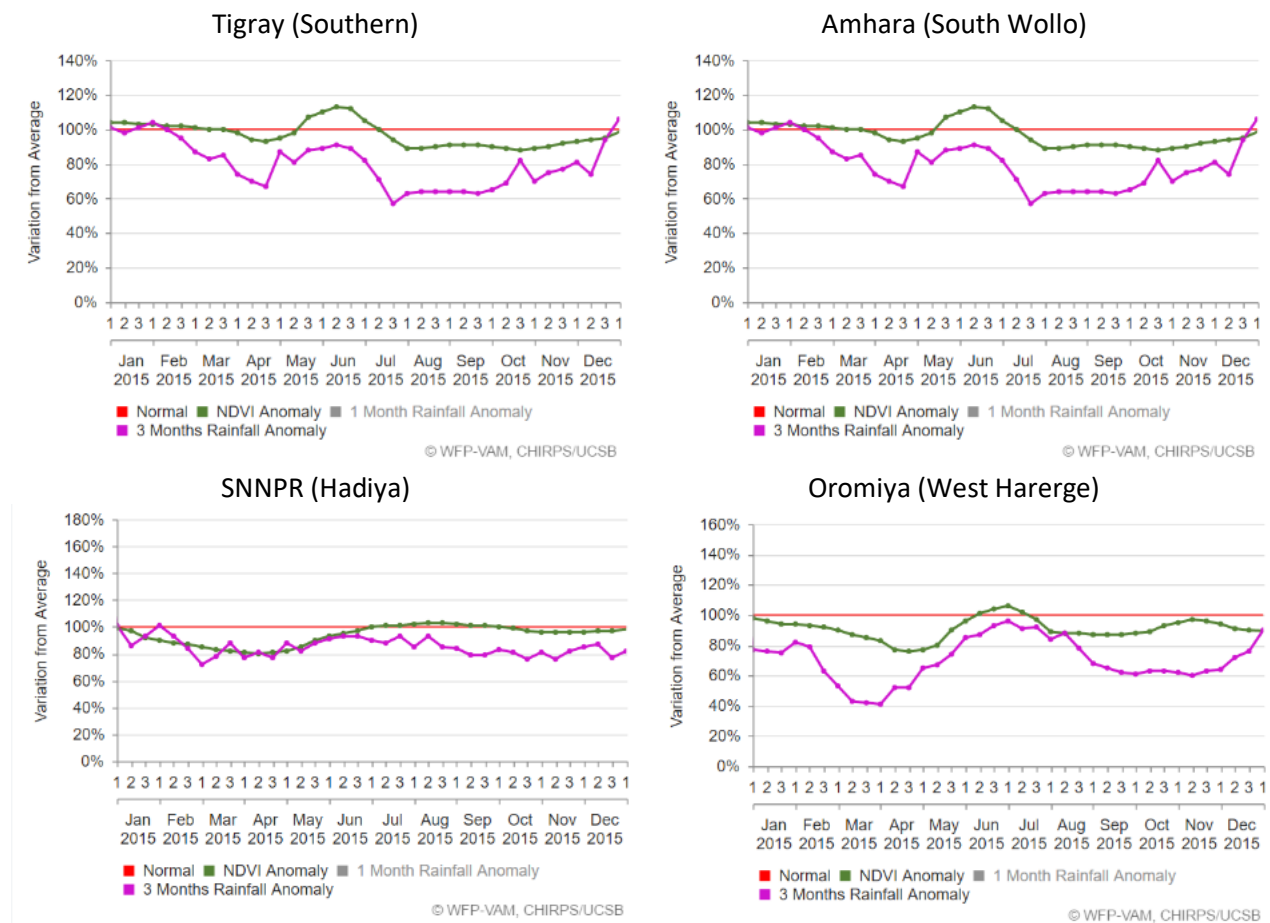
<sup>12</sup> FEWSNET. 2016. Ethiopia Food Security Outlook: February to September 2016.

<sup>13</sup> FEWSNET. 2016. Ethiopia Food Security Outlook: April 2016.

<sup>14</sup> FEWSNET. 2016. Ethiopia Food Security Outlook: February to September 2016.

Figure 1 presents data on the degree to which rainfall and vegetation (as measured with the Normalized Difference Vegetation Index; NDVI) in 2015 deviated from the long-term average. Across all four regions, large deficits in rainfall and reduced vegetative cover were experienced. Households experienced very poor harvests during the 2015 Belg harvest (June-August), followed by failure of the Meher harvests (October – January 2016), with losses estimated at 70 percent or higher in the most affected areas.<sup>15</sup> Livestock sales were also negatively impacted, due largely to poor livestock body conditions – and death – resulting from reduced availability of forage, but also from low market prices.

Figure 1. Deviations from normal rainfall and NDVI in 2015.

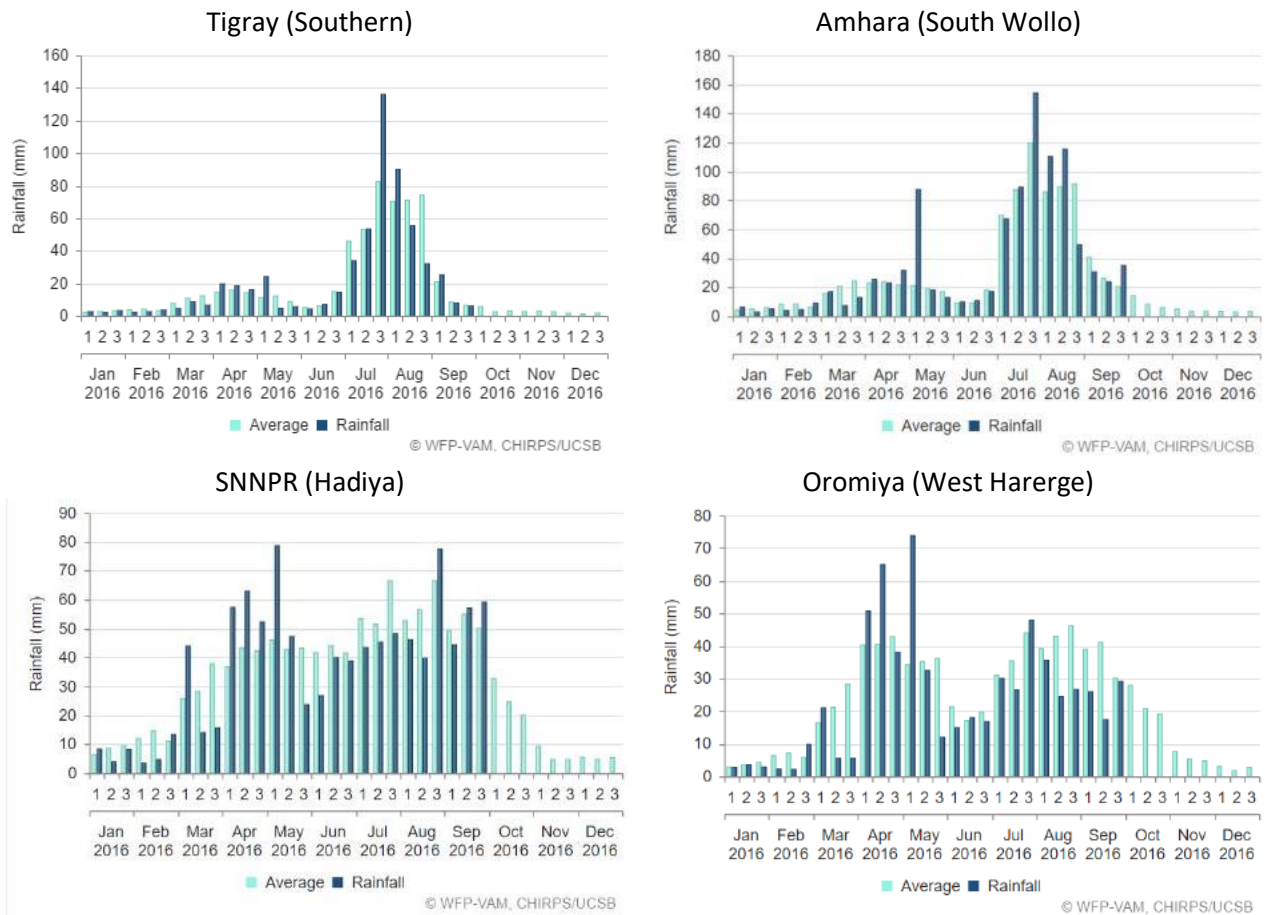


Source: [http://dataviz.vam.wfp.org/Agroclimatic\\_Charts](http://dataviz.vam.wfp.org/Agroclimatic_Charts)

The 2016 Belg rains began somewhat late and were somewhat below average early in the year in some locations (Figure 2), delaying planting in some areas. Above average rainfall later in the year resulted in areas of flash flooding. Below average production is expected in some areas and livestock body conditions remain below normal, with continuing livestock deaths occurring.

<sup>15</sup> Ibid.

Figure 2. Rainfall (mm) in 2016.



Source: [http://dataviz.vam.wfp.org/Agroclimatic\\_Charts](http://dataviz.vam.wfp.org/Agroclimatic_Charts).

The drastic reductions in 2015 harvests meant households were depleting their food stocks earlier than normal. Reduced income from sales of crops and livestock, as well as increased prices of staple foods, restricted market access. Notwithstanding some good rains in 2016, continuing food insecurity is likely across all four regions of the study.

## 6. Household Exposure to Drought

This section documents the severity of exposure of households to the El Niño-influenced drought over the 12 months prior to the study. Based on household responses to the shock module in the household questionnaire, this section explores direct exposure of households to the drought and other shocks/stresses, as well as the nature of their impacts. Drought is defined here as “below average water availability for a season.”

### 6.1 Shock Exposure

Table 2 shows the percentage of households experiencing each of 17 different shocks/stresses over the 12 months prior to the survey. There were no statistically significant differences in the types of shocks experienced by households in MERET and Control sites.

The main shock/stress reported by all households was drought, followed closely by variable rainfall. More than one-half of all households also reported experiencing price shocks of both food and non-food items. Crop disease/pests was important in some areas, particularly where it affected major crops (e.g., enset). Flooding was somewhat location-specific; in certain areas entire fields were lost to floods, whereas flooding was not an issue in other areas.

In the 2012 IE, drought and crop failure were the most cited shocks/stresses overall, which is consistent with the current results. At that time, about one-third of all households reported experiencing drought.

Table 2. Households experiencing shocks/stresses in the 12 months prior to the survey.

% households	All	Intervention	
		MERET	Control
Climate-related shocks/stresses			
Prolonged drought	84.7	86.7	82.8
Variable rainfall	78.0	75.1	80.7
Crop Disease/pest infestation/animal damage	44.2	42.6	45.6
Livestock disease	30.5	28.5	32.3
Flooding	18.7	19.7	17.7
Landslide/erosion	8.0	9.3	6.9
Storm (wind, dust, hail)	6.7	6.2	7.3
Economic shocks/stresses			
Sharp increase in food prices	61.6	64.8	58.7
Sharp increase in non-food prices (oil, animal feed, etc.)	52.3	53.6	51.0
Loss of employment	3.3	2.6	4.0
Theft/loss of livestock	2.4	1.9	2.9
Theft of property	1.2	0.6	1.7
Household shocks/stresses			
Human epidemic	12.1	11.7	12.5
Death/prolonged illness of household member	10.6	10.3	10.9
Loss of land (confiscated, expropriated)	3.9	2.9	4.9
Conflict	1.5	0.9	2.1
Fire (wildfire or other)	0.8	0.3	1.3
	<i>n</i> 1,454	699	755

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*) and 0.1 (\*) levels.

## 6.2 Household Impacts

Since the 2012 IE, advances in resilience thinking and measurement have reshaped the way questions – and types of possible shocks/stresses – are presented. For example, many of what were listed as “shocks” in the 2012 IE are now considered impacts of various shocks – crop failure, job loss, animal

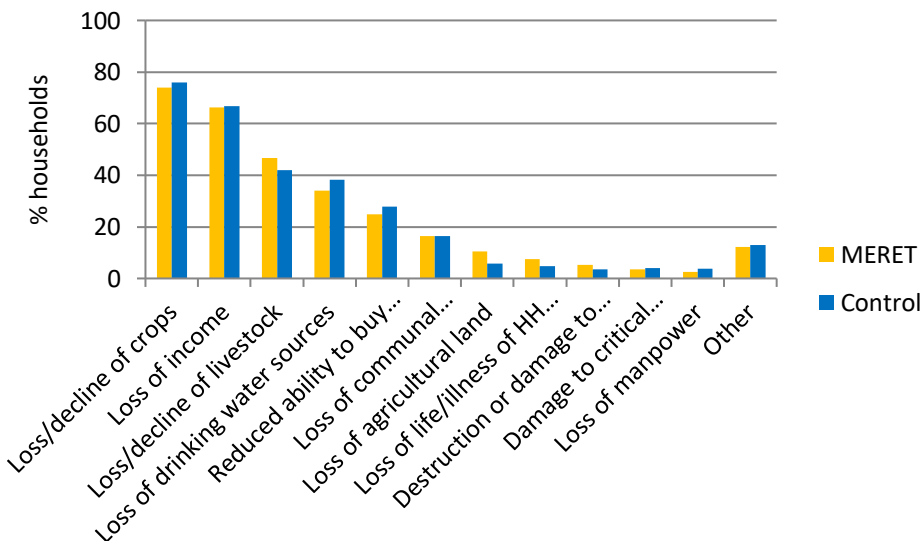


deaths. Figure 3 shows the impacts of shocks/stresses that households report experiencing in the 12 months prior to the survey.

Clearly, the El Niño-induced drought had negative impacts on households throughout Tigray, Amhara, SNNPR, and Oromiya, although there were no statistically significant differences between households in MERET and Control sites. This suggests that households in both sites experienced shocks in the same ways. However, the data do not reflect the degree to which households have been impacted, which might be expected to differ between households in MERET and Control sites.

The majority of all households surveyed reported a loss or reduction of crops and income, both of which directly reduce a households’ ability to feed their families. The next most reported impacts included losses in livestock and water availability – for both household and livestock use. Less than 1% of all households indicated they experienced a shock/stress but did not feel any impact.

Figure 3. Impacts of shocks/stresses on households.



NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

According to all focus groups and KIIs, the drought resulting from the influence of the 2015 El-Niño event had significant impacts on everyone, including reduced crop yields, crop and animal diseases, decline in livestock condition and livestock deaths, lack of water, water contamination, reduced/lack of forage, reduced production of high-value tree crops (e.g., coffee, mango, avocado, papaya, etc.), and illness from contaminated water (especially among children). Maize, sorghum, teff and enset yields were dramatically reduced and in some cases produced nothing. This was particularly true for households who had not participated in MERET. FGDs and KIIs in both MERET and Control sites indicated that although everyone’s yields were reduced, households that had implemented MERET activities typically still produced something (even if only used as feed for livestock) while households who had not been a programme beneficiary typically produced nothing. There was wide agreement that participation in the MERET programme provided a distinct advantage to those households.

Communities in both MERET and Control sites reported widespread death of livestock, particularly oxen, other types of cattle, and shoats. Availability of forage and pasture was diminished, resulting in many households purchasing feed or moving their livestock to areas with better grazing and water (see also Household Coping Strategies in sub-Section 7.1). There was a perception across all FGs that forage and pasture availability were not as diminished in MERET sites as Control sites, due largely to MERET activities such as area enclosures and soil and water conservation (SWC) practices that helped soils retain moisture, which in turn prevented the complete desiccation of forage and pastures.

Springs and boreholes dried up, forcing households to go long distances in search of water – for both household and livestock use. FGs indicated that before the drought, the average time needed to fetch water varied from 30 to 60 minutes but increased to 2 to 15 hours as a result of the drought. Diminished availability of water sources for household use contributed to women’s vulnerability. At the SNNPR control site, where the time to fetch water was greatest, women reported travelling to water points at night, which made them vulnerable to hyena attacks, and because they were gone so long, some were unable to breastfeed their infants.

## 7. Household Responses to Shocks

Given the diversity of shocks/stresses to which households can be exposed, it is important from a resilience perspective to understand households’ ability to recover from shocks and the coping strategies they employ in dealing with them. This section presents results from the shocks module in the household questionnaire that asked how households coped with the shocks/stresses they experienced during the 12 months prior to the survey.

### 7.1 Ability to Recover and Household Coping Strategies

A household’s ability to recover from shocks/stresses provides some measure of a household’s well-being in response to the types of shocks/stresses it experiences. It is calculated from household responses to the question:

- “To what extent has your ability to meet food needs returned to the level it was before all the shocks/stresses you experienced in the 12 months prior to the survey?”

Response categories included: 1) ability to meet income and food needs is the same as before the shock(s); 2) ability to meet income and food needs is better than before the shock(s); and 3) ability to meet income and food needs is worse than before the shock(s).

Over three-fourths of all households felt their ability to meet household income/food needs had recovered to the same or better level than before the shocks/stresses they experienced over the 12 months prior to the survey (Table 3). However, significantly more households in MERET sites than in Control sites reported they were able to meet their income and food needs as well as – or better than – before the shocks/stresses they experienced. This is of note as households both experienced the same types of shocks and were impacted in similar ways to the shocks/stresses they experienced. Thus, these things being equal, households in MERET sites tended to recover more than households in Control sites.

This may reflect, in part, the influence of the MERET programme on household resilience, that is, their ability to adapt to or deal with drought without diminishing their overall well-being.

The most commonly reported way of coping with – or responding to – shocks/stresses involved selling livestock, with one-half of all households doing so. According to FGDs and KIIs, households sold their livestock – though often reluctantly, in many cases completely eliminating their herds. Less than 10% of all households reported sending their livestock in search of better pasture. According to FGDs in both MERET and Control sites, households relied on area enclosures for livestock feed (e.g., fodder, grass), including having it trucked in from family and friends in other locations with better pasture.

The next most commonly cited strategies included reducing food consumption, engaging in FFW/CFW, relying on food assistance, reducing expenses, using savings, and looking for casual labor. The low percentages of households reporting they received food or money from family or friends outside of their community, or sent their children elsewhere in search of casual labor, are a little surprising, given the emphasis FGs placed on the importance of receiving remittances.

Table 3. Household recovery from and coping strategies for dealing with shocks/stresses.

% households	All	Intervention		
		MERET	Control	
Ability to recover to the same level/better than before all the shocks/stresses experienced	76.2	85.8	66.2	**
<i>n</i>	1,401	717	684	
Livestock coping strategies				
Sell/destocking livestock	49.3	47.9	50.9	
Send livestock in search of pasture	7.2	7.3	7.1	
Slaughter livestock	1.5	1.6	1.4	
Migration coping strategies				
Migrate (only some family members)	1.0	1.2	0.8	
Migrate (the whole family)	0.3	0.0	0.6	
Strategies to reduce current expenditure/food consumption				
Reduced food consumption	34.3	30.6	38.4	
Reduced non-essential household expenses	26.1	23.6	28.7	
Strategies to get more food or money				
Participate in cash/food for work	32.6	27.7	37.9	
Receive food aid from the government or NGO	32.5	36.6	28.1	
Used household savings	26.3	26.4	26.1	
Sought additional/more work	20.0	16.8	23.5	
Took out a loan	12.6	10.4	15.1	
Receive money or food from relatives/friends within community	5.6	6.7	4.4	
Send children to work for money	3.9	4.2	3.6	
Receive money from a relative outside of community	2.8	4.3	1.3	*
Sold household items (radio, bed)	0.3	0.4	0.2	

% households	All	Intervention	
		MERET	Control
Sold productive assets (water pump, plough)	0.1	0.1	0.0
	<i>n</i> 1,305	674	631

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

In contrast to the quantitative data, most FGDs report relying on moving their livestock to other areas where there is better grazing and sources of water. Selling livestock was also mentioned as a coping strategy, though it is not a preferred, nor the most effective, strategy. There is strong cultural “resistance” to selling livestock, although it is increasingly used as a way to generate income for household needs. Livestock markets are often lacking and households are left vulnerable to unscrupulous buyers that offer much lower prices than what might be otherwise obtained. Additionally, households often wait too long – in the hopes that things will get better – to sell their animals, which are then not as valuable due to their poor condition.

Remittances are also considered important; sending family members or children to work in larger urban areas and/or to various Arab or African countries (e.g., Saudi Arabia, Yemen, Dubai, South Africa) was reported as a key coping strategy in all FGDs. It is often the women or young girls who are sent, as there are more opportunities for women in Arab countries than for men. Men stay at home to continue farming. FGs also report relying on friends and family – living both within their own communities and elsewhere – for borrowing money or food. However, this did not show up in the quantitative data as a strategy that many households reported.

Eating fewer meals a day (e.g., skipping breakfast) and eating less preferred foods were common responses across all regions (see also sub-Section 8.3). Most households prefer teff but shift to maize and sorghum because they are cheaper. This both reduces their expenditures when purchasing food and increases income by leaving the higher value teff to sell. Teff, particularly the local variety, can be almost twice as expensive as sorghum or maize.<sup>16</sup>

Assistance from the government was considered by most all FGDs as the most effective way that households were able to deal with the effects of the drought. The Government of Ethiopia’s PSNP programme operates in all the surveyed communities, although at very low levels in most, even Control sites, at least according to FGs. They also provided some emergency food aid for a few months in response to the drought. Taken together, assistance from the government is a key strategy for helping families through hard times.

Although there were no statistically significant differences found for most of the coping strategies, the data hint that households in Control sites may tend to rely on slightly different coping strategies than households in MERET sites. For example, households in Control sites may rely more on casual labor and loans than households in MERET sites. They also appear to be less likely to rely on relatives for money or food than households in MERET sites. Such potential trends could provide insights into the underlying

<sup>16</sup> In Tigray, teff was estimated at 1,700-2,000 birr/quintal, maize at 1,000 birr/quintal, and sorghum at 800-1,000 birr/quintal.

factors contributing to household resilience in MERET sites. For example, taking on additional work (e.g., casual labor, off-farm activities) can help fill immediate gaps in household food/income but does not necessarily lead to increased household wealth (i.e., escaping from poverty) or enhanced resilience.<sup>17</sup> Social capital is also an important element of resilience capacity and is looked at in more detail in sub-Section 9.2. Reliance on social capital in the form of receiving money from a relative tended to be greater for households in MERET sites than in Control sites.

The data on food/cash transfers is a little perplexing. For the most part, MERET constituted the primary FFW programme operating in the MERET sites surveyed for this study while the PSNP was the primary source of FFW/CWF in Control sites.<sup>18</sup> Although PSNP also operated in MERET sites, many MERET FGs and KIIs indicated very few households in these sites received PSNP benefits. Thus, the expectation might be that more households in Control sites than MERET sites would report receiving food aid from the government – because of PSNP. Likewise, we might expect that more households in MERET sites than Control sites would report participating in FFW – as a function of participating in MERET. Clearly, better wording or explanation by enumerators of the question might be needed in future surveys.

One explanation for why households in MERET sites are better able to recover than Control sites, even though they experience the same types of shocks and shock impacts, and use the same types of coping strategies to deal with them, is that they experience them to a lesser degree. That is, they are not as negatively impacted as households in Control sites, even though they experience the same types of impact. This is supported by qualitative insights from FGDs, in which participants perceived that households in MERET sites managed to produce some crops or forage, even if production was greatly reduced, and that their water sources lasted longer than those in Control sites. Such advantages are likely to contribute to their ability to recover. This suggests that SWC and NRM practices promoted through MERET help mitigate the negative impacts of and promote household recovery from drought.

## 7.2 Measures taken to protect from future shocks/stresses

Resilience capacity depends in part on the ability to prepare for and mitigate the impact of future shocks/stresses, i.e., before they happen. Such strategies contribute, in particular, to household and community absorptive capacity.

According to Table 4, most surveyed households report doing something to help protect their households from future shocks/stresses (only 4% did nothing). The majority of households report diversifying the crops they plant and increasing household savings as ways to mitigate the impact of future shocks/stresses. Crop (and livestock) diversification and savings both contribute to adaptive capacity (see sub-Section 9.2).

Savings provide a cushion for households when other sources of income are reduced or eliminated by a shock/stress. By planting a diversity of crop types (i.e., different species, varieties, or cultivars), households increase the chances that at least some harvest will occur, even if only a small amount. Not

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<sup>17</sup> Nelson et al. 2016.

<sup>18</sup> FGDs and particularly some KIIs indicated other NGOs were operating or had operated in their communities, some of which involved FFW/CFW. This could contribute, at least in part, to the confusion regarding the results, but such claims have not been verified as part of this study.

all crops are equally susceptible to lack of water, insects or diseases. Some crops mature quicker than others, increasing the likelihood they may “escape” the effects of prolonged drought if they mature and are harvested before conditions get too severe. In 2012, only 7% and 4% of MERET and Control households, respectively, reported diversifying their crops.

Approximately one-third of all households report putting aside food for later use. About one-fourth report diversifying their livestock as well as participating in government programmes (e.g., PSNP). These strategies were also cited in the 2012 IE, at relatively similar levels of importance overall.

Table 4. Strategies used by households to protect themselves against future shocks/stresses.

% households	All	Intervention	
		MERET	Control
Planted different crops	64.4	65.7	63.1
Increased savings	63.8	66.6	60.7
Put food aside	36.1	35.2	37.1
Purchased different animals	25.7	25.8	25.6
Enrolled in government programme (e.g., PSNP)	22.6	20.0	25.3
Stocked water	17.8	17.0	18.7
Changed livelihood	17.6	21.1	13.9
Acquired crop insurance	4.8	4.6	4.9
Relocated permanently	4.3	2.4	6.4
Nothing	3.9	3.1	4.7
	<i>n</i> 1,454	755	699

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*) and 0.1 (\*) levels.

Most FGDs in Control sites indicated their communities did little – other than praying – to prepare for and mitigate the impacts of the drought. Both MERET and Control sites indicated they had received information from the government (Development Agents), over the radio, on TV, and in community meetings regarding El Niño and the expected drought but that the information was late in coming (see also sub-Section 9.2). For the most part, there was little most communities – especially in Control sites – did to prepare. In contrast, communities in some MERET sites prepared short-term plans, primarily involving implementing more MERET-type activities to help conserve moisture, promoted drought-tolerant crops (e.g., sorghum) and crop varieties (e.g., drought-tolerant varieties of teff), or strengthened their early warning and DRM committees. FGs in Control sites reported very limited use of drought tolerant crop varieties.

Households were asked whether they considered themselves better off (in terms of their perceived level of poverty) than a year ago, before the drought (Table 5). More households in Control sites than in MERET sites considered themselves to have been poor 12 months prior to the survey and to still be poor at the time of the survey. In contrast, more households in MERET sites than in Control sites considered themselves not poor 12 months prior nor at the time of the survey.

Across all households, approximately 21% perceived their situation improved over the last 12 months, i.e., they perceived themselves to have been poor 12 months ago but not poor at the time of the survey. Likewise, 22% of all households perceived that their situation worsened (not poor 12 months ago, but poor today) over the last 12 months. Regardless of their status 12 months prior to the survey, the majority of households in Control sites (61%) tended to consider themselves poor at the time of the survey (poor today), while the majority of households in MERET sites (59%) considered themselves “not poor today”.

Although there is no statistically significant difference observed between MERET and Control sites for households that consider themselves to have “moved out of poverty” over the 12 months prior to the survey, this may be as much a function of the limitations from the design effect as anything else and could be further explored in the future. Such results are suggestive of – but not statistically robust evidence for – MERET activities helping households build assets and resources that contribute to their livelihoods.

Table 5. Household perceptions of poverty status.

% households	All	Intervention		
		MERET	Control	
Poor 12 months ago, still poor today	28.1	19.2	37.8	***
Poor 12 months ago, not poor today	21.3	23.4	18.9	
Not poor 12 months ago, but poor today	22.4	21.2	23.6	
Not poor 12 months ago, not poor today	27.9	35.6	19.6	**
	<i>n</i> 1,454	755	699	

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*) and 0.1 (\*) levels.

In spite of these household perceptions of poverty (or wealth) status, when asked whether households felt they would be able to meet their food or income needs in the coming year the same as or better than before the drought, most households indicated they would be able to do so (85% and 76% in MERET and Control sites, respectively). Although no statistically significant difference was observed, the data suggest an advantage for MERET households, but are not conclusive and further exploration is necessary.

Thus, even though all households have been severely impacted by the El Niño-induced drought, and most felt there is little if any coordinated action happening in their communities to prepare for and mitigate the impact of future shocks/stresses, they are also fairly optimistic that they can provide sufficient food for their families during the upcoming year, regardless of whether they lived in Control or MERET sites. This may be due, at least in part, to the fact that the rains had begun in many communities by the time of the survey, providing them with some sense of what the upcoming year might bring.

## 8. Food Security Outcomes

Food security exists “when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.”<sup>19</sup> In this report, food security is measured using two types of indicators: indicators based on reports of food consumption and indicators that reflect respondents’ perceptions of and experiences with hunger and food insecurity. This section reports on various food security and hunger indicators. See Annex 3 for details on calculating the Household Food Insecurity Access Scale (HFIAS), Household Hunger Scale (HHS), and Months of Adequate Household Food Provisioning (MAHFP).

### 8.1 Household Food Access and Hunger

Table 6 shows that the majority of all households were classified as food insecure according to the HFIAS, with approximately 67% of all households moderately to severely food insecure. Households in MERET sites tended to be better off than households in Control sites; they were more likely to be food secure and less likely to be severely food insecure than households in Control sites. Twice as many households from MERET sites as Control sites were food secure and 69% more households in Control than MERET sites were severely food insecure.

Although the majority (67%) of households reported being moderately or severely food insecure, very few households overall were considered to have experienced moderate or severe hunger during the four weeks prior to the survey, with no significant statistical differences between households in MERET and Control sites.<sup>20</sup> Based on the MAHFP, households in MERET sites are able to provide one more month of their household’s food needs than are households in Control sites. That is, households that participated in MERET have a slightly smaller food gap than households that did not. Female FGs in Tigray indicated that even in a good year, most households experience a 2-3 month food gap, largely because the size of their farms is so small; with sufficient land – and good soil fertility – they indicated that households could usually produce enough to last all year.

Table 6. Household food access and hunger.

% households	All	Intervention		
		MERET	Control	
Household Food Security (HFS)				
Food secure	25.9	35.0	16.1	*
Mildly food insecure	7.5	7.3	7.8	
Moderately food insecure	34.0	33.2	34.7	
Severely food insecure	32.6	24.5	41.4	*
<i>n</i>	1,437	743	694	
Household Hunger Scale (HHS)				

<sup>19</sup> FAO. 1996. Rome Declaration on World Food Security. Accessed: <http://www.fao.org/docrep/003/w3613e/w3613e00.HTM>.

<sup>20</sup> We assume the government’s emergency food assistance efforts had terminated more than four weeks prior to the survey, but it may be that households still had food reserves.



% households	All	Intervention	
		MERET	Control
Little or no hunger	91.8	93.4	90.0
Moderate/severe hunger	8.2	6.5	10.0
Months of Adequate Household Food Provisioning (MAHFP)			
Number of months with adequate food	9.6	10.1	9.0 *
<i>n</i>	1,454	755	699

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

## 8.2 Household Dietary Diversity Score (HDDS)

Dietary diversity refers to nutrient adequacy and in this context is defined as a diet meeting the minimum requirements for energy and all essential nutrients. The rationale for using dietary diversity as an indicator for dietary quality stems primarily from a concern related to nutrient deficiency and the recognition of the importance of increasing food and food group variety to ensure nutrient adequacy. Based on guidelines developed by the Food and Nutrition Technical Assistance (FANTA) project, the HDDS reflects the quality of household diets and is the total number of food groups, out of 12, from which household members consumed food in the 24-hours prior to the survey.<sup>21</sup>

Table 7 shows that the mean HDDS was not significantly different between households in the MERET and Control sites. Overall, households consume an average of five different types of food. Household diets are dominated by cereals, but a majority of households also consumed vegetables and oil. Nearly one-half of households reported consuming pulses. The diets of households in MERET sites differed little from that of households in the Control sites, but in potentially important ways; households in MERET sites consumed more fruit and meat – important sources of micronutrients and protein – than households in Control sites. MERET activities include promotion of high-value tree crops (e.g., oranges, mango, avocado, guava), which could help account for the higher consumption of fruits in MERET sites.

FGs in the south reported that intercropping had improved both the types of vegetables they consumed as well as what they could sell, both of which contributed to slightly increased income, better access to food, and diet diversity. Although vegetables were not yet mature at the time of field work, FGs expected fairly good production.

In the 2012 IE, HDDS was significantly higher for households in MERET sites (5.5) than for households in Control sites (4.8).

Table 7. Household diet diversity in the 24 hours prior to the survey.

Mean score	All	Intervention	
		MERET	Control
Mean HDDS <sup>β</sup>	5.1	5.5	4.8

<sup>21</sup> Swindale and Bilinsky. 2006.

Mean score	All	Intervention		
		MERET	Control	
Food groups consumed (% households)				
Cereal	96.8	95.8	97.9	
Tubers	39.1	44.9	32.8	
Vegetables	70.6	75.1	65.8	
Fruit	10.3	15.5	4.6	***
Meat	7.4	10.6	4.0	**
Fish	0.4	0.8	0.0	
Eggs	10.4	13.8	6.7	
Pulses	49.8	53.0	46.4	
Oil	67.8	70.1	65.4	
Dairy	23.0	27.0	18.6	
Sugar	40.9	43.3	38.3	
Condiments	97.8	98.7	96.9	
	<i>n</i> 1,454	755	699	

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*) and 0.1 (\*) levels.

<sup>a</sup> HDDS refers to the number of food groups (out of a possible 12 groups) consumed by households in the 24 hours prior to the survey.

### 8.3 Food Insecurity and Coping Strategies Index (CSI)

Analysis of coping strategies provides insights into a household's ability to deal with shocks and meet food needs during crisis periods, and generally represents their food security. The Coping Strategies Index (CSI) is a scale taking into account the frequency and severity of coping strategies that households employ to deal with food insecurity.<sup>22</sup> The scale used here is based on seven coping strategies (Table 8). Respondents are asked to report on the frequency they employed each strategy. The index is calculated as a weighted average of the frequency with which a strategy was employed, where the weights reflect the severity of food insecurity associated with each strategy. A higher CSI score indicates food insecurity.

Table 8 suggests that a majority of all households surveyed did not have enough food at sometime within the three month period immediately prior to the survey, and that households in Control sites were more likely than households in MERET sites to not have enough food during that time. This is consistent with the findings in Table 6, which suggest that on average, households have a three month food gap. Even within 30 days of the survey, a majority of all households reported not having enough food. Again, more households in Control sites reported food deficiencies within a month of the survey than did households in MERET sites.

Food consumption reduction strategies are among the first ways many households attempt to cope with a shock/stress. During the three months prior to the survey, the majority of all households tended to rely on less preferred or less expensive food, borrowing food or money to purchase it, and reducing the

<sup>22</sup> Maxwell and Caldwell. 2008.

number of meals eaten in a day (e.g., skip breakfast). Significantly more households in Control sites than in MERET sites reported relying on less preferred or less expensive food. The low CSI score suggests households are not sufficiently food insecure that they resort to the types of coping strategies that might have negative, longer-term consequences and be harder to reverse.

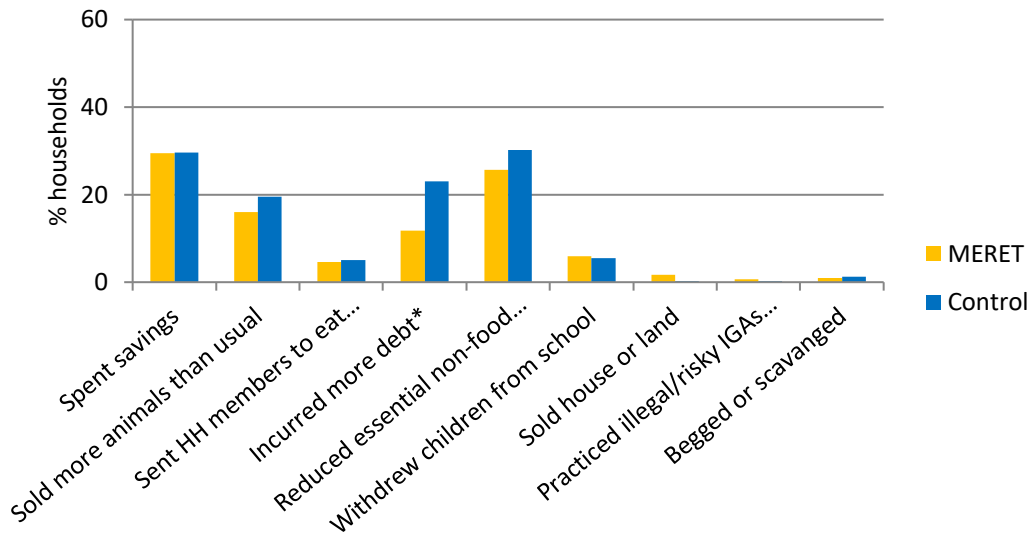
Table 8. Food insecurity and coping strategies.

% households	All	Intervention		
		MERET	Control	
Households without enough food in the 3 months prior to the survey	59.5	47.7	72.3	**
Households without enough food in the 30 days prior to the survey	56.4	45.0	68.7	**
	<i>n</i> 1,454	755	699	
Household reliance on various food insecurity coping strategies				
Relied on less preferred or less expensive foods	67.9	64.2	70.5	*
Borrowed food or money to buy food	54.7	56.1	53.7	
Reduced the number of meals or the quantity eaten per day	51.1	50.8	51.3	
Restricted consumption of some family members so others could eat	27.3	27.8	26.9	
Eat seed stock held for next season	24.1	27.5	21.6	
Skip entire day without eating	16.3	15.3	17.0	
Consumed taboo food, wild food, famine foods	8.6	7.5	9.3	
<b>Coping Strategies Index (mean score)</b>	<b>19.7</b>	<b>19.2</b>	<b>20.1</b>	
	<i>n</i> 865	360	505	

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

There were no statistically significant differences between MERET and Control sites in terms of the coping strategies reported in Figure 4. The top two strategies cited by all households were the use of household savings and reducing expenditures on essential non-food items. More households in Control sites than in MERET sites relied on borrowing money. Overall, few households resorted to taking children out of school, which can have long term negative consequences on an individual's future income generating abilities and opportunities.

Figure 4. Household reliance on more severe coping strategies in the 7 days prior to the survey.



NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

Qualitative findings from FGDs in Tigray and Amhara suggest that households do not consider themselves to be food insecure per se. There was widespread agreement among FGs that households in both sites were generally much better off than a number of years ago in terms of health, education, basic services, water and sanitation, and their housing, such that they did not consider the degree to which food was in short supply due to the drought to mean that they were food insecure. It is of note that “hunger” was not reported as one of the main impacts of the drought by most FGs, though some mentioned there was hunger prior to the provision of emergency food assistance by the government.

There was general acknowledgement that households were eating less preferred foods (e.g., sorghum rather than teff) and less food overall. Some, but not all, FGs reported they had reduced the number of meals eaten/day, typically skipping breakfast. Meals were often limited to two food groups, injera or boiled maize. In a good year, households in Tigray might eat porridge with butter in the morning, sometimes with bread and honey, injera with shiro (using different types of protein-rich beans), a snack before dinner (e.g., cooked barley or oats with beans), perhaps with bread, and finally more injera with shiro for dinner. Others indicated they were still able to provide three meals/day, but ate less at each meal, as well as less nutritious foods (e.g., less milk and eggs).

FGs in the south reported that intercropping had improved both the types of vegetables they consumed as well as what they could sell, both of which contributed to slightly increased income, better access to food, and diet diversity. Although vegetables were not yet mature at the time of field work, FGs expected fairly good production.

Some households resorted to consuming their seed stocks. Though most FGs indicated the drought had not increased conflict within the community generally, one of the few examples cited involved differences in opinion between men and women regarding using seed stored for planting as food or not. In such cases, women tended to prefer to feed their families whereas men tended to prefer planting the seed.

During the drought, government assistance (e.g., PSNP, emergency food relief) was the primary thing keeping many households from starving. At the same time, one FG lamented the limited scope of the safety net programmes, saying “the government arms are like a kangaroo’s – not very long or strong.” In some areas, NGO programmes provided food aid to the extreme poor (e.g., CARE Ethiopia in Oromiya). It was not uncommon for households to have sold all of their livestock in order to use the income for food and other household needs. FGs also felt that the degree to which the community shares its resources (particularly food and labor) helps ensure that families do not go hungry. There were communities, however, who reported not being able to share anything with others because they had nothing to share.

## 9. Resilience Capacity

While resilience is an ability to manage or recover from shocks, resilience capacities are a set of conditions, attributes, or skills that enable households and communities to achieve resilience in the face of shocks. Building resilience requires an integrated approach and a long-term commitment to improving three critical capacities.

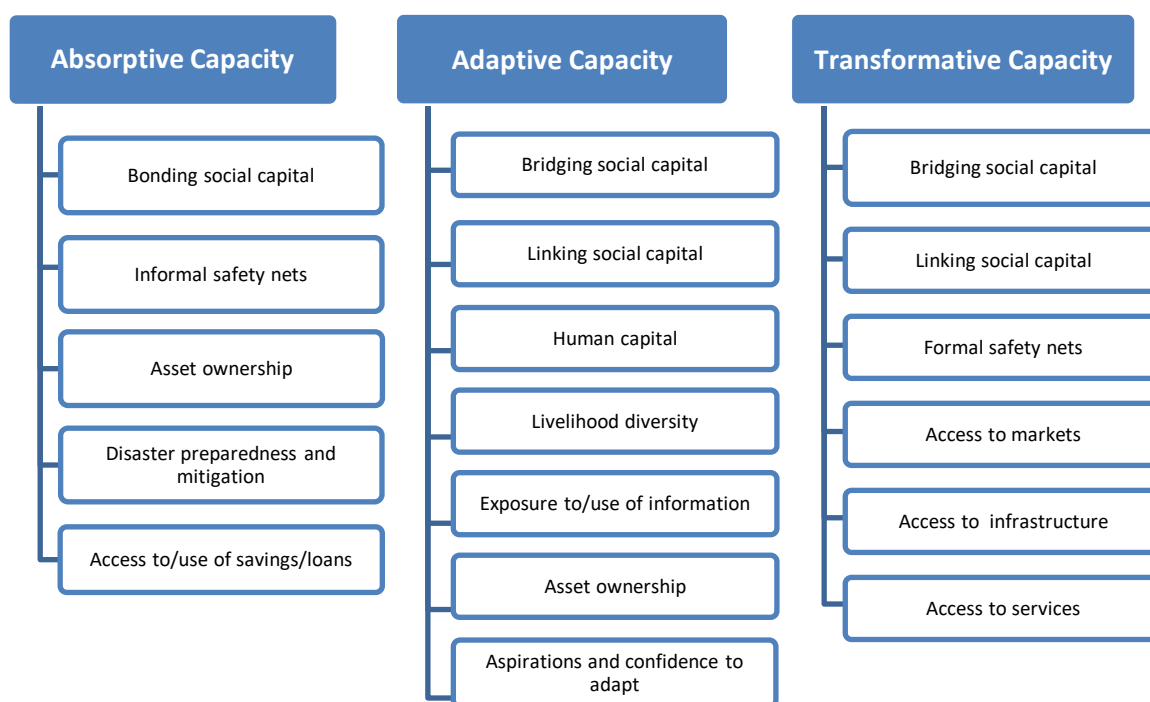
Absorptive capacity is enhanced through disaster risk management, which helps households and communities reduce disaster risk and absorb the impacts of shocks without suffering permanent, negative impacts on their longer-term livelihood security.<sup>23</sup> Adaptive capacity is strengthened by improving households’ and community’s ability to respond to longer-term social, economic, and environmental change. This entails promoting livelihood diversification, supporting asset accumulation, and improving the social and human capital available to vulnerable populations. Building transformative capacity often requires changing the governance and policy environment that defines the opportunities and constraints that affect household decision-making and involves improved access to infrastructure and services, strengthened community networks, and access to formal safety nets.

Figure 5 lays out the indicators that are used to measure each of the three capacities in this report. Some indicators are used to measure more than one capacity. The indicators are subsequently combined into indexes for each of the three capacities and finally into an overall index of resilience capacity, which is calculated using factor analysis. Indicators are based on primary data collected at the household level. Both the indicators and indexes of resilience capacity are used to understand the conditions, attributes, and skills that enable households to achieve resilience in the face of shocks.

Figure 5. Indicators for measuring resilience capacity.

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<sup>23</sup> Frankenberger et al. 2012.



## 9.1 Household Resilience Capacity Index and Sub-Indices

Given their complexity, resilience capacities can be measured by combining a variety of indicators of underlying concepts relevant in a particular setting into one overall indicator. Most of the indicators for absorptive and adaptive capacity are derived from the household questionnaire, though some are derived from the community questionnaire. Most of the transformative capacity indicators are derived from the community questionnaire, though some are derived from the household questionnaire. A detailed description of how the overall resilience capacity index and each sub-index were calculated is presented in Annex 4 of this report. All are placed on a scale of 0-100 in order to facilitate comparisons.

Table 9 suggests that participation in the MERET programme may confer some advantage to households in terms of their resilience capacity, and in particular, through improved adaptive capacity, or their ability to adapt and respond to changing conditions in ways that do not lead to negative impacts on household well-being (e.g., food security). The overall measure of resilience capacity – and adaptive capacity – is significantly greater for households that participated in MERET than for households that did not.

Table 9. Household resilience capacity index and sub-indices.

Mean index value	All	Intervention	
		MERET	Control
Resilience capacity index	40.3	42.7	37.8

\*

Mean index value	All	Intervention	
		MERET	Control
<i>n</i>	1,428	740	688
Resilience capacity sub-indices			
Absorptive capacity	37.9	40.1	35.6
<i>n</i>	1,452	753	699
Adaptive capacity	40.2	42.8	37.4 **
<i>n</i>	1,429	741	688
Transformative capacity	64.8	64.4	65.1
<i>n</i>	1,454	755	699

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

The concept of resilience is best captured in FGDs by probing for whether there are certain households within the community that were more successful dealing with the El Niño-influenced drought than others, and why. FGD participants in both MERET and Control sites indicated that those who work hard, improve soil fertility on their land, use agricultural inputs (e.g., fertilizer), use improved or drought-tolerant seeds, protect and manage their watersheds, etc. were perceived to be better able to deal with the drought. In essence, they describe households that engage in all the types of activities promoted through the MERET programme.

FGDs in both MERET and Control sites felt that households that participated in MERET were better off than others. In particular, both male and female FGs in Control sites – but especially the women – want the same type of programming support for their own communities. Not only did they acknowledge the improvements in production, in terms of improved soil fertility and water-holding capacity, they also valued the FFW support provided through the programme. In some cases, this was the more critical element. There was fairly widespread awareness of the practices themselves, particularly among men. In addition to technical support, groups indicated that they need some type of FFW support in order to put in the time and effort required to implement many of these activities (e.g., irrigation schemes, flood diversions, large gabions, terraces).

## 9.2 Elements of Household Resilience Capacity

This section examines individual indicators that contribute to resilience capacity. Given that households in MERET sites had a higher adaptive capacity index than households in Control sites, particular attention is given to indicators that contribute to adaptive capacity, including social capital, livelihood diversification, ownership of assets, and access to financial resources, including credit and savings.<sup>24</sup>

### Social Capital

As noted in Figure 5, social capital is an important element of adaptive capacity (as well as absorptive and transformative capacities). There are three types of social capital that enhance resilience – bonding social capital, bridging social capital and linking social capital. Households and communities with higher

<sup>24</sup> Some indicators can be used to measure more than one capacity. Thus, placement of an indicator in one capacity or another is somewhat illustrative; it may also contribute to the other capacities.

levels of bonding, bridging and linking social capital are inherently more resilient than those with only one type or none. They are described as follows:<sup>25</sup>

**Bonding social capital** is seen in the bonds between group members (e.g., families, communities, social groups). It involves principles and norms such as trust, reciprocity, and cooperation, and is often drawn on in a disaster context, where survivors work closely to help each other to cope and recover.

**Bridging social capital** connects members of one group to other groups. It often crosses ethnic/racial lines, geographic boundaries and language groups, and can facilitate links to external assets and broader social and economic identities. Bridging social capital makes a direct contribution to community resilience in that those with social ties outside their immediate group – especially a community – can draw on these links when local resources are insufficient or unavailable.

**Linking social capital** is seen in trusted social networks between individuals and groups interacting across explicit, institutionalized, and formal boundaries in society. Linked networks are particularly important for economic development and resilience because they provide resources and information that are otherwise unavailable. This type of social capital is often conceived of as a vertical link between a network and some form of authority or power in the social sphere.

#### Indices of Bonding, Bridging, and Linking Social Capital

Having good overall measures of social capital is important for understanding its strength within and across populations and how it changes over time, but also for measuring resilience. The quantitative data from the household survey are used to construct indexes of bonding, bridging and linking social capital.

The index of bonding social capital measures whether a household can rely on other members of their community when in need (receiving), and whether they feel they could help another community member in need (giving). The index of bridging social capital measures the same type of help (receiving/giving) but in regards to households residing *outside* of the respondent's community. The index of linking social capital is based on indicators of people's ability to form vertical linkages with sources of power and authority outside of their community. The bonding and bridging social capital indices are calculated on a scale of 0-6 and the linking social capital index on a scale of 0-2. Details of how each index is calculated are provided in Annex 5.

Table 10 shows that neither bonding nor bridging social capital is strong (mean score < 1 out of 6) at the time of the survey. The low bonding and bridging social capital indices suggest that households do not feel they can rely much on their neighbors, family and friends to help them if they needed it (receiving), or that they could help their neighbors, family and friends if asked (giving). Nor is there strong linking social capital, suggesting that households do not feel they have connections to people in authority that might help them in times of need. Although the differences are small, households in MERET sites were more likely than households in Control sites to feel they would be able to provide help if asked, either within their own community (bonding) or to friends, family, and relatives living elsewhere (bridging).

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<sup>25</sup> Aldrich. 2012.



This may not be surprising given the perception among FGDs in both the MERET and Control sites that households who participated in MERET were “better off” than those who did not, and would therefore be more likely to be able to provide help if someone asked.

Table 10. Household indices of bonding, bridging, and linking social capital.

Mean score	All	Intervention		
		MERET	Control	
Bonding Social Capital Index				
Receiving (0-3)	0.6	0.7	0.6	
Giving (0-3)	0.7	0.8	0.6	**
Bridging Social Capital Index				
Receiving (0-3)	0.5	0.6	0.5	
Giving (0-3)	0.6	0.6	0.5	*
Linking Social Capital Index				
Linking social capital (0-2)	0.5	0.6	0.5	
<i>n</i>	1,454	755	699	

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

Table 11 supports the data above in that less than one-fourth of all households provided or received help from a family member, friend or neighbor within their community (bonding), and fewer still provided or received help to/from someone outside of their community (bridging). However, twice as many households who had participated in MERET were able to provide help to someone they knew – either within their own community or in another community – than households who had not participated in MERET. This suggests that there is little to share generally, but that households who participate in MERET may be in a slightly better position to do so, which is consistent with input from FGDs.

Table 11. Household reliance on bonding and bridging social capital.

% households	All	Intervention		
		MERET	Control	
Bonding Social Capital				
Receiving	22.0	22.4	21.6	
Giving	21.5	27.2	14.5	**
Bridging Social Capital				
Receiving	11.2	12.7	9.6	
Giving	8.6	11.8	5.2	**
<i>n</i>	1,454	755	699	

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

## Participation in groups

Membership in community groups is another avenue for developing social capital, particularly bonding social capital. They provide opportunities to build or strengthen personal relationships with others. Respondents were asked about their participation in 17 possible types of community groups. Participation was based first on whether the group was reported as active in a community and subsequently whether any household member participated in the group. The most commonly cited groups in which households reported at least one participating member include mutual help groups (94%), civic groups (84%), religious groups (83%), women’s groups (74%), and farmers’ groups (71%). The complete results are presented in Annex 9, Table 35. Other groups in which more than one-half of all households have a member who participates include charitable groups, water users groups, trade or business associations, DRR/CCA committees, savings/credit groups, or community forest/rangeland users groups.

### Formal and Informal Social Support

Formal and informal support systems are also important to a household’s ability to deal with shocks/stresses.<sup>26</sup> Table 12 shows that approximately two-thirds of all surveyed households received formal food aid over the 12 months prior to the survey, 85% of which indicated they received formal support from the government (Annex 9, Table 36). Across all households, the main type of food aid received was in the form of FFW or CFW (43%), followed by general food distribution (25%) and school feeding (20%).

Approximately one-fourth of all households report having received other types of social support since the start of El Niño (Table 12), in particular, seeds (e.g., wheat) for planting (30%), and cash (25%) (Annex 9, Table 37). The main source of such support was provided by the government (49%).

Table 12. Sources of household social support over the 12 months prior to the survey.

% households	All	Intervention	
		MERET	Control
Households that received any formal food aid since the start of El Niño	69.9	66.2	74.0
Households that received other types of support since the start of El Niño	24.1	22.6	25.8
<i>n</i>	1,454	755	699

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

According to all FGDs and KIIs, there is a strong culture of sharing throughout Ethiopia. Social capital and social safety nets (formal and informal) are an important way that households cope with the everyday stresses of rural living. There is a strong commitment to “help those that are less fortunate”, particularly children and the elderly. Sharing typically occurs at an individual level, but communities also mobilize resources to the poorest, most in need households. Labor (both human and animal), food, money, crop seeds, and livestock are shared. Some communities mobilize resources with the help of committees

<sup>26</sup> Informal safety nets are often classified under absorptive capacity, and formal safety nets often classified under transformative capacity.

(e.g., Community Care Committees; CCC) that identify who is in need, collect resources (money, food, milk or whatever is needed), and help distribute them. As seen in the quantitative data, most all households surveyed indicated they belonged to a mutual help group in their community, and a large majority belong to a civic group or religious group, all of which have an element of helping others.

Some sharing is also done as “loans”, with the understanding that once the household has enough assets to repay the loan, they do so. Women in SNNPR reported high interest rates on informal loans; 10% on 1,000 birr and 100% interest on 50 kg of grain.

According to FGDs, the drought had no significant effect on relationships within the community because it has a strong cultural norm of supporting each other. Even as severe as the current El Niño-induced drought was for communities, there was widespread agreement that although everyone has less to share, “they still try to share what they can.” Most households produced less, sold their animals, and used up other assets (e.g., savings). Sharing was focused on making sure everyone survived, but not much more. In this regard, the government assistance (e.g., PSNP) received during the drought was important, as the transfer was often shared through a household’s social network.

For the most part, conflict was not considered worse due to the drought. There were, however, a few instances in which altercations occurred at water sources; someone either tried to jump in front of others queued up already, and an outsider attempted to collect water from a household’s personal pond (MERET household).

### Livelihood diversification

Livelihood diversification has long been promoted in development programmes as a pathway out of poverty,<sup>27</sup> as well as a way of improving household income and productivity.<sup>28</sup> In general, households spread risk or gain income by engaging in a wide diversity of livelihood activities, especially if those activities are not vulnerable to the same type of risk(s). Under most scenarios, households are more likely to be less resilient if they rely on a single source of income, especially if that source is susceptible to the most prevalent shock(s) the household is likely to experience.<sup>29</sup>

Table 13 shows that on average, households were engaged in three different livelihood activities. The top three reported activities were cash cropping (62%), livestock activities (56%), and reliance of FFW/safety nets (43%) (Annex 9, Table 38). Approximately three times as many households in MERET (9%) than Control (3%) sites report beekeeping as a livelihood activity, which may not be surprising given this is an activity promoted through MERET and can involve significant investment in equipment. Strikingly, there is very little engagement in off-farm activities (e.g., blacksmithing, bicycle repair, sewing) by any households, either in MERET or Control sites (less than 10% each).

Table 13. Household livelihoods.

	All	Intervention
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<sup>27</sup> Ellis. 2000.

<sup>28</sup> For example, see Bezu et al. 2010; Haggblade et al. 2007.

<sup>29</sup> Nelson et al. 2016.

		MERET	Control
Mean number of livelihoods	3.0	2.9	3.1
% households that changed livelihoods	44.2	44.5	43.9
<i>n</i>	1,454	755	699

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

Households also respond to shocks/stresses by diversifying into more than one livelihood activity or changing livelihood activities. In particular, livelihoods activities that are not subject to climate risks provide some buffer against total loss from agricultural activities. Table 13 shows that just less than one-half of all households surveyed indicated they had changed their livelihood activities over the 12 months prior to the survey. As described in Table 39 (Annex 9), the primary changes involved crop and livestock production – either increasing or decreasing the types of crops or livestock produced. Nearly all surveyed households (94%) report being engaged in crop production during the 12 months prior to the survey and only 3% (and significantly more MERET than Control households) indicated they experienced no constraints to production (Annex 9, Table 40). The primary constraint reported by all households was a lack of water/drought (81%). This is supported by data that show the main reason households cite (51%) for changing their livelihoods activities was drought (Annex 9, Table 41). However, 83% of households reported cultivating the same amount of land as in previous years (Annex 9, Table 42).

Insights from FGDs suggest households are fairly equally engaged in crop and livestock production, which is consistent with the quantitative findings. Teff, maize, and sorghum are the main crops grown, although enset, wheat, barley, and legumes (e.g., beans, chickpea) are also grown, depending on the area. Other crops include chat and gesho, a local shrub used as hop for making beer in Tigray. Many households also engage in growing horticultural crops, including some high-value tree crops (e.g., chiles, onions, tomato, cabbage, mango, avocado, papaya, guava). Gardens provide an additional source of income, particularly for households with access to irrigation.

Livestock production is important generally, including oxen, other cattle, and shoats, but the drought forced a lot of households out of livestock as their main livelihood and into other activities; FGs characterized this as a shift from production to sales only. Many households had to sell their entire herds, with slim prospects for restocking any time soon.

Most livestock products, such as milk, butter, cheese, and meat are not widely produced to be sold (except in close proximity to urban areas) but are rather consumed within the household. Thus, the reduction in livestock activities not only directly affected household income but also household food availability. Holidays, marriages and other celebrations more typically include chicken. Sheep/goat production and fattening is also common, especially for women. A number of communities reported NGO programmes with women’s groups to promote sheep/goat fattening, along with savings. In the south, men and women participated in livestock fattening. Women also tend to be the ones engaged in raising poultry, particularly in response to the drought, as poultry do not require a lot of area or feed, and are easy and inexpensive to raise. Although many poultry died as a result of the drought, the government was promoting subsidized hens, at least in some parts of the country.

Other income generating activities mentioned by FGDs include selling firewood, charcoal or tree poles (e.g., eucalyptus), daily labor, remittances, trading in food products, migrating to nearby towns for casual labor, and food assistance, primarily through the MERET programme’s FFW activities or the government’s PSNP. Most MERET households – especially in the highlands of Tigray and Amhara – have small woodlots on their farms, from which they harvest tree poles to sell for construction purposes. Firewood is used for baking bread in traditional, closed ovens. Although women still use charcoal for cooking, they are now more likely to be using fuel efficient stoves than open fires.

There was also wide acknowledgement that livelihoods had changed over the last year, primarily due to crop failure or reduced harvests and livestock disease and death from the drought. Households in MERET sites indicated they were able to make use of many of the practices they had learned through the programme, such as switching to improved varieties of local crops, use of drought-tolerant crops or crop varieties, better crop management practices, improving soil fertility and water-holding capacity of soils, water harvesting/conservation, and poultry production (i.e., selling eggs and hens). Although local hens are preferred for home consumption, modern hens lay bigger eggs and have higher production rates, producing eggs every day.

Although the sample sizes were small and translation could have been misinterpreted, there was an underlying sense from FGDs in Tigray and Amhara that households considered, for example, use of drought tolerant crops or crop varieties, or poultry raising, as activities they engaged in because they had been warned of the coming drought. That is, they did not necessarily consider using drought tolerant crops or crop varieties as a positive livelihood change in the absence of an impending drought.

### Ownership of productive and financial assets

Productive and financial assets may be used by households to increase income and to buffer themselves against shocks/stresses, and are therefore important components of a household’s resilience capacity.

The weighted asset indices are computed by multiplying the number of each type of asset (household consumer durables, productive, livestock) by the index value for that asset, and then summed. Asset weights are presented in Annex 6. The indices are scaled from 0 to 100 in order to be comparable.

According to the asset index in Table 14, households are generally asset poor, although households that participated in MERET have a higher asset index than households that did not (Control). In particular, households that participated in MERET have more and/or higher value livestock and productive assets than households in Control sites. Nearly all households (97%) own agricultural productive assets in the form of small farming tools (Annex 9, Table 43). Although the overall numbers are small, significantly more households in MERET sites (6%) than Control sites (1%) own some type of water pump used for irrigation.

Table 14. Asset index and sub-indices.

Mean index value	All	Intervention	
		MERET	Control

Asset index	17.4	19.9	14.7	**
Asset sub-indices				
Livestock	13.6	15.6	11.3	**
Consumer durables <sup>30</sup>	11.7	13.0	10.3	
Productive assets	15.9	17.6	14.1	*
<i>n</i>	1,453	754	699	

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*) and 0.1 (\*) levels.

Households were asked specifically if they sold any assets (consumer durables, productive, livestock) in the 12 months prior to the survey because they did not have enough money to cover normal expenses (e.g., food, school expenses, medical expenses). Table 15 suggests that nearly two-thirds of all households relied on distress sales of assets, and in particular, sale of livestock.

Table 15. Distress sales over the 12 months prior to the survey.

% households	All	Intervention	
		MERET	Control
HHs who sold at least one asset	63.6	63.4	63.8
Type of assets sold			
Consumer durables	16.7	14.0	19.2
Productive assets	20.7	22.9	18.3
Livestock	60.4	59.2	61.7
<i>n</i>	1,454	755	699

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*) and 0.1 (\*) levels.

This is consistent with input from all FGDs, who reported they sold their livestock – sometimes their entire herds – in order to deal with reductions in their normal sources of income and food as a result of the drought.

### Access to and use of financial assets

Table 16 reports on household access to cash savings and how the El Niño-related drought has affected savings. Approximately one-half of all households report having cash savings at the time of the survey. The majority (89%) of households keep their savings in some sort of savings group or at home (Annex 9, Table 44). Twice as many households that participated in MERET (22%) as households that did not (10%) keep their money in banks.

Although there were no observable statistical differences between households in MERET and Control sites for borrowing money over the 12 months prior to the survey, approximately one-third of all households report having taken out a loan in that time (Table 16). The main source of household loans was some type of savings group (52%), followed by a friend or relative (Annex 9, Table 45).

<sup>30</sup> See Annex 9, Table 33 for data on consumer durables. No statistically significant differences were observed.

More than one-half (58%) of all households report their savings decreased to some degree due to the drought (Annex 9, Table 44). Close to one-third (29%) indicated their savings remained stable, although it is unclear whether they were able to maintain their savings – both using and replenishing them – or whether they did not use them at all. As previously reported, nearly two-thirds of all surveyed households reported increasing their savings as a way to protect themselves against future shocks/stresses (Table 4).

Table 16. Household access to savings and loans.

% households	All	Intervention	
		MERET	Control
Households with cash savings	50.4	50.9	49.9
Households that took out a loan	35.1	30.1	40.5
<i>n</i>	1,454	755	699

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

Most household savings and loans are used to buy food, meet regular household needs, and to purchase livestock and agricultural inputs (Annex 9, Table 46 and Table 47). Approximately one-fourth of all households report using their savings (28%) or loans (24%) specifically to deal with the impact of the drought. More households that participated in MERET (5%) used their savings to replace lost assets than did households in Control sites (0.6%). Most FGs spoke of the importance of assets in helping them deal with the drought, primarily livestock and then cash (including savings). According to FGs, a loss of assets due to the drought was perceived as the main reason households were not able to deal with the drought, and a households' ability to build them back up was perceived as critical to their ability for dealing with future shocks/stresses.

The main reason given for households not borrowing money was fear of not being able to pay it back (52%), with significantly more households in Control (59%) sites than MERET (46%) sites reporting this as their main reason (Annex 9, Table 45). Interestingly, one-fourth of households indicated they did not take out a loan because they did not need the money. Although no statistical differences were observed between MERET and Control sites, 31% of households in MERET and 17% in Control sites indicated they did not need a loan because they had enough money. Very few households (< 5%) indicated that a lack of providers in their area, unfavorable terms, or inability to qualify deterred them from taking out a loan.

### Aspirations and confidence to adapt

Psychosocial capabilities, such as self-esteem and agency, are important traits that are hypothesized to give people greater resilience in the face of shocks. Recent research in Ethiopia has pointed to low self-esteem, low aspirations, and a fatalistic view among the poor as intrinsically linked to their inability to

take action to improve their material well-being.<sup>31</sup> Such traits are particularly disabling in the face of shocks, which require quick adaptation in order to successfully cope.

Table 17 presents mean scores of an index on “aspirations and confidence to adapt,” along with mean scores for each of the sub-components of the index. The four index components are: absence of fatalism, belief in individual power to enact change, exposure to alternatives to the status quo, and trust. These four concepts are considered to be positively associated with having aspirations and confidence to adapt to change, which is important for learning and adapting to new conditions, such as those under climate change.<sup>32</sup> Generally, lower aspirations or confidence can undermine the ability of households to escape poverty or food insecurity.

The indexes for the sub-components of the overall aspirations and confidence to adapt index are constructed to be comparable with each other, and are scaled from 0 to 100. The methods for calculating the sub-indexes and the overall index are detailed in Annex 7.

The values of the indexes are generally somewhat high, suggesting that there is some opportunity – or desire – for people to be exposed to ways of life that differ from their own, and a belief that they as individuals can facilitate positive change in their lives. At the same time, there remains some sense of fatalism.

Table 17. Household aspirations and confidence to adapt index.

Mean score	All	Intervention	
		MERET	Control
Index of aspirations and confidence to adapt	56.4	57.3	55.3
Sub-components of the index			
Absence of fatalism	42.1	40.6	43.8
Belief in individual power to enact change	67.7	69.2	66.1
Exposure to alternatives to the status quo	65.2	66.5	63.7
Trust	61.3	61.6	61.0
	<i>n</i> 1,431	743	688

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

FGDs varied somewhat across MERET and Control sites in terms of their confidence – or lack thereof – in being able to improve their lives. However, this difference was at least partially attributable to the receipt of outside support – either from the government or an NGO – rather than some sense of fate, lack of trust, or belief that they as individuals could not change their lives. Overall, FGs tended to perceive that it was within their ability to improve their lives, if they worked hard. In FGDs, those groups who had received training and support through MERET tended to be somewhat more confident in their abilities to adapt than groups who had not received such support (Control). However, it should be noted that the “receipt of support” was not restricted to just technical support, but very much involved food

<sup>31</sup> Bernard et al. 2012.

<sup>32</sup> Fournier. 2009.



support. FGs in both MERET and Control sites tended to consider the FFW transfer as the most highly-valued part of the programme. In particular, women’s FGs considered support in the form of food assistance either from the government or an NGO as being the primary source of their confidence in being able to deal with future shocks/stresses. Those who received support tended to feel confident, while those who did not receive any support tended to express a lack of confidence. In these cases, FGs felt that the extra support would get them through a crisis.

### Access to markets, services, and infrastructure

Access to markets, services, and infrastructure affect household and community capacity to deal with shocks/stresses. They are typically measured as elements of transformative capacity, as they are necessary in order to ensure long-term, sustainable resilience capacity.

The access to markets index is comprised of the three indicators measuring the distance a household needs to travel to markets for selling agricultural products, purchasing agricultural inputs, and buying/selling livestock. It is calculated using a scale of 1-7 that is based on distance to the market, where “1” represents markets within the village (i.e., 0 km) and “7” represents markets more than 25 km away. The index is an average of the summed values of the three indicators. Household access to market variables are binary, where a value of “1” indicates a market within 5 km of the household. Households that are more than 5 km from the market of interest are assigned a value of “0”.

Results in Table 18 suggest that market access is somewhat challenging, given the somewhat high mean score across all households. This is supported by the data for each type of market. Only about one-fourth of all households surveyed report a livestock market within 5 km of their village and only slightly more than one-third report a market where they can sell agricultural products within the same distance. Thus, households have to travel some distance to sell their agricultural products. In contrast, more than one-half of all households indicate they have fairly good access ( $\leq 5$  km) to markets where they purchase agricultural inputs.

Table 18. Household access to markets.

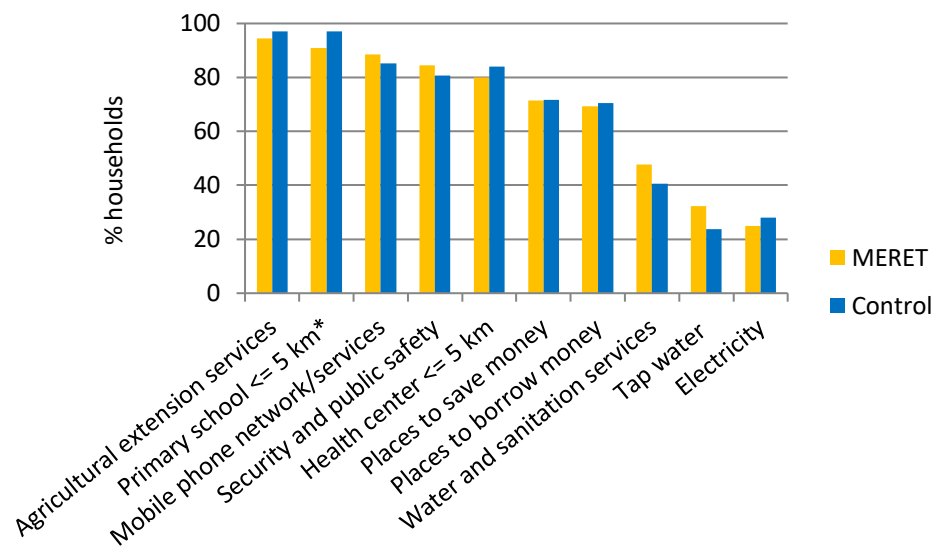
Mean score	All	Intervention	
		MERET	Control
Access to markets index (1-7)	4.8	4.8	4.9
Household access to markets (% households)			
Markets for selling agricultural products	37.1	37.6	36.5
Markets for purchasing agricultural inputs	53.6	47.4	60.2
Markets for selling/purchase livestock	27.9	30.6	24.9
	<i>n</i> 1,454	755	699

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

Figure 6 reports results when households were asked whether certain basic services were available to them in their community. According to the data, most services are available to households in the MERET and Control sites surveyed as part of this assessment. Less than one-half of households report having

access to water and sanitation services, and only about one-fourth have access to tap water or electricity. More households in Control than in MERET sites report a primary school  $\leq$  5 km.

Figure 6. Basic services and infrastructure households perceive to be available.



NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

Availability of basic services and infrastructure, i.e., their physical presence, is one element of transformative capacity. Those services and infrastructure must be of use – in terms of their accessibility and quality – as part of the enabling environment in which households and communities operate and make decisions. When asked whether anyone in the household had ever faced problems in accessing services when they were needed (e.g., because of distance, lack of documentation, gender, ethnicity, or other reasons), a majority of all households indicated they did not, with no statistically significant differences between households in MERET and Control sites (Annex 9, Table 48). The most problematic services for households to access were electricity, TV signal, and mobile phone service.

Figure 12 (Annex 9) reports on the percentage of households that feel the services and infrastructure to which they have access meet – or more than meet – their basic needs. Overall, there is widespread satisfaction (> 60%) that basic services at least meet the needs of most households, if not more than meet their needs. The least satisfactory were water and sanitation services.

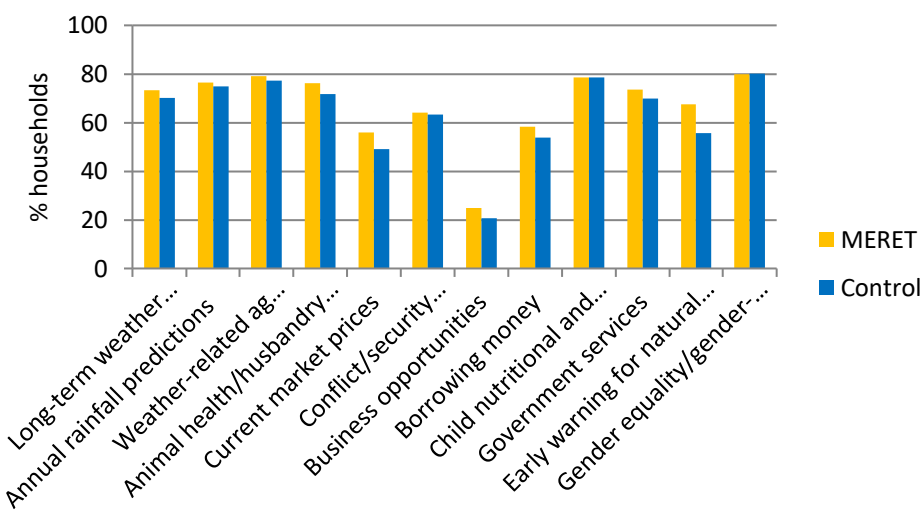
Quantitative results presented above are consistent with input from FGDs. There was widespread agreement that households – in both MERET and Control sites – had much improved availability of schools for their children, health services (including women’s reproductive health), telecommunications and information (e.g., cellphone service), electricity, sanitation and hygiene, and in Tigray and Amhara, potable water. Households often lack money to access certain services (e.g., pay for medicine, health clinic fees), but by and large communities feel that the government is providing better services.

### Access to and use of information

Access to and use of information is an important component of resilience. It contributes to the adaptive capacity of households and communities, or the capacity to make informed decisions and take proactive actions to cope with shocks/stresses.

Nearly all surveyed households (96%) reported receiving information useful to their household decision-making process, with no statistical differences between MERET and Control sites (data not shown). The most commonly cited types of information households received during the 12 months prior to the survey include information on gender equality/gender-based violence, child nutrition and health, weather-related agricultural recommendations (e.g., what types of crops to grow), rainfall prospects for the coming season, and animal health/husbandry (Figure 7).

Figure 7. Access to information.



NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

Having access to information to inform household decision-making is of little value if the information is not actually used for making decisions. The majority (>73%) of all households report having benefitted from decisions they made using the information they accessed (Annex 9, Table 49). In particular, of those households that received information regarding business investment opportunities, more households in Control (88%) than MERET (69%) sites report having benefitted from the information.

FGD participants indicated they had received information about the likelihood of drought as a result of El Niño ahead of time, but not in enough time to take any relevant measures to reduce its impact. According to FGs, information was available through government agents, the radio and TV, as well as in community meetings. Praying was the main strategy employed by the time households learned of it. Although most FGDs did not expand significantly on their access to other types of specific information, there seemed to be a general sense that information useful for household decision-making was fairly accessible. This is consistent with the quantitative data.

FGs in Oromiya reported they did not find weather forecasts useful because the reports were specific to nearby towns, and did not account for the local and highly variable topography and microclimates in

their communities. One FGD indicated that government warnings about the drought were broadcast over the radio but lacked recommendations about how to prepare.

### 9.3 Participation in MERET

Given the focus of the study on assessing the influence of MERET programming on household and community resilience capacity in response to the El Niño-influenced drought in 2015, this sub-section documents whether households in MERET and Control sites understand and implement important soil and water conservation practices that can enhance their ability to adapt to climate variability and build resilience to climate-related shocks/stresses.

The majority of all households reported they were aware of the types of soil and water conservation practices promoted through MERET, regardless of whether they participated in the MERET programme or not (Control sites) (Table 19). Significantly more households in MERET than in Control sites reported awareness of soil fertility management and moisture conservation practices.

Although nearly three-fourths of all households are aware of irrigation practices, only 31% reported having access to irrigation, with no significant differences in access between households in MERET and Control sites (Annex 9, Table 50). The main reason households cited for not using irrigation was lack of water (67%). One-fourth of all households also report that irrigation does not reach their fields. Given that small-scale irrigation systems were promoted through the MERET programme, these results may be slightly misleading. A better question may have been to first ask households whether they had *access* to irrigation water (rather than if they had used any irrigation), then follow up with why they may not have used it, including “no irrigation system” as a response. It was clear from FGDs that the households that had access to water (e.g., household ponds), had better production outcomes generally, whether it was crops, aquaculture, livestock, or garden/horticultural products.

Table 19. Household awareness of soil and water conservation practices.

% households	All	Intervention		
		MERET	Control	
Erosion control <sup>†</sup>	97.7	99.2	96.1	
Forestry <sup>‡</sup>	97.3	98.6	95.9	
Soil fertility management	94.2	97.1	91.1	*
Moisture conservation <sup>‡</sup>	91.5	96.3	86.3	*
Improved fodder production	81.4	85.2	77.4	
Irrigation	72.7	77.4	67.7	
	<i>n</i> 1,454	755	699	

NOTES: Stars represent statistical significance at the 0.01 (\*\*), 0.05 (\*) and 0.1 (\*) levels.

<sup>†</sup> Erosion control includes: bunds, terracing, water harvesting/dispersion, and gully treatment.

<sup>‡</sup> Moisture conservation includes: moisture conservation and water source development.

<sup>§</sup> Forestry includes: agro-forestry (high-value crop trees) and reforestation (tree planting).

Table 20 shows results on whether households reported practicing any of the MERET-promoted types of soil and water conservation practices on their own land, regardless of whether or not they participated in MERET. Virtually all households report using at least one of the types of SWC practices promoted through MERET, which may not be surprising, given that the PSNP and government mass mobilization efforts promote many of the same activities as the MERET programme. Fewer households in Control sites than in MERET sites practice erosion control, soil fertility management, forestry, or improved fodder practices on their own land. Nearly 90% of all households report receiving technical support from the MoA while approximately one-third received support through PSNP. Not surprisingly, significantly more households in MERET sites report receiving support through MERET than do households in Control sites, but there is obvious spill-over. Nearly 10% of households in Control sites report getting technical support through the MERET programme. Additionally, twice as many households in Control than MERET sites report getting technical support from other farmers, although there is no observable statistically significant difference in the current analysis.

Table 20. Household use of soil and water conservation practices on their own land.

% households	All	Intervention		
		MERET	Control	
Households adopting at least one SWC practice on their own land	98.1	98.8	97.3	
<i>n</i>	1,454	755	699	
Soil and water conservation practices				
Erosion control	87.1	94.2	79.4	**
Soil fertility management	79.6	85.2	73.5	**
Forestry	78.3	88.0	67.8	**
Moisture conservation	55.4	60.5	49.8	
Improved fodder production	51.7	57.9	44.9	*
Irrigation	28.3	30.9	25.6	
<i>n</i>	1,454	755	699	
Source of technical support				
MoA	86.7	85.6	87.9	
MERET programme	52.6	81.0	8.1	***
PSNP	29.0	24.0	34.8	
Other farmers	8.4	5.5	11.8	
NGOs	7.7	10.0	5.0	
<i>n</i>	1,349	728	621	

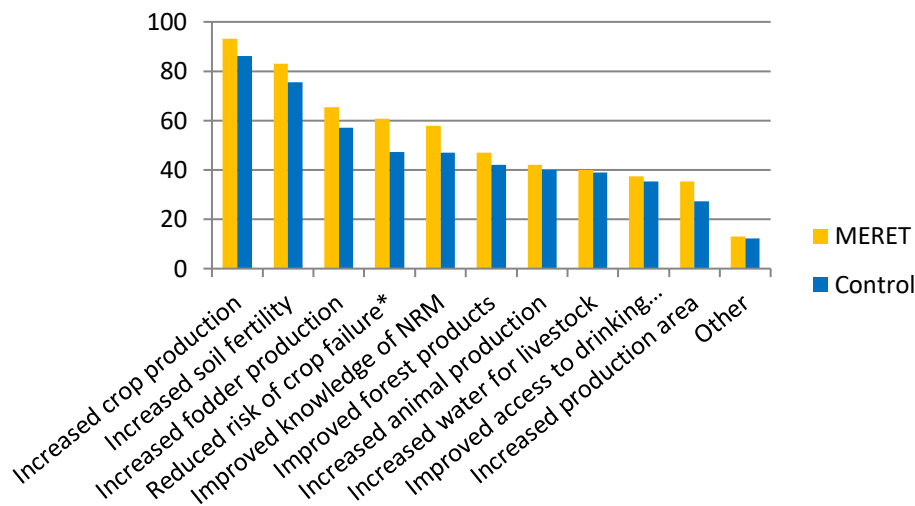
NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*) and 0.1 (\*) levels.

Figure 8 clearly shows widespread appreciation for the benefits of soil and water conservation practices. Across all households, most perceive that by using SWC practices, they will have better soil fertility and higher crop yields. A majority of households also perceive that such practices contribute to increased

fodder production and reduced risk of crop failure. More households in MERET than Control sites report reduced risk of crop failure as a benefit.

While these results are quite positive overall, in terms of households’ understanding of some of the benefits of SWC practices generally, they also suggest areas for improvement. For example, much is made about the benefits of reclaiming degraded land through certain SWC practices (e.g., gully rehabilitation), which increases the amount of land available for production. Yet only approximately 30% of households in either MERET or Control sites reported this as a benefit. Additionally, only 5% of all households indicated they increased the amount of land they cultivated in the 12 months prior to the survey (see Annex 9, Table 42), though decisions regarding how much to cultivate may not necessarily have been tied to the availability of land. Nonetheless, there remains room for improvement in households’ understanding of the benefits that can accrue from implementing certain practices promoted through MERET.

Figure 8. Household's perceived benefits of using SWC practices on their land.



NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\* ) and 0.1 ( \* ) levels.

As Table 21 suggests, the majority of all households surveyed – regardless of whether they participated in MERET or not – are aware that the types of various soil and water conservation practices implemented by MERET are also implemented on communal lands. What is not clear from this data is whether it was a result of MERET’s integrated participatory watershed management approach, learned as spill-over from MERET (e.g., neighbor to neighbor), or through some other effort that promotes the same types of practices (e.g., PSNP, community mobilization). More households that participated in MERET are aware of certain practices having been implemented on communal lands (e.g., erosion control, soil moisture conservation, and improved fodder production) than households that did not (Control). Although this may reflect MERET’s use of a participatory watershed development approach, the data are not conclusive.

Table 21. Household awareness of SWC practices implemented on communal lands.

% household	All	Intervention		
		MERET	Control	
Erosion control	93.3	96.8	89.4	**
Forestry	91.8	94.8	88.6	
Moisture conservation	80.4	90.2	69.8	**
Improved fodder production	62.5	72.1	52.2	*
Soil fertility management	50.6	57.1	43.5	
Irrigation	28.8	31.0	26.3	
	<i>n</i> 1,454	755	699	

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

All FGs perceived the MERET programme to be extremely beneficial; households in MERET sites wanted the programme not only to continue but to expand to include more households, and households in Control sites all wanted the same type of programming in their communities. Even without programme support from MERET, households were generally very knowledgeable about the potential benefits of the types of practices promoted through the MERET programme:

- ❖ SWC activities protect/prevent soil from eroding (i.e., more land to farm), contribute to soil moisture content, help ground water recharge (i.e., groundwater remains accessible), allow for recovery/regeneration of indigenous vegetation, ground cover, and grasses (e.g., cut and carry);
- ❖ Terracing stabilizes farm land, protects soil from eroding, reduces flooding, allows water to percolate into the ground, can provide grass as cut and carry for livestock, and improves soil fertility;
- ❖ Planting trees (afforestation/reforestation) helps improve soil fertility, serves as a wind break (helping to reduce soil lost to wind erosion), provides wood for home use and for sale (e.g., construction, firewood), and provides shade for people, livestock, and coffee plantings;
- ❖ Water harvesting/diversion activities increase the availability of water for crop and household use, reduce erosion from flooding, help with groundwater recharge, reduce the time burden on women in fetching water, and help reduce contamination and water-borne disease;
- ❖ Area enclosures improve biomass production and provide food for livestock – either through managed grazing and/or cut and carry, help reduce erosion, and contribute to forage development (e.g., vetiver, elephant grass, sesbania).

Overall, FGs perceived that, “due to improving the soil fertility, crop production and forage production are improved, which allows [households] to create assets – both for selling and using, and can help mitigate the severity of drought.” At its core, this is a key tenet of the Theory of Change (TOC) for the

MERET approach to reducing vulnerability and chronic food insecurity through natural resources rehabilitation and land productivity enhancement.<sup>33</sup>

## 9.4 Community Resilience Capacity Index and Sub-Indices

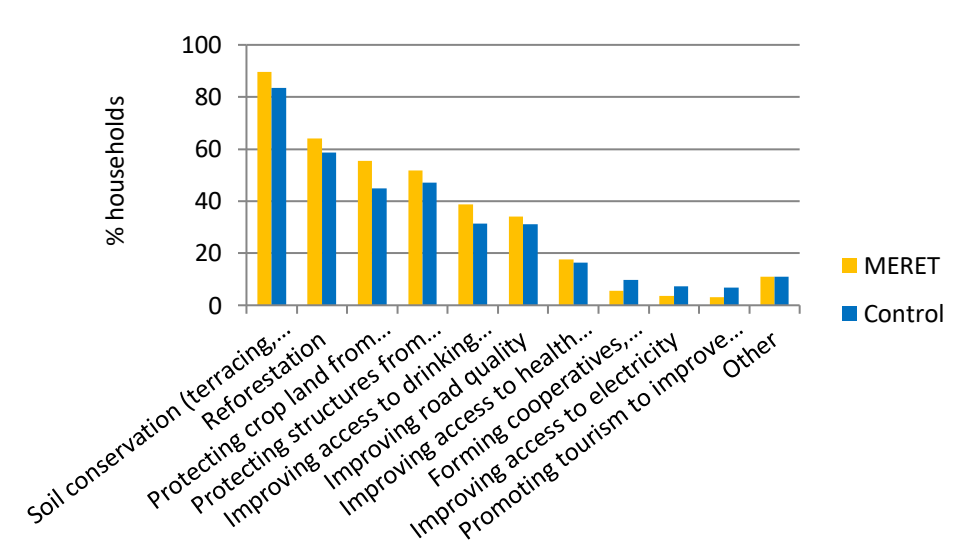
For the purposes of this study, community resilience capacity is defined as:

*“The general capacity of a community to absorb change, seize opportunity to improve living standards, and to transform livelihood systems while sustaining the natural resource base. It is determined by community capacity for collective action as well as its ability for problem solving and consensus building to negotiate coordinated response.”<sup>34</sup>*

A defining feature of community resilience is community capacity for collective action as well as for collective problem solving and building consensus in order to negotiate coordinated response to shocks/stresses. Data from the community survey are not included in this analysis due to the incomplete nature of the dataset across kebeles. However, the following data are from questions in the household survey regarding collective action.

Most households surveyed (84%) had participated in some form of collective action (e.g., activities that benefit the community) since the start of El Niño, with the most commonly cited activities including soil conservation, reforestation, and flood protection of both land and physical structures. Improving roads and access to potable water were reported by approximately one-third of all households.

Figure 9. Household engagement in activities that benefit the community.



NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

Insights from the qualitative data generally support the findings from quantitative data; households are heavily engaged in activities that benefit the community as a whole – particularly activities to protect or

<sup>33</sup> TANGO. 2012.

<sup>34</sup> Walker et al. 2010.



restore natural resources (e.g., SWC, gully rehabilitation, flood diversion structures) – and that they implement “collectively”. It is, however, somewhat challenging to tease out the “what” and “how” of collective action within and between MERET and Control sites, given that most of the activities in either site could have been implemented as part of MERET, PSNP, the government’s mass mobilization efforts, or any combination thereof.

Part of this “confusion” is a natural outgrowth of how MERET and PSNP evolved over time and the more recent addition of the government’s efforts to rehabilitate degraded lands through community mobilization whereby rural communities volunteer to work on land rehabilitation activities, usually for 60 days per calendar year. Many of these activities are similar to the ones implemented under MERET and follow MERET guidance.<sup>35</sup> While explicit differences do exist between all three initiatives, the bottom line is that MERET has served as a milestone and the model for both the PSNP and the government’s community mobilization efforts. For that, it deserves considerable credit.

According to FGDs, households clearly participate in collective action through mass mobilization by the local government, focusing on maintenance of roads, schools and health centers, as well as SWC and land rehabilitation activities. FGDs in MERET and to a lesser degree Control sites indicated they also participated in hillside terracing, construction of check dams and big trenches, and afforestation (with trees grown in nurseries as part of MERET) on communal lands, though they did not necessarily indicate under what context these types of activities occurred (e.g., mobilization, MERET, PSNP).

Although this “blurring of the lines” potentially complicates what might otherwise be a straightforward interpretation, there is tremendous community effort being put into activities that provide long-term benefits to the community through landscape-level natural resources management practices that are promoted by all three efforts.

## 10. Multivariate Analysis

The results of multivariate regression analysis presented in this section report the coefficients of the explanatory variables of interest (MERET participation and SWC activities index), household characteristics, and significant resilience capacity components at the 0.1 level and below. The full regression models can be found in Annex 8 and include all indicators controlled for in the analysis. The difference-in-differences (DID) analysis indicators also include MERET participation, a variable for survey round, and an interaction term between the two. The 2012 MERET IE represents the first round, with a score of 0 and the 2016 analysis represents the second round, with a score of 1. Data also include the elasticity coefficient, which compares the percentage change in the outcome variable to changes in the indicators, with the exception of those indicators that are binary. Likewise, this provides a basis for comparing the magnitude to which the indicators impact the outcome.

Food security is analyzed for participation in MERET, engagement in SWC activities, resilience capacity components, and household characteristics (Table 22). The regression results show a significant and positive relationship between MERET sites (i.e., participation in MERET) and household food security; households are more likely to be food secure if they participate in the MERET programme than

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<sup>35</sup> TANGO. 2012.

households who do not (Control sites). This is consistent with input from FGDs who overwhelmingly perceived that households who participated in MERET were better able to deal with the drought, and that this was due, at least in part, to receipt of a food transfer. There was genuine understanding of – and appreciation for – the longer-term benefits of programme activities in terms of soil productivity, increased yields, water infiltration, etc., but “extra” food had a more immediate and tangible effect on household well-being.

Aspirations, exposure to information, savings, access to markets, and access to infrastructure also have positive impacts on household food security. Based on the elasticity coefficient, assets have the greatest impact on food security such that a 10% increase in the asset index results in a 1.2% increase in food security. Household size is negatively associated with food security suggesting that larger households are less food secure. This is consistent with qualitative findings; FGs reported that larger families were the most resource-limited and the most negatively affected by the drought.

Table 22. Relationship between HFS , MERET participation, resilience capacity and household characteristics.

HFS	Coefficient	Elasticity
Intervention		
Number of shocks	-0.29	-0.06
Soil and water conservation activities index	-0.07	-0.02
MERET participation	1.40 **	-
Resilience capacity components		
Assets index	0.14 ***	0.12
Aspirations index	0.02 ***	0.06
Exposure to information	0.21 *	0.08
Savings	0.70 **	-
Access to markets	0.66 *	0.08
Access to infrastructure	0.42 *	0.05
Household characteristics		
Female-headed household	0.02	-
Age of household head	0.01	0.01
Household size	-0.17 **	-0.04
<i>n</i>	1,412	

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*) and 0.1 (\*) levels.

Table 23 shows a significant and positive relationship between participation in MERET and dietary diversity such that households participating in MERET are more likely to have more diverse diets than households that did not (Control sites). Elements of resilience capacity that contribute to HDDS include bonding social capital, bridging social capital, access to markets, assets, and livelihoods diversity. Again, household size is negatively associated with HDDS, suggesting larger households are likely to have less

diverse diets than smaller households. Overall, the assets index has the greatest impact on HDDS; for every 10% increase in assets, dietary diversity increased by 1.8%.

Table 23. Relationship between HDDS, MERET participation, resilience capacity, and household characteristics.

HDDS		
	Coefficient	Elasticity
Intervention		
Number of shocks	-0.02	-0.02
Soil and water conservation activities index	0.05	0.05
MERET participation	0.32 **	-
Resilience capacity components		
Assets index	0.05 ***	0.18
Number of livelihoods	0.14 **	0.08
Bonding social capital	0.11 **	0.03
Bridging social capital	0.09 *	0.02
Access to markets	0.21 **	0.11
Household characteristics		
Female-headed household	0.00	-
Age of household head	0.00	-0.03
Household size	-0.06 ***	-0.06
<i>n</i>		1,426

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*) and 0.1 (\*) levels.

Results presented in Table 24 indicate that participation in MERET and engaging in soil and water conservation activities are each positively associated with recovery. Bridging social capital, exposure to information, access to markets, and assets also have a positive impact on a households' ability to recover from shocks. Conversely, human capital, household size and access to infrastructure have a negative relationship with recovery. Based on the elasticity coefficients, access to markets has the greatest magnitude of impact on recovery, where every 10% increase results in a 2.5% increase in a household's ability to recovery from shocks.

Table 24. Relationship between recovery, MERET participation, resilience capacity, and household characteristics.

Recovery		
	Coefficient	Elasticity
Intervention		
Number of shocks	-0.31	-0.40
Soil and water conservation activities index	0.18 **	0.18
MERET participation	1.04 **	-

Recovery	Coefficient		Elasticity
Resilience capacity components			
Assets index	0.06	***	0.17
Bridging social capital	0.14	*	0.14
Human capital	-0.005	**	0.00
Exposure to information	0.17	**	0.17
Access to markets	0.24	**	0.25
Access to infrastructure	-0.26	*	-0.16
Household characteristics			
Female-headed household	-0.02		-
Age of household head	0.00		0.00
Household size	-0.09	***	-0.10
	<i>n</i>	1,374	

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*) and 0.1 (\*) levels.

### Difference-in-differences (DID)

To capture change over time and potential differences between the first (2012) and second (2016) rounds of data collection for MERET and Control sites, a subset of the 2012 MERET IE dataset was used.<sup>36</sup> To detect this change, three variables were included in regression analysis: 1) MERET participation (i.e., MERET versus Control), 2) survey round (2012 versus 2016) and 3) an interaction between the two variables. A statistically significant interaction would indicate change over time, with the coefficient representing the amount of the relative change in the treatment (MERET) compared to the control between the two rounds (i.e., the difference-in-differences).

For reference, Table 25 shows the mean values of all indicators used in the DID regression analysis. As previously noted, the DID used a sub-sample of households from the 2012 IE, thus the sample sizes differ between the two survey rounds. Because Table 25 does not include the entire population of households sampled in the 2012 IE, the mean values presented here are not the same as those presented in the 2012 IE final report.

Table 25. Mean values of indicators used in DID.

Mean score	2012			2016		
	All	MERET	Control	All	MERET	Control
Numbers of shocks (0-13)	0.7	0.7	0.6	2.9	3.0	2.9
Savings	0.2	0.3	0.2	0.5	0.5	0.5
Assets index	117.4	126.4	108.4	131.5	150.1	111.4
Number of livelihoods	1.4	1.4	1.4	3.0	3.1	2.9

<sup>36</sup> Because there were many more woredas sampled in 2012 than 2016, only those woredas which were sampled in 2016 (and which were also sampled in 2012) were included in the DID analysis.

Female-headed HH	0.1	0.1	0.2	0.2	0.2	0.3	
Age of household head	45.0	44.5	45.5	44.3	45.2	43.3	
Household size	5.3	5.4	5.2	4.8	5.0	4.7	
Highest education of HHH	2.2	2.4	2.1	2.6	2.7	2.5	
Literacy	0.5	0.5	0.4	0.6	0.6	0.5	
HDDS	5.3	5.7	5.0 **	5.1	5.5	4.8	
	<i>n</i>	719	360	359	1,454	755	699

The results of the DID analysis presented in Table 26 suggest that HDDS is negatively associated with the number of shocks experienced by a household, and positively related to household participation in the MERET programme. That is, household dietary diversity tends to decrease as households experience more and more shocks; households participating in MERET tend to have higher HDDS. HDDS is positively associated with savings, assets, livelihoods diversity, and level of education of the household head. As a measure of food access, HDDS is considered a proxy for wealth. These results support the theory that with increased wealth, households can afford to purchase more food and more diverse foods (e.g., of better nutritional quality). All other things being equal, HDDS is improved because of increased assets. The lack of significance in the interaction term (i.e., the DID) suggests that the differences between Round 1 and 2 for households in MERET sites are not different from the differences between Round 1 and 2 for households in Control sites.

Table 26. Relationship between HDDS, MERET participation, survey round, resilience capacities, and household characteristics.

HDDS		
	Coefficient	Elasticity
Intervention		
Number of shocks	-0.14 *	-0.06
MERET participation	0.62 **	0.06
Survey Round	-0.51	-0.07
Interaction <sup>†</sup>	-0.18	-0.01
Resilience capacity components		
Assets index	0.01 ***	0.13
Number of livelihoods	0.29 ***	0.14
Savings	0.39 ***	0.03
Household characteristics		
Female-headed household	0.23	0.01
Age of household head	0.00	-0.01
Household size	0.00	0.00
Highest education of the HH	0.01 **	0.03
Literate	0.06	0.00
	<i>n</i>	2,171

HDDS	Coefficient	Elasticity
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NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

† Interaction between Survey Round and MERET.

Overall, households that participate in the MERET programme tend to be better off than households that do not. However, it is difficult to determine from this analysis whether that is specifically due to the MERET programme itself, or whether they were better off to begin with (i.e., at the 2012 MERET IE). It is possible, however, to infer that households that participate in MERET continue to be better off after four years, including after the El Niño-induced drought, than those who did not participate in the programme. That is, their ability to deal with shocks/stresses has not eroded over time.

## 11. Conclusions

This assessment was designed to examine the influence of the MERET programme on household resilience to the El Niño-induced drought on livelihood and food security in community watersheds that participated in WFP’s MERET programme and those that did not (i.e., Control sites). Sampled watersheds were selected from four regions in which MERET operated (i.e., Tigray, Amhara, Oromiya, SNNPR) and were identified by WFP as having been most heavily affected by the 2015 El Niño event. Sampling involved a total of 20 purposively selected MERET and Control sites in 10 woredas that had been sampled in the 2012 MERET IE.

There was little practical difference – and no statistical differences – between MERET and Control households in terms of most basic demographic characteristics, educational level, ownership of assets, livestock, or livelihood strategies. Households in Control sites relied more on non-agricultural wage labor than did households in MERET sites, but otherwise the sites relied on similar livelihood strategies as their main source of income. The similarities of these household characteristics across the two groups suggests that there was no significant selection bias that could explain observed differences between the MERET and Control groups other than the effect of participation in the MERET programme.

Households in both sites experienced shocks/stresses in the same ways – the same types of shocks/stresses were reported, and they experienced the same types of impacts. Overall, all households were severely impacted by the drought; crop production was dramatically reduced (or failed completely), many livestock died, household assets (including livestock) were depleted, income was dramatically reduced, and water for household and livestock use became scarce, which increased the time burden on women. However, there is also some indication that the magnitude of the impacts is less for MERET households than for Control households. FGs from both sites felt that households in MERET sites managed to produce some crops or forage, even if it was greatly reduced, and that their water sources lasted longer than those in Control sites. Such advantages are likely to contribute to their ability to recover and suggest that the SWC and land rehabilitation practices promoted through MERET help mitigate the negative impacts of and promote household recovery from drought.

The most commonly reported way of coping with – or responding to – shocks/stresses in both MERET and Control sites involved selling livestock, often eliminating herds. Common strategies for dealing with

the drought also included reducing the quantity and quality of foods consumed, engaging in FFW/CFW, receiving government food aid, reducing expenses, using savings, and looking for work (e.g., casual labor). Social capital (e.g., food, labor) was also important, but households generally agreed there was less to share as a result of the drought. Households in Control sites were less able to rely on remittances from relatives living elsewhere than households in MERET sites.

Despite the general similarities in basic household characteristics, exposure to shock, and coping strategies used to deal with shocks/stresses, both the quantitative and qualitative data suggest that households who participated in MERET tended to be “better off” than households that did not. Households in MERET sites were more food secure and less severely food insecure than households in Control sites. They also consumed more fruits and meat, and had a slightly smaller food gap, than households in Control sites. Promoted through the MERET programme, high value fruit trees (e.g., mango, avocado) contribute to improved diet diversity, provide important vitamins and micronutrients necessary for good health, and generate income. Households in MERET sites were less likely to perceive themselves as poor and were more likely to share food or labor with family or friends in need than households in Control sites; approximately twice as many MERET as Control households reported that they helped a family member, friend or neighbor over the 12 months prior to the survey.

These differences are consistent with insights from FGs as well, in that FGs in both MERET and Control sites felt that households who participated in MERET typically produced something from their fields, even if greatly reduced. MERET activities were perceived to have resulted in better soil fertility and conserved soil moisture, enabling households to produce even small amounts of crops or fodder when others produced nothing. Thus, MERET activities provide some buffer from climate-related shocks such as the El Niño-influenced drought.

Households in MERET sites recovered better than households in Control sites, in terms of bouncing back to the same level – if not better than – they were before the drought. Based on the resilience capacity index, households that participated in the MERET programme were more resilient than households in Control sites, due in part to their better adaptive capacity. In particular, more and/or higher value assets and the awareness and use of certain SWC practices appear to underlie their capacity to better adapt to drought. FGD participants clearly understood the basic MERET logic that healthy landscapes (gained through good SWC and NRM practices) lead to better productivity, which create assets and increase household income, both of which contribute to improved household food security and other well-being outcomes.

Households in MERET and Control sites engage in an average of three main livelihoods activities: growing crops, livestock, and NGO/government support (FFW, CFW, safety net programmes). Clearly, two of these activities are vulnerable to the same climate risks and the third is not a long-term sustainable livelihoods strategy. Although MERET activities can reduce the risks from climate shocks (e.g., the 2015 drought), households can better spread risk or gain income by engaging in a diversity of livelihood activities that are not vulnerable to the same type of risk(s).

Not only does participation in MERET seem to have contributed to better household food security, results from the multivariate analysis show that households who participated in MERET continue to be better off four years after the MERET IE (i.e., post-programme). Even in light of the El Niño-induced drought, the benefits accrued to them at the time of the MERET IE in 2012 did not erode after four years, during which occurred a severe drought.

It should be noted that certain limitations in interpretation exist. That is, the results are only representative of the conditions characterizing the sampled clusters used in this analysis, which had been identified as having been highly affected by the drought. Even so, the results presented here strongly suggest that the MERET programme contributed to the ability of households to cope with and recover from the El Niño-induced drought. That is, MERET activities contribute to building household resilience to drought, at least in the types of communities surveyed as part of this assessment.

Natural resource degradation has plagued Ethiopia for decades and has undermined rural livelihoods and food security for millions of Ethiopians. Variable and changing climate conditions are the future for us all, and Ethiopia remains highly vulnerable to climate-related shocks/stresses and natural disasters. Households and communities must have the skills, knowledge, and resources to make pro-active decisions in preparing for and reducing the impact of future shocks/stresses in ways that do not undermine their future well-being.

## Recommendations

The MERET approach has previously been shown to have a positive influence on livelihood and food security for rural Ethiopians through better soil conservation and land management practices that provide long-term benefits.<sup>37</sup> The current assessment supports this finding and provides evidence that suggests MERET activities contribute to strengthened resilience capacity and improved household ability to adapt to changing climate events. Given recent – and likely continuing – reductions in available donor resources, a number of recommendations for expanding the reach and sustainability of MERET principles are provided below.

**Integrate MERET principles into existing Government mechanisms.** In general, the findings presented in this study suggest that the underlying TOC used in the MERET programme is sound. That is, activities that promote natural resources rehabilitation and enhanced land productivity lead to healthier landscapes, which in turn enhance livelihoods security in rural Ethiopia (given the heavy reliance on the natural resource base as a key livelihood strategy), and which ultimately contributes to improved household well-being outcomes such as food security and/or increased income.

MERET principles should be integrated into existing government and donor-supported strategies that involve NRM, SWC, and food security activities. Transitioning MERET principles and approach into the GoE's SLMP and PSNP initiatives, for example, takes advantage of and enhances the impact of these already operational donor-supported programmes. This would help enshrine MERET principles within GoE SLM activities in high-potential areas and GoE food security activities in food insecure areas.

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<sup>37</sup> TANGO. 2012.



For example, MERET's participatory watershed approach uses watershed planning teams whose members are from that watershed. In contrast, PSNP watershed planning teams include members from outside the watershed. The MERET approach promotes a sense of ownership because improvements help the members themselves and increases the likelihood of built assets being maintained. The sense of ownership and ultimate success of MERET also results from its use of a watershed development approach that includes private as well as communal land. A watershed will not be successfully rehabilitated unless the entire watershed is treated.

**Scale-up MERET better practices to more watersheds.** MERET has been somewhat limited in scope; it has operated in a relatively small number of woredas, and in some cases for many years, with little phasing out of existing watersheds and expansion into new ones. Given the soundness of its TOC and proven success, MERET should be scaled-up to reach more watersheds, beginning with expansion into catchment areas where SLMP and PSNP are already operating and that are adjacent to existing MERET watersheds.

**More emphasis on diversifying into non-climate-sensitive livelihoods.** Adaptive capacity is improved through livelihoods diversification, in terms of both the quantity and quality of activities by which households earn income. In general, households spread risk or gain income by engaging in a wide diversity of livelihood activities, especially if those activities are not vulnerable to the same type of risk(s). Improved opportunities for diversifying livelihoods – particularly into activities that are not vulnerable to climate risks – may further enhance households' ability to cope with and recover from climate-related shocks/stresses without negatively impacting their well-being.

**Improve monitoring and evaluation.** Results-Based Monitoring was successfully used to monitor performance of the MERET programme. However, more emphasis should be placed on documenting programme impact. Although the study reported here was not sufficiently funded to allow for an assessment of impact, it nonetheless suggests MERET activities are having positive effects on household livelihood and food security. An M&E system that will capture programme impact should be designed and fully funded, including training field staff and government personnel at the woreda and national levels, and should include baseline surveys in every new watershed in order to properly document NRM, food security and livelihood improvements and impact.

**Transfer the MERET model to other countries.** WFP should use the success of and lessons learned from MERET and encourage adoption of its principles and approach in other countries in which it operates. As previously noted, there is sufficient evidence to show that MERET's approach and activities result in positive gains for households vulnerable to climate shocks/stresses. WFP's RBN and Ethiopia CO should continue to fund these types of studies in order to strengthen learning and knowledge management among other COs.

## References

- Aldrich D. 2012. Building resilience: Social capital in post-disaster recovery. The University of Chicago Press.
- Béné C, T Frankenberger and S Nelson. 2015. Design, monitoring and evaluation of resilience interventions: conceptual and empirical considerations. IDS Working Paper Vol. 2015 No. 459. Brighton: Institute of Development Studies.
- Bernard T, S Dercon, P Krishnan, S Krutikova and A Taffesse. 2012. Aspirations matter: Shaping aspirations can play a crucial role in enabling people to pull themselves out of poverty. Improving Institutions for Pro-Poor Growth (IIG) Briefing Paper NO. 19. CSAE Economics Department. United Kingdom: University of Oxford.
- Bezu S, C Barrett and S Holder. 2010. Does the nonfarm economy offer pathways for upward mobility? Evidence from a panel data study in Ethiopia. MPRA Paper No. 35754. <http://mpra.ub.uni-muenchen.de/35754>.
- Coates J, A Swindale and P Bilinsky. 2007. Household Food Insecurity Access Scale (HFIAS) for Measurement of Household Food Access: Indicator Guide (v. 3). Washington, D.C.: FHI 360/FANTA.
- Constas M, T Frankenberger, J Hoddinott, N Mock, D Romano, C Béné and D Maxwell. 2014. A common analytical model for resilience measurement: causal framework and methodological options. Food Security Information Network (FSIN) Technical Series No. 2. Rome: World Food Programme.
- Ellis F. 2000. Rural livelihoods and diversity in developing countries. Oxford: Oxford University Press.
- Fournier G. 2009. Locus of control. Encyclopedia of Psychology. Accessed at: <http://psychcentral.com/encyclopedia/2009/locus-of-control/>.
- Frankenberger T, T Spangler, S Nelson and M Langworthy. 2012. Enhancing Resilience to Food Security Shocks in Africa. Washington, DC: US Agency for International Development; London: Department for International Development; Washington, DC: World Bank. Available at: [www.fsnnetwork.org/sites/default/files/discussion\\_paper\\_usaid\\_dfid\\_wb\\_nov\\_8\\_2012.pdf](http://www.fsnnetwork.org/sites/default/files/discussion_paper_usaid_dfid_wb_nov_8_2012.pdf).
- Haggblade S, P Hazell and T Reardon. 2007. In: Haggblade S, Hazell P and Reardon T (eds), *Transforming the Rural Nonfarm Economy*. Baltimore: Johns Hopkins University Press.
- Maxwell D and R Caldwell. 2008. The Coping Strategies Index Field Methods Manual, Second Edition. Medford: Feinstein International Center, Tufts University.
- Nelson S, Frankenberger T, Langworthy M, Finan T and T Bower. 2016. The Effect of Livelihood Diversity on Recovery and Shock Impact in Ethiopia, Kenya and Uganda. Report prepared by The Technical Consortium, a project of the CGIAR. Technical Report Series No 2: Strengthening the Evidence Base for Resilience in the Horn of Africa. Nairobi, Kenya: A joint International Livestock Research Institute (ILRI) and Tango International publication.

Swindale A and P Bilinsky. 2006. Household Dietary Diversity Score (HDDS) for Measurement of Household Food Access: Indicator Guide. Version 2. Food and Nutrition Technical Assistance (FANTA III), Washington, D.C.

TANGO. 2016. WFP Ethiopia: Climate Adaptation, Management and Innovation Initiative (C-ADAPT). Inception Report.

TANGO. 2012. MERET Impact Evaluation Report. Submitted to WFP 20 November, 2012.

Walker, B., Sayer, J., Andrew, N. L., and Campbell, B. 2010. Should enhanced resilience be an objective of natural resource management research for developing countries? *Crop Science* (50): 10.

## Annex 1. Methodological Details

This annex presents additional details of the methodology used in the C-ADAPT study for both quantitative and qualitative data collection and analysis.

### Quantitative Data

**Training of enumerators.** A four-day training for enumerators was conducted by TANGO, with support from WFP, in Nazareth on June 20-24, 2016. The main objective of the training was to ensure that all members of the survey teams understood the objectives of the study, could properly use the survey tools and tablets, and for each team member to clearly understand their roles and responsibilities.

Training included a one-day field test of both the household and community surveys, where enumerators and supervisors practiced implementing the survey in a nearby village outside of Nazareth. Both training and the field-test served to help identify potential problems with the survey logic (e.g., skip patterns), translation issues, clarify instructions to enumerators, and identify difficult or sensitive questions.

Supervisors were responsible for conducting daily spot checks and reviewing specific questions before uploading data to the ONA server or sending data via email to TANGO. In addition to the supervisor quality control mechanisms, data was uploaded to TANGO frequently throughout the course of data collection. TANGO monitored and reviewed the data and provided the field coordinators with feedback on data quality and survey progress, and highlighted problems to be discussed with specific enumerators.

**Field work organization.** Field work took place June 21 – July 22, 2016 across the four regions. Field work was conducted using ten teams, each with three enumerators and one supervisor. Supervisors were responsible for conducting a community survey in one community per woreda. The community survey was conducted with local leaders, as they are among the most knowledgeable persons in the community with respect to community assets and governance.

**Data management, security, and confidentiality.** Android tablets (Google Nexus Tablets) were used for quantitative data collection, using ODK (Open Data Kit) software. The use of mobile devices and an electronic questionnaire allow for the integration of data validation rules and consistency checks as part of data collection. For multiple response questions, “Don’t Know” and “Refused” were not allowed as responses when other affirmative responses were also selected. The automated consistency checks programmed directly into the survey limited data entry errors associated with invalid and inconsistent data, as well as, outliers.

Every record was stored and uploaded to a cloud server utilizing the built-in internet connectivity of the devices. This allowed the data analysis team to review data consistency frequently and ensure the data were ready for analysis as soon as field data collection was completed.

SPSS and Stata statistical software were used to analyze the dataset. Syntax files were created to compute indicator, resilience capacities, and resilience capacity component values. The analysis includes descriptive statistics with statistical hypothesis testing, as well as multivariate analysis.

Missing data points were excluded from the denominator and the numerator for calculation of all indicators and descriptive statistics. Responses of “Don’t Know” were recoded to “null” values and included in the denominator. As an example, a question may contain response codes of “Yes”, “No”, and “Don’t Know”. All three responses are counted in the denominator, but only “Yes” may be counted in the numerator (unless the number of “Don’t Know” cases was sufficiently high to report).

Consent for participation by individuals and/or households was obtained through a consent form referenced to the surveyed household. A statement regarding the purpose and content of the survey, as well as an estimation of how long it would take, was read for all respondents. They were informed that their participation was entirely voluntary, their answers confidential, and they could stop at any time. Following the reading of the consent form, respondents were asked whether they agreed to participate and their answer recorded on the tablet form of the survey.

## Qualitative Data

**Qualitative team training.** A four-day training was conducted for the qualitative teams concurrent with the June training of enumerators described above, including a one-day field-test of the qualitative tools.

Qualitative teams consisted of two people selected by WFP, typically technical experts or former MERET staff, and a TANGO consultant. Each team was deployed to different parts of the country: one team conducted FGDs in Oromiya and SNNPR, and the other team in Amhara and Tigray.

Qualitative data collection occurred concurrent with – but lasted slightly less than – quantitative data collection.

**Data management, security, and confidentiality.** Qualitative data were recorded on topical outlines and transferred to data matrices on laptops every other day, or few days. Consent was assumed by respondent participation in the relevant interview, since they would not have been present if they had not consented to be interviewed, either as part of a group or individually.

## Annex 2. Quantitative Survey Modules

The household survey includes the following topics:

### *Module A: Household Identification and Informed Consent*

- Basic identification information
- Informed consent

### *Module B: Household Roster and Demographics*

- Basic demographic information: name, age, sex, education, literacy, marital status.

### *Module C: Assets*

- For various household and productive assets: number owned and whether any were sold in the previous 12 months as distress sales

### *Module D: Major Sources of Cash Income*

- Income/food sources, ranked

### *Module E: Savings and Loans*

- Ability to save, location and use of savings
- Loan services availability and use, source and purpose of loan

### *Module G: Crop Production*

- Engagement in crop production, constraints to production, access to/use of irrigation schemes, knowledge and use of soil and water conservation practices

### *Module H: Livestock*

- Number and type currently owned, distress sales, migration

### *Module I: Shocks since El Niño*

- For various shocks: exposure in the 12 months prior to the interview, impacts, ability to recover, coping strategies

### *Module J: Food security*

- Household Dietary Diversity Score
- Household Food Insecurity Access Scale
- Household Hunger Scale
- Months of Adequate Food Provisioning
- Food Insecurity Coping Strategies

### *Module K: Housing Characteristics*

- Roof, wall and floor materials, number of rooms, water and sanitation, and electricity

### *Module L: Social and Improved Livelihood Practice Support*

- Availability, access, and utilization of various formal/informal sources of social support and services, collective action
- Access to and use of social services

### *Module M: Access to Markets*

- Distance to various markets

### *Module N: Access to Information*

- For various types of information: information received, influence on decision making

### *Module O: Membership in community organization*

- Awareness of group, participation

*Module P: Aspirations and Confidence to Adapt*

- Perceptions of ability to foment change for improved well-being outcomes, and trust in others

*Module Q: Household Perceptions of Poverty Status*

The community survey includes the following topics:

*Module 1: Community Identification Cover Sheet and Informed Consent*

- Basic identification information
- Treatment status of community (MERET, Control)

*Module 2: Community Characteristics*

- Basic community information including population size and trend, ethnicity, nearest urban centers and provincial capital, agricultural seasons, access/availability of water, fuel, etc.

*Module 3: Community Infrastructure and Services*

- Water, electricity, communications, roads and transport, housing, education, health, animal health, agricultural extension, markets, security, and financial.

*Module 4: Community organizations*

- For various types of organizations, information on availability and membership

*Module 5: Government and NGO programmes*

- Basic information on presence of government and NGO programmes

*Module 6: Shocks*

- Whether or not community has experienced various shocks since the start of El Niño

*Module 7: Land Tenure*

- Basic information on land tenure types

*Module 8: Governance*

- Basic information on community governance structure and conflict resolution

## Annex 3. Food Security

As used here, household food security (HFS) is the inverse of an experiential indicator of food insecurity, the Household Food Insecurity Access Scale (HFIAS).<sup>38</sup> The HFIAS is an index constructed from the responses to nine questions regarding the frequency that respondents report experiencing food insecurity in the four weeks prior to the survey. It categorizes households into four groups: food secure, mildly food insecure, moderately food insecure, and severely food insecure based on the assumption that the severity of food insecurity progresses from feeling worry, through concerns about dietary quality, and finally, experiencing an actual lack of food. In the current analysis, the inverse of the HFIAS is used, allowing for the measure to increase with increasing household food security.

The Household Hunger Scale (HHS) is based on six questions that ask respondents about the frequency of hunger they or their household members might have experienced in the four weeks prior to the survey. Questions include:

- In the past four weeks, was there never any food to eat of any kind in your household because of lack of resources to get food?
  - How often was there never any food to eat of any kind in your household because of lack of resources to get food?
- In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?
  - How often did you or any household member go to sleep at night hungry because there was not enough food?
- In the past four weeks, did you or any household member go a whole day or night without eating anything because there was not enough food?
  - How often did you or any household member go a whole day or night without eating anything because there was not enough food?

For households indicating that they did experience hunger, responses ranged from rarely, sometimes, and often. Responses for each question was given a value of 0, 1, or 2 depending on the frequency of hunger experienced, where no hunger = 0, rarely or sometimes = 1, and often = 2. The index is calculated as the sum of these responses, which is then classified into three HHS indicators: little to no hunger (0-1), moderate hunger (2-3), and severe hunger (4-6). For the purposes of this report, these categories were collapsed into either “little to no hunger” and “moderate/severe hunger” due to the small number of respondents classified as “severe”.

The MAHFP is a measure of household food access – the ability of a household to produce, purchase, gather, or otherwise get food (e.g., through social networks, food/cash transfers). The MAHFP is a sum of the number of months in which a household was unable to meet their food needs, subtracted from 12.

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<sup>38</sup> Coates, Swindale and Bilinsky. 2007.



## Annex 4. Resilience Capacity Index and Sub-Indices

The overall index of resilience capacity is calculated using a factor analysis with the indexes of absorptive capacity, adaptive capacity, and transformative capacity as inputs. Indicators are based on primary data collected at the household level.<sup>39</sup>

**Index of Absorptive Capacity.** The index of absorptive capacity is constructed from five indicators, some of which are themselves indexes based on primary household data. The indicators and explanations of their calculation are as follows.

1. **Informal Safety Nets.** This indicator is the sum of available community groups providing safety nets. The seven organizations are:
  - Saving or credit groups;
  - Trade or business associations;
  - Mutual help groups (including burial societies);
  - Civic (“improving community”) groups;
  - Charitable groups (“helping others”);
  - Religious groups; and
  - Women’s groups.
2. **Disaster Preparedness and Mitigation.** This indicator is calculated using a factor analysis of the following binary variables: (1) village of residence is involved in protecting crop from flooding; (2) village received information on long term changes in climate patterns in the last year; and (3) disaster risk reduction/climate change adaptation committee is active in the village.
3. **Bonding Social Capital.** See Annex 5.
4. **Whether a household currently holds savings.**
5. **Asset Ownership.** Asset ownership is measured based on three categories of assets: ownership of consumer durables, ownership of agricultural productive assets, and ownership of animals. Consumer durables ownership is measured as the weighted sum of consumption assets owned out of a total of 19. Ownership of agricultural productive assets is measured as the weighted sum of productive implements owned out of 6. Animal ownership is measured as the weighted sum of livestock owned out of 11. See Annex 6 for weights.

The indicators were combined into an index using a polychoric factor analysis.

**Index of Adaptive Capacity.** The index of adaptive capacity is constructed from seven indicators. Again, some of these are themselves indexes based on primary household data. The indicators and explanations of their calculation are as follows.

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<sup>39</sup> Data from the community survey are not included in this analysis due to the incomplete nature of the dataset across Kebeles.

1. **Human Capital.** The variable is based on an index calculated from two variables. The first is whether or not the household head can read or write, a binary variable. The second is based on ordinal data indicating which formal grade level the household head completed, ranging from 0 (did not attend) to 14 (technical school/university). Given that both binary and ordinal variables need to be combined, polychoric factor analysis is used to calculate the index.
2. **Diversity of Livelihoods.** Calculated as the number of livelihood activities engaged in in the last year. The question asked to identify these livelihoods is “What was the source of your household’s food/income over the whole last 12 months?” The possible options are:
  - Agricultural daily labor;
  - Non-Agricultural daily labor;
  - Cash crops;
  - Livestock or livestock product sales;
  - Beekeeping;
  - Fishing;
  - Grasses;
  - Forest products;
  - Off-farm activities;
  - Hunting/gathering;
  - Business;
  - Salaried employment;
  - Sales of crafts;
  - Food for work/safety net programme;
  - Remittances;
  - Pension/retirement;
  - Gifts; and
  - Other.
3. **Exposure to Information.** Number of topic respondent has received information on in the last year, out of 12 topics.
4. **Asset Ownership.** See Index of Absorptive Capacity (above).
5. **Aspirations and Confidence to Adapt.** See Annex 7.
6. **Bridging Social Capital.** See Annex 5.
7. **Linking Social Capital.** See Annex 5.

The overall index of adaptive capacity is calculated using a factor analysis.

**Index of Transformative Capacity.** The index of transformative capacity is constructed from six indicators, as follows.

1. **Formal Safety Nets.** This indicator is the number of formal safety nets (food and other) received by the household since the start of the El Niño events from the Government of Ethiopia, non-government organizations, and WFP.
2. **Access to Markets.** This indicator is computed by first assigning values to distances households are away from three types of markets by multiples of five kilometers. Markets include: livestock market, market for selling agricultural products, and market for purchasing agricultural inputs. The sum of these values is then averaged and the inverse of the score is used to demonstrate a positive relationship between access and outcomes.
3. **Access to Infrastructure.** The number of social services and infrastructure households has access to. These include:
  - Piped water;
  - Mobile phone network/service in their community;
  - Electricity;
  - Water and sanitation services; and
  - Security and public safety.
4. **Access to Services.** The number of basic services households has access to. These include:
  - Institutions or other places where people can borrow money;
  - Institutions or other places where people can save money;
  - Primary school within 5 kilometers;
  - Health center within 5 kilometers; and
  - Agricultural extension services.
5. **Bridging Social Capital.** See Annex 5.
6. **Linking Social Capital.** See Annex 5.

The index of transformative capacity is calculated using a factor analysis.

## Annex 5. Social Capital Indices and Sub-Indices

**Bonding Social Capital Index.** Bonding social capital index is the sum of six responses that look at a household's ability to provide or receive assistance from within their community. Questions from the survey are listed below:

- If your household had a problem and needed money or food urgently, who *within* this community could you turn to for assistance?
- Who *within* this community would you help if they needed food or money urgently?

Households that indicated that they were able to provide or receive assistance to a close family member/extended family, a non-relative in their ethnic group, or a non-relative in a different ethnic group were given a value of 1. All other responses were assigned a value of 0.

**Bridging Social Capital Index.** Bridging social capital index is the sum of six responses that look at a household's ability to provide or receive assistance from outside their community. Questions from the survey are listed below:

- If your household had a problem and needed money or food urgently, who outside this community could you turn to for assistance?
- Who *outside* this community would you help if they needed food or money urgently?

Households that indicated that they were able to provide or receive assistance to a close family member/extended family, a non-relative in their ethnic group, or a non-relative in a different ethnic group were given a value of 1. All other responses were assigned a value of 0.

**Linking Social Capital Index.** Linking social capital index is the sum of four responses from the following survey questions:

- Do you or does anyone else in your household know an elected government official?
- How do you (or another household) know the government official? Is he or she a...

Households that indicated that they know a government official because they were a family member/relative, friend, neighbor, or acquaintance were given a value of 1. All other responses were assigned a value of 0.

## Annex 6. Asset Weights for Weighted Asset Index

The weighted asset index is computed by multiplying the number of each type of household/livestock asset by the index value for that particular asset type. Index values of household assets used in the construction of the asset index are presented in the table below:

Asset category	Asset type	Index value
Consumption assets	Blankets	1
	Mosquito nets	1
	Radio	2
	Chairs	2
	Jewelry	5
	Stove	5
	Mobile phone	5
	Bicycles	10
	Sewing machine	10
	Television	10
	Refrigerator	10
	Computer	10
	Motorcycle	50
	Automobile	100
	Sofa	2
	Mattress/bed	2
	Gas lamp	2
Generator	10	
Iron roof	10	

Asset category	Asset type	Index value
Productive assets	Hoe	1
	Cart	5
	Yoke beam	5
	Weaving equipment	5
	Irrigation pump	10
	Grain mill	10

<b>Asset category</b>	<b>Asset type</b>	<b>Index value</b>
Livestock assets	Ox	25
	Cow/Heifers	20
	Bulls	20
	Calves	20
	Camels	40
	Horse/mules	15
	Donkey	15
	Goats	10
	Sheep	10
	Hen/chickens	3
	Beehives	8

## Annex 7. Index of Aspirations and Confidence to Adapt

This index is based on indicators of four underlying concepts:

- **Absence of Fatalism.** The *absence* of the sense of being powerless to enact change and that one has no control over life's events.
- **Sense of Individual Power.** A sense of having power to enact change as an individual rather than being subject to the decisions of more powerful people.
- **Exposure to Alternatives to the Status Quo.** The degree to which a person has been exposed to alternative ways of life than one's own.
- **Trust.** The degree in which a person trust and believe others to be honest.

The concepts are measured using the answers to both subjective and objective questions asked of household survey respondents that fall into two categories:

1. Yes/no questions regarding whether or not people agree with certain viewpoints or engage in certain behaviors;
2. Questions about the number of times in the previous month the respondent engaged in various behaviors; and

Respondents' responses are used to calculate indexes, one for each of the four concepts.

The **absence of fatalism** index is based on two binary variables that ask if a person agrees with the following statements/questions.

- Do you think what happens in your life was supposed to happen? (*the inverse of the responses were used to calculate the index*)
- Do you believe that what happens in your life is a matter of good or bad fortune? (*the inverse of the responses were used to calculate the index*)

The **individual power** index is based on five binary variables that asks if a person agrees with the following questions:

- Would you be willing to move somewhere else to improve your life?
- Do you feel like what happens in your life is mostly determined by powerful people? (*the inverse of the responses were used to calculate the index*)
- Do you feel like your life is mainly controlled by other powerful people? (*the inverse of the responses were used to calculate the index*)
- Do you feel mostly in control of your life?
- Do you feel like you get what you want in life because you worked hard for it?

The **exposure to alternatives** index is based on five questions regarding communication, engagement and travel. Three of the questions ask respondents to provide a frequency in which they partook in the specified activity. The responses were coded as a binary in which all frequency with the exception of “0” were coded as 1.

- Do you communicate regularly with at least one person outside the village?
- During the past week, have you engaged in any economic activities with members of other clans?
- How many times in the past 30 days have you got together with people to have food or drinks, either in their home or in a public place?
- How many times in the past 30 days have you attended a church/mosque or other religious services?
- In the last 12 months, how many times have you stayed more than 2 days outside of your village?

The **trust** index involves three binary questions:

- Do you think most people are basically honest?
- Do you think that most people can be trusted?
- Can you trust your neighbors to look after your house if you go away?

The index are the sum of the responses. All indices are calculated on a scale of 0-100 in order to enable comparisons across indices.



## Annex 8. Full Regression Results

Table 27. Full regression results for the relationship between HFS, MERET participation, resilience capacity, and household characteristics.

HFS		
	Coefficient	Elasticity
Intervention		
Number of shocks	-0.29	-0.06
Soil and water conservation activities index	-0.07	-0.02
MERET programme	1.40 **	-
Resilience capacity components		
Bonding social capital	0.14	0.01
Bridging social capital	-0.35	-0.02
Linking social capital	-0.61	-0.02
Aspirations index	0.02 ***	0.06
Human capital	0.01	0.01
Exposure to information	0.21 *	0.08
Savings	0.70 **	-
Access to markets	0.66 *	0.08
Access to services	-0.08	-0.02
Access to infrastructure	0.42 *	0.05
Informal safety nets	0.02	0.00
Formal safety nets	0.14	0.01
Disaster preparedness and mitigation	0.00	0.00
Household characteristics		
Assets index	0.14 ***	0.12
Number of livelihoods	-0.31	-0.04
Female-headed household	0.02	-
Age of household head	0.01	0.01
Household size	-0.17 **	-0.04
<i>n</i>		1,412

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*) and 0.1 (\*) levels.

Table 28. Full regression results for the relationship between HDDS, MERET participation, resilience capacity, and household characteristics.

HDDS		
	Coefficient	Elasticity
Intervention		
Number of shocks	-0.02	-0.02
Soil and water conservation activities index	0.05	0.05
MERET programme	0.32 **	-
Resilience capacity components		
Bonding social capital	0.11 **	0.03
Bridging social capital	0.09 *	0.02
Linking social capital	-0.10	-0.01
Aspirations index	0.00	-0.01
Human capital	0.00	0.02
Exposure to information	0.01	0.02
Savings	0.16	-
Access to markets	0.21 **	0.11
Access to services	-0.03	-0.03
Access to infrastructure	-0.05	-0.03
Informal safety nets	0.09	0.05
Formal safety nets	0.11	0.02
Disaster preparedness and mitigation	0.00	0.05
Household characteristics		
Assets index	0.05 ***	0.18
Number of livelihoods	0.14 **	0.08
Female-headed household	0.00	-
Age of household head	0.00	-0.03
Household size	-0.06 ***	-0.06
<i>n</i>	1,426	

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*), and 0.1 (\*) levels.

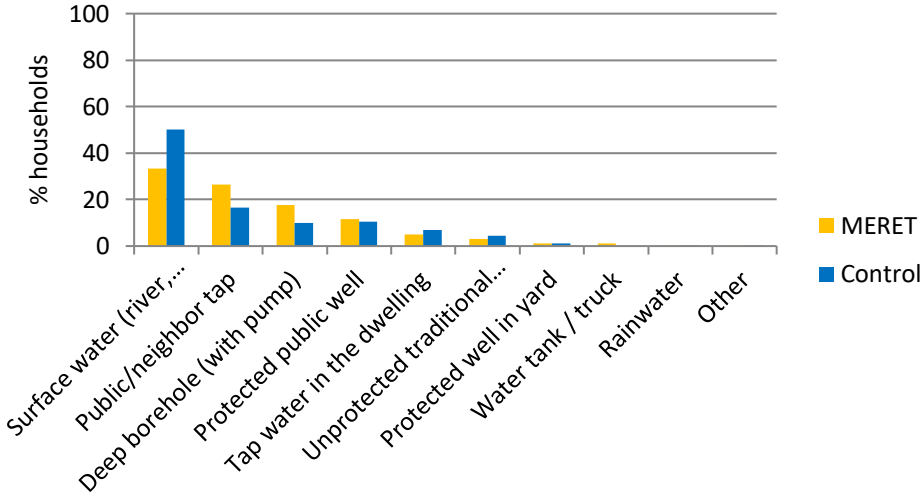
Table 29. Full regression results for the relationship between recovery, MERET participation, resilience capacity, and household characteristics.

Recovery		
	Coefficient	Elasticity
Intervention		
Number of shocks	-0.31	-0.40
Soil and water conservation activities index	0.18 **	0.18
MERET programme	1.04 **	-
Resilience capacity components		
Bonding social capital	-0.05	-0.05
Bridging social capital	0.14 *	0.14
Linking social capital	-0.11	-0.11
Aspirations index	0.00	0.00
Human capital	-0.005 **	0.00
Exposure to information	0.17 **	0.17
Savings	0.20	-
Access to markets	0.24 **	0.25
Access to services	0.14	0.13
Access to infrastructure	-0.26 *	-0.16
Informal safety nets	0.14	0.10
Formal safety nets	0.14	0.03
Disaster preparedness and mitigation	-0.01	-0.09
Household characteristics		
Assets index	0.06 ***	0.17
Number of livelihoods	0.00	0.00
Female-headed household	-0.02	-
Age of household head	0.00	0.00
Household size	-0.09 ***	-0.10
<i>n</i>		1,374

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*) and 0.1 (\*) levels.

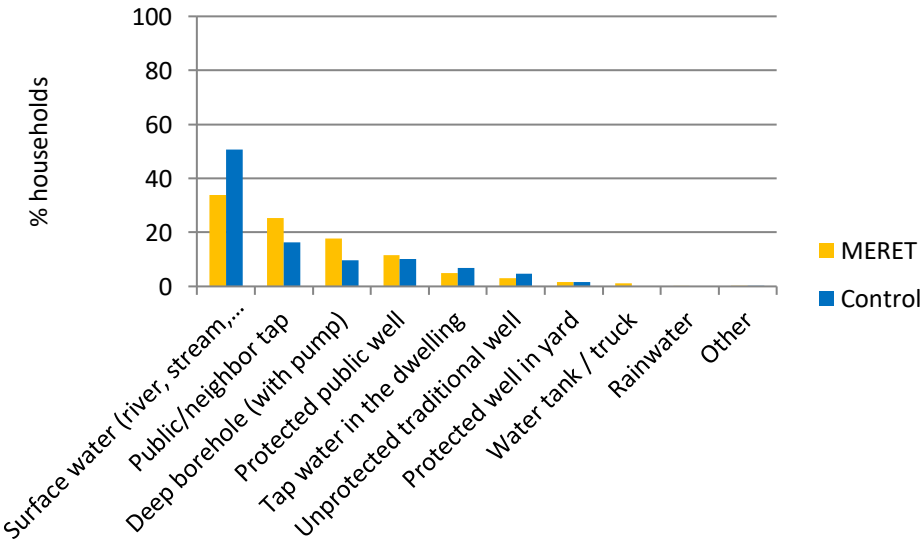
## Annex 9. Supplemental Tables

Figure 10. Household sources of water during the dry season.



NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

Figure 11. Household sources of water during the rainy season.



NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

Table 30. Household sanitation.

% households	All	Intervention	
		MERET	Control
Traditional latrine / open hole	80.1	80.7	79.4
Ventilated pit latrine	11.8	13.3	10.3
Bush / nature	7.6	57.0	9.7
Flush toilet / sewer system	0.2	0.3	0.1
Other	0.3	0.1	0.4
<i>n</i>	1,454	755	699

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*) and 0.1 (\*) levels.

Table 31. Household sources of electricity.

% households	All	Intervention	
		MERET	Control
Access to electricity	13.9	11.9	16.0
<i>n</i>	1,454	755	699
Sources of electricity			
Central power lines	98.5	100.0	97.3
Solar panel	0.5	0.0	0.9
Diesel generator	0.0	0.0	0.0
<i>n</i>	202	90	112

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*) and 0.1 (\*) levels.

Table 32. Primary source of household income/food over the 12 months prior to the survey.

% households	All	Intervention	
		MERET	Control
Cash crops	37.5	40.7	34.1
Agricultural daily labor	13.3	14.0	12.5
Food for work/safety net programme	11.3	8.3	14.6
Livestock/livestock product sales	6.1	6.6	5.6
Non-agricultural daily labor	3.1	1.7	4.7 *
Business	2.3	2.2	2.3
Gifts	2.3	1.1	3.5
Forest products	0.7	0.6	0.8
Off-farm activities	0.7	0.6	0.8
Remittances	0.4	0.4	0.3

% households	All	Intervention	
		MERET	Control
Beekeeping	0.1	0.1	0.2
Grasses	0.1	0.1	0.2
Pension/retirement	0.1	0.1	0.2
Salaried employment	0.1	0.3	0.0
Sales of crafts	0.0	0.0	0.1
<i>n</i>	1,380	715	665

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

Table 33. Household ownership of consumer durables.

% households	All	Intervention	
		MERET	Control
Mosquito nets	80.8	83.6	77.8
Blankets	79.8	85.7	73.4
Iron roof	62.0	64.1	59.8
Bed/mattress	59.4	64.4	53.9
Cell phone	57.2	62.5	51.4
Gas Lamp	38.7	42.3	34.9
Chairs/tables	34.4	39.2	29.2
Radio/Cassette player/tape recorder	32.1	37.0	26.9
Jewelry/gold/silver	17.5	21.2	13.6
Stove (electric/gas/kerosene)	7.9	9.1	6.6
TV set/video/dvd player	2.5	2.4	2.7
Bicycle	0.8	1.2	0.4
Refrigerator	0.7	1.1	0.3
Laptop/desk computer	0.6	0.8	0.3
Sofas	0.4	0.4	0.4
Sewing machine	0.3	0.3	0.3
Motor vehicle (car/pick up, Bajaj)	0.3	0.4	0.1
Generator	0.2	0.4	0.0
Motorcycle	0.1	0.1	0.1
<i>n</i>	1,454	755	699

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

Table 34. Household livestock ownership.

% households	All	Intervention		
		MERET	Control	
Hens/chickens	67.5	68.9	66.1	
Ox	60.8	68.3	52.7	
Cows/Heifers	58.8	63.4	53.8	
Calves	39.6	42.9	36.1	
Goats	36.2	39.3	32.9	
Donkey	38.4	40.3	36.3	
Sheep	32.5	37.9	26.8	
Bulls	18.8	15.6	21.9	
Beehives	12.7	16.6	8.4	**
Horse/mules	2.1	3.1	1.0	
Camels	1.4	2.0	0.9	
	<i>n</i> 1,453	754	699	

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

Table 35. Household participation in community groups.

% households	All	Intervention				
		<i>n</i>	MERET	<i>n</i>	Control	<i>n</i>
Mutual help group	94.1	774	92.3	388	95.9	386
Civic group	84.0	638	81.5	352	86.1	286
Religious group	82.6	1,134	83.3	593	81.9	541
Women's group	74.2	1,342	76.4	696	71.8	646
Farmer groups (e.g., commodity group)	70.6	630	74.4	367	65.4	263
Farmer groups (e.g., union)	67.4	1,112	71.4	594	62.7	518
Charitable group	65.5	145	67.9	81	62.5	64
Water users group	63.6	914	63.6	522	63.5	392
Trade or business associations	63.5	126	67.1	79	57.5	47
DRR/CCA committee	60.4	512	59.4	236	61.4	276
Savings/credit groups	57.2	1,113	58.7	567	55.7	546
Community forest/rangeland users group	56.3	572	61.9	312	49.6	260
In-school, out-of-school clubs	48.0	773	51.0	416	44.5	357
Youth group	42.0	1,202	42.9	630	41.1	572
Marketing association	41.8	141	48.4	95	28.3	46
Livestock production group	30.8	286	34.2	164	26.2	122
Area land committee	30.0	856	33.8	456	25.8	400

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

Table 36. Formal sources of household social support over the 12 months prior to the survey.

% households	All	Intervention	
		MERET	Control
Sources of formal food aid (multiple response)			
Government	84.6	83.8	85.5
NGOs	16.8	20.0	13.7
WFP	4.6	8.8	0.5
Religious organization	0.5	0.0	1.1
Community-based organization	0.4	0.5	0.2
	<i>n</i> 1,140	569	571
Types of formal food aid received (multiple response)			
FFW/CFW	42.5	40.6	44.5
General food distribution	24.9	26.9	22.9
School feeding	20.4	20.9	20.0
Supplementary feeding	19.0	19.5	18.6
Food for people unable to work	9.2	10.0	8.4
Canteens	0.1	0.2	0.0
Water	0.1	0.2	0.0
	<i>n</i> 1,140	569	571

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*\*) and 0.1 (\*) levels.

Table 37. Other types of social support received by households.

% households	All	Intervention	
		MERET	Control
Sources of support (multiple response)			
Government	49.3	46.2	52.9
NGOs	12.1	15.4	8.4
WFP	5.1	9.6	0.0
Religious organization	0.4	0.5	0.3
Community-based organization	0.1	0.3	0.0
Other	1.7	1.9	1.6
Other types of support received (multiple response)			
Seed	29.7	32.1	26.9
Cash	24.9	22.0	28.2
Educational materials	3.6	2.7	4.6
Health services	2.3	2.5	2.2
Agricultural labor	1.0	1.4	0.6
Installed water points	0.4	0.8	0.0



% households	All	Intervention	
		MERET	Control
Childcare	0.4	0.0	0.9
Transporting HH items to safety	0.3	0.5	0.0
Land parcel	0.3	0.5	0.0
Vocational training	0.3	0.3	0.3
Clothing	0.3	0.0	0.6
Household items	0.3	0.5	0.0
Labor to rebuild/repair structures	0.3	0.5	0.0
Installed latrine	0.1	0.0	0.3
	<i>n</i> 687	364	323

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

Table 38. Household livelihood activities.

% households	All	Intervention		
		MERET	Control	
Livelihood activities (multiple responses)				
Cash crops	61.6	67.0	55.7	
Livestock/livestock product sales	55.6	60.4	50.5	
Food for work/safety net programme	42.8	39.2	46.6	
Agricultural daily labor	29.9	28.7	31.0	
Forest products	16.3	21.3	10.9	
Non-agricultural daily labor	13.5	10.3	16.9	
Business	8.0	8.1	7.9	
Gifts	7.0	7.0	7.0	
Beekeeping	6.1	8.5	3.4	**
Grasses	4.3	5.8	2.6	
Remittances	3.7	4.0	3.3	
Off-farm activities	3.6	4.4	2.7	
Salaried employment	1.4	2.0	0.9	
Sales of crafts	0.9	1.2	0.6	
Pension/retirement	0.7	0.4	1.0	
	<i>n</i> 1,454	755	699	

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

Table 39. Changes in household livelihood activities over the 12 months prior to the survey.

% households	All	Intervention	
		MERET	Control
How livelihoods changed (multiple responses)			
Decreased types of crops grown	41.3	36.5	46.6
Decreased livestock production	30.4	26.9	34.3
Increased types of crops grown	21.0	25.1	16.5
Increased livestock production	15.8	19.6	11.6
Added small business/shop	7.1	9.0	5.1
Added local farm and non-farm labor	6.0	5.2	7.0
Stopped non-local farm wage labor	2.1	2.1	2.1
Stopped local farm and non-farm labor	1.7	1.5	1.9
Added non-local farm wage labor	1.7	1.5	1.9
Closed small business/shop	1.0	1.3	0.7

Table 40. Household engagement in crop production.

% households	All	Intervention		
		MERET	Control	
Households cultivating land in the 12 months prior to the survey	94.0	94.2	93.9	
	<i>n</i> 1,454	755	699	
Household constraints to crop production				
Abnormal water scarcity/drought	80.6	78.3	83.1	
Pests and plant diseases	44.6	45.0	44.1	
Poor soil fertility	21.9	16.5	27.7	
High prices of agricultural inputs	19.9	21.2	18.5	
Area of small size	18.4	14.8	22.3	
Low availability of agricultural inputs	10.9	12.0	9.8	
Flood	7.8	3.9	11.9	
Lack of workforce	6.7	6.2	7.3	
Low access to technical assistance	6.0	4.6	7.5	
No constraints	2.5	4.2	0.6	**
Hailstorm	0.6	0.6	0.6	
Bush fire	0.2	0.4	0.0	
	<i>n</i> 1,367	711	656	

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*) and 0.1 (\*) levels.

Table 41. Reasons households changed their livelihoods in the 12 months prior to the survey.

% households	All	Intervention		
		MERET	Control	
Drought or other natural causes	50.1	45.1	55.7	
Good markets	13.6	18.4	8.4	
Disease/insects	13.9	10.4	17.6	
Price increases of basic HH needs	8.6	8.8	8.4	
Better returns	6.8	7.9	5.6	
Have capital to invest	6.4	9.0	3.5	
Sold assets to buy food	3.9	4.8	2.8	
Support for activity initiated	3.3	3.8	2.8	
Received training	3.0	3.1	2.8	
Poor markets	2.3	3.6	0.9	*
Additional HH member employed	2.0	2.7	1.2	
Support for activity ended	1.1	1.9	0.2	*
New job opportunity	1.0	0.8	1.2	
Lower returns	0.7	0.8	0.5	
HH member left employment	0.7	0.6	0.7	
	<i>n</i> 910	479	431	

NOTES: Stars represent statistical significance at the 0.01 (\*\*), 0.05 (\*) and 0.1 (\*) levels.

Table 42. Changes in amount of land used for crop production in the 12 months prior to the survey.

% households	All	Intervention	
		MERET	Control
Farmed the same amount of land	82.9	82.7	83.1
Farmed less land	11.9	11.1	12.7
Farmed more land	5.3	6.2	4.3
	<i>n</i> 1,367	711	656

Table 43. Household ownership of agricultural productive assets.

% households	All	Intervention		
		MERET	Control	
Small farming tools†	97.0	97.5	96.4	
Yoke beam	75.5	79.2	71.4	
Cart (horse/mule/donkey pulled)	3.5	4.0	3.0	
Motor pump or pedal pump (used for irrigation)	3.4	5.7	1.0	**
Grain mill (modern not stone mill)	0.3	0.5	0.0	
Weaving equipment	0.3	0.4	0.1	
	<i>n</i> 1,454	755	699	

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

† Includes: plough, sickle, mencha, axe, gejera, konchera, hoe, gesso, dengora, shovel, spade, saw, and hammer

Table 44. Household savings and effect of the drought.

% households	All	Intervention		
		MERET	Control	
Where households keep their savings				
Savings group (RSG/SACCO etc.)	32.7	28.9	37.0	
Local savings group	30.3	29.7	31.0	
Home	25.9	26.6	25.2	
Bank	16.5	22.1	10.3	*
Savings institutions (traditional)	13.5	14.1	12.9	
Cooperative	8.1	6.8	9.5	
Other	1.9	1.3	2.6	
NGO	1.5	2.6	0.3	**
With friend/relative	1.1	1.0	1.2	
Change in household savings due to the drought				
Increased a lot	4.5	6.0	2.9	
Increased some	8.3	10.2	6.3	
Stable	29.1	29.4	28.7	
Decreased some	32.6	36.5	28.4	
Decreased a lot	25.2	18.0	33.2	
	<i>n</i> 733	384	349	

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

Table 45. Access to credit.

% households	All	Intervention	
		MERET	Control
Sources of loans (multiple responses)			
With friend/ relative	32.9	34.8	31.5
Savings group (RSG/SACCO etc.)	30.8	25.1	35.3
Local savings group	21.0	19.4	22.3
Savings institution (traditional)	14.9	13.7	15.9
Cooperative	9.4	11.9	7.4
Bank	4.5	4.4	4.6
NGO	2.4	4.4	0.7 *
Home	2.2	3.1	1.4
Other	4.5	4.4	4.6
	<i>n</i> 510	227	283
Reasons for NOT borrowing (multiple responses)			
Afraid I couldn't pay it back	52.1	46.4	59.4 *
Didn't need (I have enough money)	24.8	31.1	16.8
Interest rate/other costs too high	23.4	26.5	19.5
Afraid of losing collateral	15.7	15.2	16.4
Process is too long	8.3	9.1	7.2
Not aware of possibility (not familiar with loans)	6.3	5.5	7.2
No loan providers in my area (too far)	3.5	3.2	3.9
Couldn't find a loan to meet needs (e.g., size, terms)	3.4	3.6	3.1
Cannot qualify (e.g., no collateral)	2.5	1.9	3.4
	<i>n</i> 944	528	416

NOTES: Stars represent statistical significance at the 0.01 (\*\*), 0.05 (\*) and 0.1 (\*) levels.

Table 46. Use of household savings.

% households	All	Intervention	
		MERET	Control
To buy food	53.2	54.2	52.2
To meet medical expenses	41.1	40.1	42.1
To buy household goods	35.1	37.8	32.1
For education/training	31.8	33.3	30.1
To buy livestock	31.1	26.6	36.1
To buy agricultural inputs/technology	28.2	31.5	24.6
To cope with the impact of the current drought	28.1	30.0	26.1
To start/help business	21.2	20.3	22.1
To pay taxes	16.8	18.5	14.9
To buy house	12.6	15.4	9.5
To pay utilities	12.3	15.4	8.9
For religious reasons	9.4	10.4	8.3
To build/repair house	8.7	8.6	8.9

% households	All	Intervention		
		MERET	Control	
To rent land (contract)	5.5	6.0	4.9	
To replace lost assets	2.7	4.7	0.6	**
For funeral	2.6	2.6	2.6	
To buy water pump (for irrigation)	2.2	3.1	1.2	
To pay for labor	1.1	1.3	0.9	
To send to friends/family elsewhere	0.7	1.0	0.3	
For marriage	0.4	0.3	0.6	
To migrate	0.3	0.0	0.6	
	<i>n</i> 733	384	349	

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*) and 0.1 (\*) levels.

Table 47. Use of credit.

% households	All	Intervention		
		MERET	Control	
To buy food	58.0	54.6	60.8	
To buy livestock	34.1	30.8	36.8	
To cope with the impact of the current drought	23.5	26.0	21.6	
To buy household goods	21.0	19.8	21.9	
To buy agricultural inputs/technology	20.8	27.3	15.6	
To meet medical expenses	20.6	20.7	20.5	
For education/training	17.7	17.2	18.0	
To start/help business	9.8	10.6	9.2	
To pay taxes	6.3	7.5	5.3	
To pay utilities	5.3	5.3	5.3	
To build/repair house	4.7	5.3	4.2	
For religious reasons	3.3	4.0	2.8	
To buy house	2.8	1.8	3.5	
To rent land (contract)	1.6	1.3	1.8	
To pay for manpower	1.2	1.3	1.1	
To replace lost assets	1.0	1.8	0.4	
For funeral	0.8	0.0	1.4	
To buy water pump (for irrigation)	0.6	0.0	1.1	
For marriage	0.2	0.4	0.0	
To send to friends/family elsewhere	0.2	0.4	0.0	
	<i>n</i> 510	227	283	

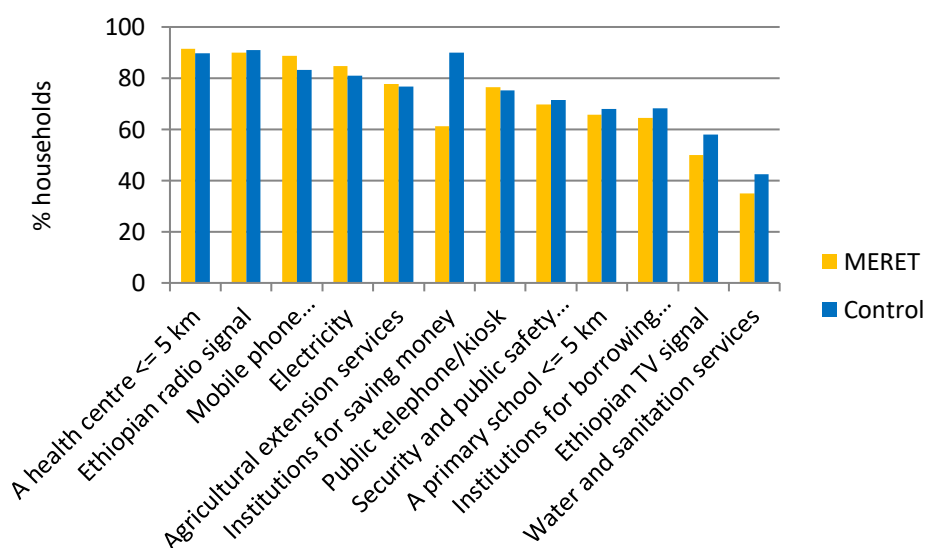
NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*) and 0.1 (\*) levels.

Table 48. Household ability to access basic services without problems.

% households	All	Intervention				
		n	MERET	n	Control	n
Primary school within 5 km	88.6	1,365	88.8	686	88.4	679
Security and public safety services	88.5	1,199	90.3	609	86.6	590
An Ethiopian radio signal	86.7	1,205	86.6	625	86.9	580
Agricultural extension services	85.4	1,393	85.2	714	85.7	679
Health center within 5 km	81.8	1,190	82.4	603	81.3	587
Water and sanitation services	81.5	643	82.8	360	79.9	283
Places to borrow money	81.2	1,016	82.3	524	80.1	492
Places to save money	80.5	1,041	79.1	540	82.0	501
Public telephone/kiosk	80.2	131	74.2	62	85.5	69
Mobile phone network/service	75.5	1,261	75.1	643	75.9	618
An Ethiopian TV signal	71.0	231	67.0	112	74.8	119
Electricity	62.9	385	64.6	189	61.2	196

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

Figure 12. Households that feel basic services meet or more than meet their needs.



NOTES: Stars represent statistical significance at the 0.01 (\*\*\*) , 0.05 (\*\*) and 0.1 (\*) levels.

Table 49. Use of information in household decision-making.

% households	All	Intervention					
		n	MERET	n	Control	n	
Gender equality/gender-based violence	94.6	1,163	95.7	602	93.4	561	
Conflict or other security restrictions	92.9	925	93.4	483	92.3	442	
Current market prices	92.0	765	92.4	422	91.6	343	
Weather-related agriculture recommendations	92.0	1,136	93.8	596	90.0	540	
Animal health/husbandry practices	90.6	1,076	92.7	574	88.3	502	
Child nutritional and health information	90.3	1,143	90.7	593	89.8	550	
Information about government services/responsibilities/processes	90.0	1,042	90.3	554	89.8	488	
Early warning for natural hazards	88.0	899	88.6	509	87.2	390	
Long-term changes in weather patterns	87.7	1,043	88.4	552	87.0	491	
Rainfall prospects/weather prospects for the coming season	87.8	1,100	89.8	576	85.7	524	
Business investment and opportunities	77.1	332	68.6	188	88.2	144	**
Opportunities for borrowing money	73.4	816	69.9	439	77.5	377	

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*) and 0.1 (\*) levels.

Table 50. Household access to irrigation.

% households	All	Intervention	
		MERET	Control
Households using irrigation	31.4	33.5	29.1
	<i>n</i> 1,367	711	656
Reasons households did NOT use irrigation			
No water	66.6	59.6	73.4
Does not reach my fields	25.2	32.1	18.1
System not functional	4.5	5.1	3.9
Too costly	1.4	0.6	2.2
No management committee	0.3	0.6	0.0
Other	1.8	1.9	1.7
	<i>n</i> 938	473	465

NOTES: Stars represent statistical significance at the 0.01 (\*\*\*), 0.05 (\*\*) and 0.1 (\*) levels.