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DECENTRALIZED EVALUATION FOR EVIDENCE-BASED DECISION MAKING



World Food  
Programme

# Decentralized Evaluation

**Evaluation of the Satellite Index Insurance for Pastoralists in Ethiopia (SIPE)  
Programme: Impact Evaluation of the SIPE Pilot (2017 – 2019)**

## **Evaluation Report**

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## **List of acronyms**

BoANRD	Bureau of Agriculture and Natural Resource Development
BoLPD	Bureau of Livestock and Pastoral Development
C4ED	Center for Evaluation and Development
DS	Direct Support Beneficiaries
EQ	Evaluation question
ETB	Ethiopian Birr
ETHCO	Ethiopia Country Office
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus group discussion
GoE	Government of Ethiopia
HFIAS	Household Food Insecurity Access Score
HH	Household
ICC	Intra-cluster correlation
IfA	Insurance for Assets
IDI	In-depth interview
IGA	Income-generating activity
ILRI	International Livestock Research Institute
KII	Key informant interview
KM	Kernel matching (estimates)
MDES	Minimum detectable effect size
MDD-W	Minimum Dietary Diversity for Women
MUAC	Mid-upper arm circumference
NDVI	Normalized Differenced Vegetation Index
NGO	Non-governmental organisation
NN	Nearest neighbour (estimates)
PC	Pure Control (Group)
PSM	Propensity score matching
PSNP	Productive Safety Net Program
PW	Public Work
RCT	Randomized Controlled Trial
SC	SIPE Control (Group)
SIPE	Satellite Index Insurance for Pastoralists in Ethiopia
ST	SIPE Treatment (Group)
TLU	Tropical Livestock Unit
ToR	Terms of Reference
USD	United States Dollar
VAM	Vulnerability Analysis and Mapping
WFP	World Food Programme
WTP	Willingness to pay

## EXECUTIVE SUMMARY

### Background of the evaluation

1. This report presents the impact evaluation findings of the first year of the Satellite Index Insurance for Pastoralists in Ethiopia (SIIPE) pilot programme. SIIPE was launched in March 2018 by the WFP Ethiopia Country Office (ETHCO) in collaboration with the Government of Ethiopia, the International Livestock Research Institute and the private sector. It aims to enhance the adaptability and resilience of pastoralist households in the Somali region of Ethiopia by insuring them against drought-related livestock risks.
2. Climate change has increased the frequency of droughts over time. In the most recent drought prior to the launch of SIIPE (November 2016 to April 2017), an estimated 1.5 million livestock units perished in South(east) Ethiopia, threatening the livelihoods and food security of (agro)pastoral households. Against this background, SIIPE has provided livestock insurance to 5,001 beneficiary households in three districts of the Somali region. The insurance policies are offered by four companies partnering with SIIPE. All insurance holders are also beneficiaries of Ethiopia's Productive Safety Net Programme (PSNP), which provides cash or food payments against public works, and obtain SIIPE insurance coverage in exchange for public work days in addition to standard PSNP obligations. Insurance payouts would be triggered in scenarios of extreme drought as identified by a vegetation index calculated from satellite images.
3. ETHCO commissioned this evaluation to improve the product and processes of the SIIPE pilot and to decide about its potential scale up. The specific objectives were to understand whether SIIPE brought about any behavioural change, if (and how) it provided greater protection to pastoralists against climate risk; as well as to measure the changes in well-being of individual households attributable to the programme.
4. The main stakeholders and intended users of the evaluation include WFP (ETHCO, local offices in the programme areas, and the central Office of Evaluation), as well as the Somali regional government and the private sector partners.

### Methodology

5. The evaluation was designed to assess the first year of SIIPE against the evaluation criteria of effectiveness and impact. The main evaluation questions were:
  - EQ 1: *Behavioural change*: To which extent (and how) has SIIPE affected productive decisions and livelihoods of beneficiary households?
  - EQ 2: *Insurance awareness and understanding, and financial inclusion*: Have programme activities and services led to improved awareness, understanding or use of insurance and financial tools and products?
  - EQ 3: *Livestock protection*: To which extent (and how) has SIIPE strengthened the ability of pastoralists to keep their animals alive?
  - EQ 4: *Food security*: Has the food security of pastoralists and their families improved as a consequence of the programme?
6. These questions were answered through a mixed-method evaluation approach. The quantitative analysis estimated the programme effects on key outcome and impact indicators; it also provided descriptive insights into mechanisms and context. The impact estimates in this report are based on a quasi-experimental (propensity score matching) design that compares beneficiary households in pilot communities with comparable non-

beneficiary households in nearby communities<sup>1</sup>. Survey data were collected from approximately 400 households per study group. Qualitative evidence from group and individual interviews provided further insight into the impact pathways of SIIPE. Two waves of data collection were carried out. The baseline was conducted in January and February 2018, and the follow-up data collection in February and March 2019.

7. The main limitations of this evaluation included the short study period, the absence of insurance payouts and the delayed implementation of some programme components. This report covers only the first year of the SIIPE pilot and can thus only identify short-term effects, which may differ from those in the longer term. Moreover, the fact that the index insurance was not triggered and did not pay out in the first year – even though pastoralists reported having experienced a prolonged drought – implies that the main effects of insurance in cushioning hardship and protecting assets by providing cash when needed could not be observed yet. Finally, a period of conflict in the study area led to delays in implementation of certain SIIPE activities, such as some public work activities and improvements in the filtering of satellite images. Due to this combination of factors, the quantitative impact analysis yielded only few statistically significant effects in the short run (but some additional results through qualitative analysis).

### **Key findings of the evaluation**

**The results for EQ 1 show few behavioural changes at household level, but some effects at community level.**

8. The insurance coverage alone, without any payouts and livelihood training in the study period, has not increased livestock-related investment, income diversification or stability. The livelihoods of pastoralists continue to heavily depend on livestock and livestock sales. On a positive note, the programme has increased the likelihood that beneficiaries would rely on veterinary medicines and services to cope with drought.

9. Positive effects of SIIPE are more evident at the community level. Communities reported clear benefits from the additional public work activities required for insurance coverage. These activities differ from the standard PSNP public works and have contributed to improved water and pastureland availability, as well as social cohesion.

**Under EQ 2, the programme has improved the awareness (but not the exact understanding) of insurance and SIIPE; it also fostered willingness to pay for livestock insurance and financial inclusion.**

10. Awareness of insurance and SIIPE is relatively high, but exact knowledge about index insurance and its advantages and disadvantages has remained rather low. This has led SIIPE beneficiaries – erroneously – to being rather confident that a payout would happen and to assuming that their entire herd is insured. This scarce knowledge derives from community (*kebele*) officials responsible for training of beneficiaries.

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<sup>1</sup> In addition, an experimental control group had been included at programme design stage, consisting of randomly assigned non-beneficiary households within the *same* SIIPE pilot communities. The quasi-experimental control group actually used in this study was introduced to avoid the large risk of spillovers of programme benefits between beneficiaries and their peers in the experimental control group. Nevertheless, survey data for the latter was collected and analysed; yet the results are very similar to those of the quasi-experimental design and have thus only been collected in a supplementary annex (available on request).

11. In general, a relatively large willingness to pay for livestock insurance is reported, but this only applies to roughly half of the beneficiary households. The other half is not willing to pay anything, potentially leading them to abandon the insurance scheme if subsidies are phased out. SIIPE has maintained a higher share of beneficiaries willing to pay for livestock insurance relative to the control group.

12. As a by-product of SIIPE, all insurance holders have been registered on a mobile money platform to process potential insurance payouts, but the actual use of these accounts has been limited so far. Nevertheless, this activity is an important first step towards further financial inclusion.

**EQ 3 has not found any systematic improvements in livestock protection but has revealed large livestock losses in the programme area.**

13. Insurance holders confirmed that they would spend their potential insurance payouts partially on livestock – albeit less than on food. However, this hypothetical behaviour could not be verified given the actual lack of payouts. A positive, albeit weak, behavioural effect on the use of veterinary medicine or services has been observed.

14. Livestock accounting over the study period shows that the overall size of livestock herds owned by pastoralist households has not changed much since the baseline. Livestock losses (especially of sheep and goats) were large, amounting (on average) to one fifth of the baseline livestock or 500 USD in value. These losses were compensated through new animals born or received as gifts, but nevertheless underline the relevance of livestock insurance in the Somali region.

15. There are indications that insured households have experienced more losses of livestock and had higher sales during the dry season than non-beneficiaries. This suggests that beneficiaries entered the dry season with the expectation of insurance payouts in case of hardship and therefore did not sell livestock early during the prolonged dry season. Households may have been tempted, because of the insurance, to wait longer during drought before taking action, leading to higher losses and sales. With insurance payouts, one would expect a positive effect on livestock protection in the long run.

**The results for EQ 4 show that food insecurity is a widespread concern that has not yet been mitigated through the programme.**

16. SIIPE has not yet stimulated the food intake, dietary diversification or food expenditure of pastoralist households. Again, no large effects can be expected since the insurance has not paid out and there have been no effects either on the intermediate outcomes towards better food security (income diversification, livestock protection).

17. The descriptive analysis shows that households face on average moderate insufficiency of food intake. Children are on average modestly malnourished but with large variation in individual levels. While food insecurity is widespread, an even larger concern is low dietary diversity. Half of the women in reproductive age interviewed in beneficiary households consume only grains, a pattern that has been slightly reinforced through SIIPE, potentially to meet the calorie needs for the additional public work required from insurance holders.

## **Recommendations**

18. The findings and conclusions of this evaluation led to the evaluation team making the following recommendations (divided in two large clusters and indicating high or medium priority):



## **Recommendations on the insurance product**

19. *R1 (high): Consider increasing the insurance coverage of risks other than pastures.*

20. Current insurance policy covers risks only for water, veterinary service and pasture risks, for the seasonal cover period of Gu season (for the index interval of March to June) and Deyr season (October to December). However, beneficiaries are interested that insurance covers the entire 12 months of a year, or not only ‘catastrophic’ but also medium risks.

*R2 (medium): Explain the limitations and risk of index-based insurance.*

21. Awareness raising activities of SIIPE should spell out more clearly the limitations and risks of index-based livestock insurance to prevent disappointments of insurance holders.

*R3 (medium): Continue addressing the basis risk issues in calculations of the vegetation index.*

22. Some interviewees suggested that the vegetation index may not accurately reflect actual drought conditions because, even during drought, certain areas are covered by evergreen plants and shrubs, but which are not edible by the animals. The filtering of satellite images should be adjusted to correctly account for this fact.

## **Recommendations on other programme components**

*R4: (high) Rigorously implement training and improve training materials.*

23. The training of *kebele* officials as trainers for final beneficiaries should be closely supervised to enhance the still limited understanding of SIIPE both among trainers and in the target population. New local officials (after replacements) should be trained as soon as possible. All training sessions should make use of improved materials such as those employed by ILRI for the training of higher-level SIIPE personnel.

*R5 (high): Conduct a follow-up data collection to capture the full programme effects.*

24. It is highly recommendable to carry out another follow-up household survey in 2020 or 2021 to capture the full long-term effects of SIIPE (including those of upcoming gender-specific activities), using the same control group design. This would require WFP to refrain from implementing programme activities in the current control communities. The data collection should take place around the dates when households collect their PSNP payments and can be easily located. Flexibility in the timing of the data collection is crucial, especially to wait until the first insurance payouts have been made.

*R6 (medium): Support the implementation and monitoring of public work activities.*

25. SIIPE public work activities have strengthened community assets, but their potential has not been fully exploited because of difficulties in their coordination and initialisation. WFP and its partner organisations should play an active role in fostering community participation in identifying relevant activities, provide advisory for their implementation and directly monitor the activities under SIIPE.

*R7 (medium): Foster the use of registered mobile money accounts.*

26. SIIPE has successfully registered beneficiaries on a mobile money platform, but these accounts have not been used much. It is recommended to stimulate their active use through adequate promotion and explanation of the detailed mobile banking functions, e.g. in the training sessions on income generating activities.

## 1. INTRODUCTION

The annexes to this evaluation report are presented in a separate document. Tables in this main report are referred to with Arabic numerals (1, 2 ,3...) while tables in the annexes are numbered with Roman numerals (I, II, III...).

### 1.1 Overview of the evaluation subject

1. Prolonged droughts have severe negative impacts on pastoralist households living in arid and semi-arid areas around the world, including the Somali region of Ethiopia. Typical consequences of drought include widespread deaths of livestock and increased food insecurity, which exacerbate the vulnerability of an already poor population.

2. To mitigate the consequences of drought for pastoralist households and their livestock, the WFP Ethiopia Country Office (ETHCO), in collaboration with the Government of Ethiopia (GoE) and private sector stakeholders, launched the Satellite Index Insurance for Pastoralists in Ethiopia (SIPE) Programme in March 2018. SIPE aims to enhance the adaptability and resilience of pastoralist households in the Somali region by insuring them against drought-related livestock risks. SIPE is envisioned to run for a period of five years (WFP 2016, ILRI 2017). The first year is the pilot period covered in the present evaluation.

3. WFP ETHCO has commissioned an impact evaluation covering the first year of SIPE, with the intention of using the results “to decide whether it is feasible and desirable to scale up the intervention in Somali regions and potentially other regions in the low lands of Ethiopia and to glean lessons learnt to inform the design of future interventions” and “to refine and improve the product and processes designed in the framework of SIPE” (Terms of Reference (ToR), p.2).

4. The objectives of the evaluation, as outlined in the ToR, are:

- To understand if (and how) SIPE provides greater protection to pastoralists against climate risk;
- To understand whether there is any behavioural change connected to improvements in confidence brought about by SIPE;
- To measure the changes in well-being of individual households that can be attributed to the programme.

5. The key stakeholders and intended users of the evaluation are WFP ETHCO, its local offices in the programme areas and the central WFP Office of Evaluation. Other stakeholders include the Somali regional government, represented through the Bureau of Agriculture and Natural Resource Development (BoANRD) and the Bureau of Livestock and Pastoralists Development (BoLPD), as well as the private sector (partnering insurance companies, microfinance and mobile money providers).

6. This evaluation report is based on two rounds of data collection in early 2018 and one year later. Given the relatively short evaluation period, the impact evaluation focuses on the short-term effects of SIPE. Moreover, since the drought period in the pilot region observed in 2018 were not severe enough to actually trigger insurance payouts, not all of its potential impacts could be analysed.

### Programme description

7. SIIPE provides livestock insurance to 5,001 beneficiary households in selected districts (*woredas*) in the Somali region of Ethiopia. These households receive insurance coverage for five Tropical Livestock Units (TLUs) during the two rainy seasons of *Deyr* (October-December) and *Gu* (March-June).

8. Insurance payouts would be triggered in scenarios of extreme drought and may take place in two different time windows in each season (max. four payouts per year). Droughts are identified through satellite imagery that monitor the forage scarcity in the programme region. Specifically, SIIPE relies on a Normalized Differenced Vegetation Index (NDVI), which has proved to be a strong predictor of livestock mortality rates (Chantararat et al. 2013). Whenever the NDVI falls below a predetermined threshold within a payout window, SIIPE policy holders will receive a payout. These payouts are intended for purchasing supplementary animal feed, veterinary services, water and other inputs to keep livestock herds – the livelihood assets of pastoralist households – alive during severe droughts.

9. The insurance policies are offered by four private sector companies partnering with SIIPE: Nyala Insurance, Ethiopian Insurance Corporation, Oromia Insurance and Africa Insurance. Payments would be made through the mobile money platform HelloCash provided by the company Belcash. The total budget for SIIPE is 5.6 million USD and is co-financed by the Government of Sweden and the Swiss Agency for Development and Cooperation.

### Beneficiary eligibility and selection through the Productive Safety Net Programme

10. Households in the Somali region are eligible for SIIPE if they satisfy three criteria, which are discussed in turn:

- i) Residence in one of the 17 selected *kebeles* in the three SIIPE pilot districts;
- ii) Current participation in the GoE's Productive Safety Net Programme (PSNP);
- iii) Ownership of five to eleven tropical livestock units (TLUs).

11. The geographical focus of the pilot intervention includes three districts (out of a total of 72 districts in the Somali region): Kebridahar, Adadle and West Imey<sup>2</sup>. Within the districts, local administrative staff (in collaboration with WFP) selected a total of 17 communities (*kebeles*) to implement SIIPE. The location of the three programme districts and 17 pilot *kebeles* is shown in Annex A1-a. Communities are further sub-divided into villages (sub-*kebeles*).

12. In these areas, WFP ETHCO has implemented SIIPE under the umbrella of the PNSP, a major component of the Government's Food Security Programme. The PSNP aims to improve food security and stabilise assets for improved resilience to climate shocks. Specifically, it provides food or cash to help chronically food insecure households survive periods of food deficit, and to avoid depleting their productive assets. These transfers are typically given to a household in exchange of/conditional on its participation in community work ('Public Work' (PW) beneficiary households). This condition is waived if the household has no able-bodied workers ('Direct

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<sup>2</sup> These districts were selected based on their importance of livestock producing; proneness to drought and food insecurity; coverage under WFP relief operations; presence of social safety net interventions, livestock services or development projects; and mobile network coverage (WFP, 2016)

Support' (DS) beneficiaries – about 10% of the sample households in this study)<sup>3</sup>. Households qualify for SIIPE if they are beneficiaries of PSNP in either of the two modalities. The beneficiary lists of PSNP are also used for SIIPE and other additional social protection schemes targeted at household level.

13. Under PSNP, female-headed households are automatically classified as DS beneficiaries if they do not have any adult able-bodied male members. Roughly one third of the SIIPE households are headed by women<sup>4</sup>. So far, the programme has not implemented any gender-specific components, but it is foreseen to conduct training on income generating activities also specifically for women<sup>5</sup>.

14. The final eligibility criterion for SIIPE is that the household owns between five and 11 tropical livestock units (TLUs). The lower threshold of five units is thought to secure a pastoralist's minimum livelihood (Lybbert et al. 2004; Toth 2015), while the upper bound of 11 TLUs ensures targeting of the intervention to small herders. The livestock categories insured by SIIPE are the four most common species among pastoralist communities in Ethiopia: cows, camels, goats and sheep (WFP, 2016)<sup>6</sup>.

15. According to the previous criteria, a total of 5,800 households were eligible for SIIPE in the selected pilot communities. The WFP ETHCO Vulnerability Analysis and Mapping (VAM) team established that approximately 86 percent of the eligible population in each *woreda* would be offered the programme. In total, 5,001 households were selected as beneficiaries while 799 households were not included in the pilot programme.

16. Once selected, the conditionality of PSNP on participation in community work also extends to SIIPE insurance coverage. Within a period of six months, PSNP Public Work households selected for SIIPE are required to work two additional days per month on top of their standard PSNP obligations (five days per month). This requirement is suspended in case of disaster occurrence. In contrast, PSNP Direct Support households always receive unconditional insurance coverage. SIIPE thus follows an Insurance for Assets (IfA) approach, where households are engaged in disaster risk reduction activities, building or rehabilitating their assets through activities such as canalization and waste disposal<sup>7</sup>. The additional community work

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<sup>3</sup> PSNP beneficiaries receive monthly transfers of 15 kg of cereals or income equivalent per household member (up to a maximum of 5 household members registered under PSNP) for a total of six months per year (January to June). SIIPE beneficiaries receive the same transfers as other PSNP beneficiaries, plus livestock insurance coverage (see further below).

<sup>4</sup> Either permanently or temporarily, but for the majority of the last year. Typically, the household head manages or economically supports the household and its members.

<sup>5</sup> Planned project activities include trainings of women's groups across all pilot *districts*, which will be implemented by WFP. Moreover, in the Kebridahar districts, activities focusing on market availability and accessibility will be introduced in collaboration with Mercy Corps.

<sup>6</sup> A TLU is commonly taken to be an animal of 250 kg live weight. The conversion rates for the specific animal categories in SIIPE are: 1 camel = 1.4 TLU, 1 cow = 1 TLU, 1 goat or 1 sheep = 0.10 TLU.

<sup>7</sup> The IfA approach of SIIPE took inspiration from the success of WFP and Oxfam-America's *R4 Rural Resilience Initiative* for crop producers, piloted in 2009 as *Horn of Africa Risk Transfer for Adoption* in Tigray, Ethiopia. It currently reaches over 87,000 farmers in Ethiopia, Kenya, Malawi, Senegal, Zambia and Zimbabwe (WFP, Oxfam-America, 2019). This programme aims at improving the long-term resilience against drought of farmers and food insecure rural households with a set of integrated risk management tools, including index insurance. The programme works in partnership with PSNP via an IfA scheme, allowing farmers to paying back insurance either by investing their time in building assets or working on improving agricultural practices. The impact evaluation of the programme in Tigray (Oxfam-America, 2013) reported that insured farmers had a higher savings rate than uninsured

done by SIIPE beneficiaries typically differs from the general PSNP and focuses mostly on water and range land management.

### Beneficiary registration and other programme activities

17. In a first step, WFP organised capacity building training on livestock insurance for selected government officials in the Somali region and all WFP SIIPE coordinators. Subsequently (in October 2017) WFP informed SIIPE beneficiaries about their selection for the programme. The actual registration started only after the baseline survey in late February 2018. WFP accompanied the provider of the mobile money platform (Belcash) in the registration of beneficiaries on the platform and, in parallel, conducted awareness and sensitisation sessions in SIIPE communities. Virtually all (4,983) of the 5,001 intended beneficiaries were actually registered for the insurance scheme. Belcash then provided training in basic financial literacy through cell phone messaging and brochures. It is foreseen that the company Somali Microfinance will collaborate with Belcash and the insurance companies for potential insurance payouts.

## **1.2 Context**

18. A large proportion of households in the Somali region derive their livelihood either directly or indirectly from pastoral activities. According to the endline survey of this evaluation, 60 percent of SIIPE beneficiary household heads practice pastoralism as main activity while 33 percent are agropastoralists<sup>8,9</sup>. 41 percent of SIIPE beneficiary households are headed by women.

19. Climate change has increased the frequency of droughts over time, with adverse impacts on pasture and water availability in most (semi-)arid lands in Ethiopia. According to the FAO (2017), six major drought episodes were registered in Ethiopia between 2000 and 2017. The same source estimated that more than 1.5 million livestock units perished in South and Southeast Ethiopia between November 2016 and April 2017, which has undermined the livelihoods and food security of (agro)pastoral households. As a consequence, a total of 8.5 million people required emergency food assistance in Ethiopia between August and December 2017<sup>10</sup>. Drought emergencies also tend to reinforce gender norms. For example, Oxfam and CARE show for Ethiopia in 2016 that female-headed households had less information on humanitarian assistance and were particularly vulnerable to food insecurity and income reductions in times of drought. Even though women and men are both involved in livestock rearing, women face more constraints in market access and control over resources. Consequently, they tend to engage more in labour-

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farmers and invested more in productive assets such as animals, fertilizers and seeds, although effects were not homogeneous across areas. WFP (2014) identified the opportunity to establish a livestock index insurance programme in the pastoral regions of Ethiopia, working in partnership with PSNP.

<sup>8</sup> Agropastoralists are pastoralists who also engage in farming activities.

<sup>9</sup> Available statistics indicate that pastoralists, agropastoralists and farmers constitute around 59 percent, 26 percent and 15 percent of the rural population in the Somali region, respectively (Food Economy Group, 2015).

<sup>10</sup> Besides SIIPE, a number of other food support and disaster risk reduction interventions are implemented in the Somali region. This includes Targeted Supplementary Feeding, RELIEF and Food for Education. As regards support from external organizations, the Pastoralist Community Development Project has been rolled out in a few SIIPE *kebeles*. Household support from interventions other than SIIPE has been taken into account in the data collection.

intensive activities such as feeding or milking of livestock, while men take care of the overall herd management, as well as decision-making on livestock sales and purchases (Kinati and Mulema, 2018).

20. While the SIIPE activities implemented in the evaluation period have not had any particular gender focus, the subsequent analysis considers the possibility that households may differ in key outcomes or programme effects depending on the gender of the household head (e.g. because of the previous gender differences in livestock rearing). The survey data analysed in Section 2.4 below do not corroborate that SIIPE households face higher food insecurity if they are headed by women (which may reflect better protection of those households through the PSNP), but the data show that dietary diversification is extremely low among women, with heavy reliance on grains.

21. The vulnerability of poor households in (agro)pastoralist regions is exacerbated by the fact that their level of formal insurance coverage is generally low (Jensen et. al. 2015). This fact was also confirmed in the baseline survey of the current evaluation: 48 percent of future SIIPE beneficiaries had heard of insurance, whereas only 16 percent claimed to understand the concept of insurance or how it operates. Only 4 percent had ever purchased an insurance product before SIIPE.

22. In August 2018, the provision of WFP support (including SIIPE) was disrupted by conflicts related to the forced change in the regional government. This in turn affected the implementation of some PSNP/SIIPE public works activities and the filtering of satellite images for NDVI calculations.

23. Meteorological information<sup>11</sup> for the first year of SIIPE (2018) shows that Ethiopia has experienced rainfall above average. Despite seasonal dry spells, rangeland resources were largely available in the Somali region throughout the year. However, towards the end of the year, vegetation coverage in the Southeast of the region was below average. The NDVI was closest to – but ultimately did not fall below – the threshold for triggering insurance payouts in the Adadle district during the *Deyr* season (October to December 2018). The timing of the evaluation is thus interesting because it provides evidence on how households reacted in a drought period without payouts but having (perhaps) already changed their behaviour.

24. In this context, it is important to remember that SIIPE is a pilot intervention, and that one main objective of this evaluation is to encourage learning for key stakeholders (WFP, GoE, and private sector partners) before a potential scale-up.

### **1.3 Evaluation methodology and limitations**

25. This section describes the evaluation approach and the data collection in the field. The evaluation used a mixed-method approach. The quantitative analysis aimed to estimate the presence and numerical size of the effects of SIIPE on selected outcome and impact indicators. It also provided descriptive insights into programme mechanisms and context. Two alternative counterfactual approaches were explored for this purpose: an experimental design with randomised controlled trial (RCT), and a quasi-experimental design with propensity score matching (PSM). The corresponding data were collected through two rounds of household surveys. In contrast, the qualitative analysis relied on group and individual interviews to shed

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<sup>11</sup> Source: reliefweb.int

light on the impact pathways of SIIPE – why the programme was effective or not – and to obtain information on programme implementation.

### **1.3.1 Impact evaluation questions and evaluation criteria**

26. The evaluation covers four broad thematic areas of impact, captured through the following evaluation questions (EQs):

- EQ 1: *Behavioural change*: To which extent (and how) has SIIPE affected productive decisions and livelihoods of beneficiary households?
- EQ 2: *Insurance awareness and understanding, and financial inclusion*: Have programme activities and services led to improved awareness, understanding or use of insurance and financial tools and products?
- EQ 3: *Livestock protection*: To which extent (and how) has SIIPE strengthened the ability of pastoralists to keep their animals alive?
- EQ 4: *Food security*: Has the food security of pastoralists and their families improved as a consequence of the programme?

27. The EQs have been operationalised through a set of sub-EQs that cover a range of specific dimensions of each EQ (see Annex A1-b for the resulting evaluation matrix). The sub-EQs, in turn, have been informed through different outcome and impact indicators. Annex A1-c displays the underlying Theory of Change and indicates which logical links are covered by the evaluation matrix.

28. The evaluation matrix was initially designed to accommodate two possible scenarios in the subsequent evaluation period: that insurance payouts would be triggered – or not. In the first scenario, the full evaluation matrix would have been applied. Yet, the actual scenario experienced in the evaluation period was that no payouts took place. Therefore, some questions – e.g. on livestock protection mechanisms – can only be analysed via summary statistics or qualitative information, rather than full-fledged impact estimates.

29. Gender aspects in the EQs were taken into account and presented across the respective sections of the report through:

- Gender-specific data collection (separate focus group discussions for women and men, questionnaire section on dietary diversity specifically for women);
- Analysis of descriptive household statistics by gender of the household head;
- Heterogeneity of programme effects by gender of the household head.

### **1.3.2 Mixed-methods methodology**

#### **1.3.2.1 Quantitative methodology**

30. The quantitative estimates of programme impacts were obtained through counterfactual designs. The estimates compare a set of outcome/impact indicators, measured at follow-up data collection in 2019, in the group of SIIPE beneficiary households (“treatment group”) with similar groups of households who did not participate in SIIPE (“control groups”). The counterfactual designs disentangle the influence of external factors (e.g. rainfall, drought) from the effects of SIIPE, which cannot be obtained with a simple before-after comparison in the beneficiary group.

31. The quantitative impact estimates capture the combined effects of the different components of SIIPE: (i) insurance coverage (which may have limited effects in the absence of a payout), (ii) the additional days of PSNP community work

required, (iii) training and awareness campaigns about SIIPE and (iv) beneficiary registration for mobile money accounts (for possible insurance payouts).

32. The validity of a counterfactual design hinges upon finding a control group with household characteristics that are (on average) similar to the treatment group. In the current setting, two alternative control groups were explored.

33. The first control group would exploit the random beneficiary selection by WFP (experimental approach). The randomization strategy for beneficiary selection was applied by WFP before the evaluation team was contracted and could hence not be adjusted. While the experimental approach avoids systematic differences between the groups at baseline, it may be affected by spill-overs of programme benefits (e.g. insurance awareness and knowledge) to the control group within the same small geographic/social units. These spill-overs may occur because beneficiary and control units live in the same communities or even belong to same (extended) households.

34. For these reasons, the evaluation team (in agreement with WFP) introduced a second control group, which consists of households outside of the SIIPE pilot *kebeles*. This control group is non-experimental: WFP identified (jointly with the district administrations) 13 additional neighbouring *kebeles* that would be as similar as possible to the pilot *kebeles* in terms of average household characteristics and weather conditions. Since this second control group was not selected at random, a *quasi-experimental evaluation method* (propensity score matching) was used<sup>12</sup>. The result section of this report displays only *quasi-experimental impact estimates* from a comparison of ST and PC households, in order to minimise potential ‘contamination’ of the estimates by spillovers<sup>13</sup>.

35. The impact evaluation design thus considered three groups of households:

- i) Beneficiaries in SIIPE pilot *kebeles* (‘SIIPE Treatment Population’, **ST**)
- ii) Non-beneficiaries in SIIPE pilot *kebeles* (‘SIIPE Control Population’, **SC**)
- iii) Non-beneficiaries in non-pilot *kebeles* (‘SIIPE Pure Control Population’ **PC**)

36. The location of these communities is shown in Annex A1-d. From these populations, the evaluation team selected random (representative) household samples for conducting the baseline and endline surveys.

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<sup>12</sup> The evaluation team also examined the possibility of using an alternative quasi-experimental design with difference-in-difference estimation. However, this method was not considered appropriate since many outcome variables are binary and the key identifying assumption of parallel trends in the absence of the intervention would not have been credible for several outcomes jointly.

<sup>13</sup> The inception report of this evaluation considered the possibility of using the alternative comparison of ST with SC households to estimate the size of spillovers - but such spillovers are only possible if there are (large) direct programme effects on outcomes in the ST group. However, the results from the quasi-experimental ST-PC comparison in this study show no or small direct effects for most outcome indicators. Spillovers are thus zero *by definition* – in principle without any formal need for calculating them from a comparison of ST and SC. The evaluation team produced these RCT-based estimates anyway and collected them in a supplementary annex (available on request). They are not explicitly referred to in this report because they do not provide any different insights than the quasi-experimental estimates. Nevertheless, the SC group would be beneficial for the evaluation of the medium-term effects of SIIPE, particularly after a drought and payouts, as it would enable researchers to analyse if and how the effects of SIIPE are shared/distributed within villages, communities or households.



### Propensity score matching

37. In all EQs of this report, the (short-term) impacts of SIIPE are estimated by propensity score matching (PSM) of ST with PC households (adjusting for potential baseline differences between the two groups). Matching estimators are based on the idea of finding for each SIIPE beneficiary household the non-beneficiary household in communities of the PC group that is most similar in baseline characteristics. Thereby, average differences between the two groups are eliminated. The degree of similarity in baseline characteristics between ST and PC households is captured through a one-dimensional measure: the estimated conditional probability of being treated ('propensity score').

38. The PSM comparison group is constructed in two steps: (i) estimation of the propensity score for each household, (ii) matching of SIIPE beneficiaries with their most similar PC counterparts (based on the propensity score and a specific PSM algorithm). The effects of SIIPE can then be estimated as the difference in post-programme outcomes between the ST and PC groups at endline.

39. PSM can be implemented in two ways. A given ST households can be matched either only to the single most similar PC household ('nearest-neighbour (NN) matching') or to an average of similar PC households ('kernel matching (KM)'). Whereas the NN estimator has the least-possible estimation bias, the KM estimator tends to be statistically more precise as it uses information from more observations. In the subsequent analysis, we usually present KM estimates for reasons of statistical precision, whereas NN matching mostly serves as a robustness check. In the annexes, results for both estimators are presented.

### Internal validity of the impact evaluation

40. The internal validity of the PSM design is analysed in detail in Annex A1-e. In contrast an RCT, the PSM estimator could be biased (the impact estimates would not reflect the true causal effects of SIIPE) if it fails to account for differences in unobserved characteristics treatment (ST) and control (PC) units. However, since the identification of comparable PC *kebeles* was done together with WFP and the district administrations, any potential estimation bias should be small. Annex A1-e also shows that ST and PC units are on average similar (at least in their observed characteristics) at baseline, and that the 'common support' assumption of each SIIPE beneficiary having a counterpart with a similar propensity score in the Pure Control group is satisfied. Finally, both matching estimators meet the commonly accepted matching quality standards. After matching, the ST-PC sample is balanced.

### External validity of the impact evaluation

41. SIIPE *kebeles* were selected purposively by local administrative staff in collaboration with WFP. In statistical terms, the results of this impact evaluation are hence specific to the pilot area and not necessarily representative for other parts of the Somali region or the country. However, there is reason to believe that programme impacts would extrapolate to other areas that share similar characteristics, i.e. lowland areas employing large safety net coverage programs such as PSNP and with large numbers of small herders.

#### **1.3.2.2 Qualitative methodology**

42. The qualitative component of this evaluation relied on information from focus group discussions (FGDs) with selected beneficiaries, in-depth interviews (IDIs) with

community leaders, and key informant interviews (KIIs) with individuals involved in programme implementation. The interview notes were coded and analysed following the qualitative indicators presented in the evaluation matrix of Annex A1-b.

43. The overall objective of collecting and analysing these qualitative data was to better understand the impact pathways of SIIPE – why the programme was effective or not – and to obtain information on programme implementation. Specifically, the FGDs and IDIs focused on exploring behavioural changes (EQ 1), as well as financial literacy and insurance awareness (EQ 2). The KIIs were conducted to collect information on experiences with SIIPE implementation including participation in capacity building measures.

### 1.3.3 Data collection and sampling

44. Two waves of data collection were carried out. The baseline survey fieldwork took place from 5 January to 9 February 2018, and the follow-up from 3 February to 9 March 2019. Detailed of the fieldwork are presented in Annex A1-f, which also outlines the quality assurance approach of the fieldwork. Ethical considerations and challenges in the data collection are also discussed in Annex 1-f.

#### Sampling for the quantitative household survey

45. The baseline sample included a total of 1,314 households that were surveyed following the sampling approach described in Annex A1-g. 1,212 households were successfully re-interviewed during the endline data collection. The resulting attrition rate of 7.76 percent is rather low, considering the usual mobility of pastoralists, especially during dry spells, and the fact that a measles outbreak in one community accounted for 1.9 percentage points of the attrition rate alone. The breakdown of attrition rates by sample group are shown in Tables VII and VIII of Annex A1-h. The final sample sizes are comparable across sample groups, and there is no evidence of non-random sample attrition that would bias the impact estimates. In addition to attrition, the actual sample for analysis further reduces by 47 observations due to data cleaning and matching with external sources of baseline characteristics (TLU eligibility data from household lists shared by WFP). Table 1 below shows the final follow-up sample for the evaluation which encompasses a total of 1,165 households.

**Table 1: Composition and size of endline sample**

Sample group	Total no. of kebeles	Total no. of sub-kebeles	Mean no. of HHs per sub-kebele	Min no. of HHs per sub-kebele	Max no. of HHs per sub-kebele	Total HHs
SIIPE Treatment (ST)	17	51	7.53	1	13	<b>384</b>
SIIPE Control (SC)	17	42	7.71	1	27	<b>316</b>
Pure Control (PC)	13	65	7.15	4	18	<b>465</b>
						<b>1,165</b>

Source: C4ED analysis of endline data.

#### Sampling for qualitative data collection

46. The qualitative data collection consisted in a total of eight FGDs with individuals, five IDIs with community leaders, five KIIs with *BelCash* or *HelloCash* representatives and four KIIs with representatives involved in the SIIPE implementation. Details about sampling and number of respondents are given in Annex A1-g.

## 2. EVALUATION FINDINGS

47. This section presents the key findings of the evaluation by main EQ and sub-EQ. Quantitative impact estimates are based on endline differences in outcomes between beneficiary (ST) and matched comparison (PC) households, controlling for potential baseline differences, integrated with qualitative evidence.

### 2.1 EQ 1: To which extent (and how) has SIIPE affected productive decisions and livelihoods of beneficiary households?

#### Key findings and conclusions – Evaluation Question 1

- In its first year, SIIPE has enhanced community assets (e.g. water and pastureland availability) through SIIPE public works in addition to standard PSNP obligations, but it has not affected assets at household level.
- SIIPE has not yet mitigated the high concentration of pastoralist livelihoods on livestock. There was no change in income diversification or stability because planned training on income-generating activities has not been implemented yet.
- In terms of vulnerability, there is no evidence of reinforced protection of vulnerable household members or of beneficiaries coping differently with drought – with the important exception that SIIPE has increased the chance that households would rely on veterinary services in response to drought.

48. The first EQ analyses the effects of SIIPE on (i) assets, (ii) income generation and sources, and (iii) vulnerability of insured households. One would expect that potential programme impacts are mainly generated through insurance payouts (‘ex-post effects’) – a scenario that has not occurred yet. However, even in the absence of payouts, households may potentially change their behaviour if they believe that the insurance will effectively cover their risk and provide timely support during a prolonged drought. Such ‘ex-ante effects’ would likely be smaller than those with payouts. Further behavioural changes may potentially be induced by the fact that SIIPE also involved additional PSNP community work and registration for mobile money accounts. In any case, it is important to note that all effects studied here are of short-term nature (one year after programme inception).

49. The subsequent results show that, in the first year without insurance payouts, SIIPE has not had any systematic effects on the accumulation of productive or socioeconomic assets at household level (sub-EQs 1.1. and 1.2). Interviews with beneficiaries suggest that they lack cash (or ideas) for investments as long as they have not received any insurance payouts. In contrast, there are clear signs that community assets were further enhanced through the additional PSPN public work activities initiated through SIIPEs IfA arrangement. In particular, there is anecdotal evidence of improvements in water and pastureland availability and accessibility at community level.

50. In terms of income sources, pastoralists’ livelihoods continue to be heavily concentrated on livestock sales (sub-EQ 1.4). SIIPE has even led to a statistically and economically significant increase in the share of livestock sales in beneficiary households’ income portfolio (but not in total income). In the endline, ST households generated 64% of their income from livestock sales and 23% from PSNP transfers.

No effect of SIIPE on income diversification has been found yet – which is not surprising because SIIPE beneficiary training on alternative income generation activities (IGA) has only started in 2019. On a positive note, participants of qualitative discussions were aware of the need to diversify their income sources, which suggests that the effects of IGA training may materialise in the longer term. Similar to income diversification and levels, our analysis did not find any systematic shift to or away from stable income sources caused by SIIPE (sub-EQ 1.5).

51. Finally, two types of vulnerability analysis were performed. The first refers to coping strategies with drought shocks. SIIPE did not change coping strategies – with the important exception that it increased the use veterinary services by beneficiaries to deal with drought (sub-EQ 1.3). The second refers to the protection of children (e.g. in terms of school attendance) as the most vulnerable household members. No short-term effects were found (sub-EQ 1.5).

52. The average endline values of selected outcome indicators for EQ 1 are presented in Table 2 below (for the beneficiary sample); the complete list for all outcome indicators is summarized in Table IX of Annex 2. Estimated programme effects of interest are presented in Tables XVIII and XIX of Annex 3.

**Table 2: Endline values of selected outcome indicators for EQ 1 (by sub-EQ)**

<b>1.1: Investments in livestock</b>		<b>1.4: Alternative income sources</b>	
Has purchased livestock <sup>1</sup>	0.10	Number of income sources	1.63
Forage/fodder expenditure (ETB)	951.51	Has received income from livestock sales <sup>1</sup>	0.76
Veterinary medicine/services exp. (ETB)	310.07	Has received income from PSNP <sup>1</sup>	0.46
<b>1.2: Household asset ownership</b>		<b>1.5: Stability of income sources</b>	
Number of total assets owned	3.93	Number of months without income	2.26
<b>1.3: Coping mechanisms and distress sales</b>		<b>1.6: Protection of vulnerable HH members</b>	
Has experienced drought <sup>1</sup>	0.99	Has children absent from school <sup>1</sup>	0.48
Number of coping strategies (out of 18)	5.56	Has children engaged in economic activity <sup>1</sup>	0.21
Has carried out livestock distress sales <sup>1</sup>	0.33	Includes married children <sup>1</sup>	0.17

Notes: The unit of observation is the household. Average endline values for SIIPE beneficiaries. The variables in 1.1. and 1.3 refer to the period between baseline and endline; the variables in 1.2 and 1.6 refer to the moment of the endline. The variables in 1.4 and 1.5 refer to the last completed month before the endline.

<sup>1</sup> Binary variable (yes/no) – the above statistics correspond to the fractions of ‘yes’ responses.

Source: C4ED analysis of endline data.

### **2.1.1 Sub-EQ 1.1: Investments in livestock and other productive assets**

53. This sub-EQ looks at the effects of SIIPE on livestock-related investments. Different indicators were considered: the proportion of households performing investments, the absolute expenditure (ETB) on such investments, and the investment expenditure relative to the total household expenditure (results available on request). For each indicator, the total was disaggregated by expenditure item: (i) livestock, (ii) forage/fodder, (iii) veterinary medicine and (iv) services, water and other items.

54. On average, 10 percent of SIIPE households purchased livestock (camels, cows and shoats<sup>14</sup>), 53 percent purchased forage/fodder, 67 percent invested in veterinary services or medicine, and 26 percent purchased water or other items such as fences (Table 2 above and Table IX in Annex 2).

<sup>14</sup> Shoats is a generic term referring to goats and sheep indistinguishably, according to the customs of pastoralists, who refer to them both as “*adhi*”. The SIIPE TLU weights are also equivalent for goats and sheep (0.10).

55. Table XVIII of Annex 3 displays the impact estimates. There is no evidence that SIIPE increases total livestock-related investments or expenditures on livestock-related investment options. SIIPE increased the likelihood that a beneficiary household purchased a camel, but the effect is small (1.5 percentage points; and not confirmed for other types of livestock (cows and shoats).

**Table 3: Programme effects on livestock-related investments**

Outcome variable	Estimated effect (with standard error)	Comparison group mean (endline)
Has purchased livestock <sup>1</sup>	0.03 (0.04)	0.07
Has purchase camels <sup>1</sup>	0.01* (0.01)	0.01
Has purchased cows <sup>1</sup>	0.01 (0.02)	0.02
Has purchases goats/sheep <sup>1</sup>	-0.01 (0.03)	0.04

Notes: The unit of observation is the household. Complete estimates in Table XVIII of Annex 3.

Statistical significance levels: \*\*\* 1%, \*\* 5%, \* 10%.

<sup>1</sup> Binary variable (yes/no) – the above statistics correspond to the fractions of ‘yes’ responses.

Source: C4ED analysis of endline data.

56. The qualitative discussions revealed two main barriers to livestock-related investment: (i) financial constraints in the absence of SIIPE payouts, (ii) lack of ideas on which investments would be worthwhile. Participants explained, for example:

*“It was with the [SIIPE] payout money that we would buy grass, water and medicine. So, if we don’t get the money, with what should we buy. We are almost losing what is left of our livestock.” (FGD, Male, Todob)*

*“I didn’t make investment because I don’t have nothing in my mind [as what to invest in].” (FGD, Female, Gabal)*

### 2.1.2 Sub-EQ 1.2: Access to socioeconomic assets and infrastructure

57. This sub-EQ discusses the effects of SIIPE on both household assets (captured through quantitative impact analysis) and community assets (captured through qualitative interviews). The results contain no evidence of a programme effect on asset building at household level, but they show clear signs of enhanced community assets through additional public work activities through SIIPEs IfA arrangement.

58. Beneficiary households own, on average, a total of four assets (previous Table 2 above and Table IX of Annex 2, Panel D). The effect of SIIPE on ownership of household assets was assessed through three alternative indicators (see Filmer and Scott, 2008): the count index, the shared weighted average index and the per capita value of assets. The corresponding estimation tables are available on request in the supplementary appendix. A brief explanation of the indicators is provided in Table IX of Annex 2. Overall there is no evidence of programme effects on household assets.

59. In contrast, qualitative interviews showed that SIIPE has enhanced community assets and infrastructure, due to both the two extra days of public work in exchange of insurance coverage and the strong focus on water management and grazing land preparation, which differs from the standard PSNP public work activities (e.g. road construction, waste disposal, sanitation, among other things)<sup>15</sup>. In the words of one interviewee:

<sup>15</sup> Some respondents had difficulties distinguishing between SIIPE and general PSNP public work activities, though.

*“The saved grasses became helpful for the milking of goats and cows [When the goats or cow are fed more grass to eat, they tend to produce more milk]. The [water] channels also became advantageous to our agricultural lands. [...]. Furthermore, the [water] channels don’t only go up to the agricultural lands, they also go to the wells and from that we got clean water.” (FGD, Male, Todob)*

60. Another positive side effect, mentioned frequently, was the increased solidarity among community members. Community leaders and WFP focal personnel suggested that the participatory approach of selecting activities based on community needs contributed to the positive perception and the perceived benefits. However, they also highlighted that the building of additional community assets through SIIPE did not reach its full potential in the evaluation period, due to the security incidents the region in August 2018.

### **2.1.3 Sub-EQ 1.3: Coping mechanisms and distress sales**

61. Potential programme effects on households’ strategies for coping with drought<sup>16</sup> were analysed through two different types of outcomes: (i) the diversity of coping mechanisms and (ii) the frequency of specific coping strategies related to livestock and food security<sup>17</sup>. Financial coping mechanisms are discussed separately under sub-EQ 2.3. The results show no effect of SIIPE on the diversity of coping strategies, but a positive effect on the use of veterinary services in times of drought.

62. Regarding the *diversity* of coping mechanisms, beneficiaries adopted a mean of 5-6 different coping mechanisms (out of the 22 coping mechanisms covered in the questionnaire<sup>18</sup>; see Table 2 above and Table IX of Annex 2, Panel E). Female-headed households used slightly less coping mechanism than male-headed households (Table XVI of Annex 2, Panel C). The impact analysis shows that SIIPE has not yet contributed to diversification (measured by the number) of coping strategies to deal with drought (Table XX of Annex 3).

63. In terms of the *frequency* of use of specific strategies (see Table XX of Annex 3), there was relatively little impact of SIIPE on using livestock and food security to deal with drought. 92% of SIIPE beneficiaries would reduce consumption to deal

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<sup>16</sup> A range of other shocks than drought was considered as well. Out of 18 possible shocks covered in the questionnaire, households indicated to have faced on average four different shocks since January 2018. Drought was the most frequent shock (experienced by almost all (99 percent) of households).

<sup>17</sup> The underlying questions in the household survey took into account the coping strategies identified in the literature, which finds that pastoralists are often forced to apply short-term risk coping mechanisms, such as livestock distress sales, slaughtering of livestock, credit uptake, or reduction of food consumption (WFP, 2010). Other coping strategies include herd migration and increased reliance on savings and assistance from government or NGOs (Kinsey et al., 1998; Butt et al., 2009). Herd diversification, including keeping of female dominant herds, the increase of the number of shoats in a herd and the increase in total herd size during inter-drought periods (Huho et al., 2011).

<sup>18</sup> Covered coping mechanisms: reduced the number of meals eaten each day, relied on own savings, obtained credit for livestock, obtained credit for food, obtained credit for other expenses, relied on traditional assistance, relied on remittances or support from others, relied on support from Government/NGO, reduced expenditure on health/education, diversified income sources, migrated/herded livestock further for pasture or water, sold livestock, sold crop stock, sold other assets, slaughtered livestock, bought forage/fodder for livestock, bought water for livestock, vaccinated livestock or used veterinary services, diversified livestock herd, migration of household member(s), sent children to live elsewhere, left it to God.

with drought, consistent with findings in Janzen et al. (2018) for Northern Kenya<sup>19</sup>. Male-headed households are about three times more likely than female-headed households to use income diversification and migration of household members to deal with drought (Table XVI of Annex 2, Panel C).

64. Interestingly, SIIPE did increase the chance that households coped with drought through the use of veterinary services (by about 10-13 percentage points) compared to Pure Control households, a strategy that was somewhat more frequent among female-headed households (Table XVI of Annex 2). This result is in line with similar findings in Jensen et al.'s (2015) study on index insurance in Northern Kenya in the context of the 2011 East Africa drought. That study also found that insured households were less likely to expect themselves to rely on distress sales of livestock. This finding is not confirmed in the analysis for SIIPE due to different context and expectations about insurance payout (see sub-EQ 3.3 below for more details).

#### **2.1.4 Sub-EQ 1.4: Engagement in alternative income sources**

65. This sub-section analyses the potential effects of SIIPE on income diversification (and levels) of beneficiaries. Such effects could be expected especially as a consequence of the beneficiary training on alternative income generating activities (IGAs) provided by SIIPE. However, in the first programme year, no IGA training sessions have taken place yet. It is hence not surprising that our analysis did not find any short-term effects of SIIPE on income diversification. Pastoralists' livelihoods continue to be heavily concentrated on livestock sales. The perspectives for SIIPE to improve income diversification in the long run are nevertheless positive: beneficiaries were aware of the potential benefits of engaging in alternative IGAs.

66. In the quantitative analysis, income diversification was measured by the number of different IGAs that households engage in, as well as a selection of two different income diversification indices. Moreover, the relative shares of each income source were compared. Strikingly, out of the listed 21 income sources, SIIPE beneficiary households only received income from 1.63 IGAs on average – in particular from livestock sales and PSNP transfers (75.8 and 46.1 percent of beneficiary households, respectively; see previous Table 2 and Table IX Panel F). 64 and 23 percent of beneficiaries' total income in 2018 was generated from these two sources, respectively. There were no systematic gender differences in the extent of income diversification, but female-headed households received a larger income share (28.7 percent) from PSNP than male-headed households (17.8; Table XVI of Annex 2, Panel D)<sup>20</sup>.

67. The impact evaluation results indicate that SIIPE did not affect households' income diversification nor their total income in ETB. However, a clear and large effect on engagement in livestock sales is observed: SIIPE increased the share of households involved in this IGA by 19.4 percentage points (Table XX in Annex 3).

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<sup>19</sup> That study found that coping strategies differed by the size of livestock holdings. Livestock-rich households ( $\geq 15$  TLU) dealt with drought through consumption smoothing, whereas households with less than 15 TLU reduced consumption and assets.

<sup>20</sup> This is plausible because the chance of a female-headed household of being classified as Direct Support beneficiary is relatively higher (e.g. 100 percent if there is no able-bodied full-aged male household member).

68. SIIPE may thus affect income diversification in two opposite directions in the long run. On the one hand, one would expect that IGA training under SIIPE (once implemented) would lead to income diversification. On the other, in the short run, insurance coverage has further concentrated pastoralists' livelihoods on livestock sales<sup>21</sup>. It is not clear which of these two effects would dominate in the long run.

**Table 4: Programme effects on engagement in alternative income sources**

Outcome variable	Estimated effect (with standard error)	Comparison group mean (endline)
Total income last month (in ETB)	-328 (502)	2,955
Income from livestock sales in last month <sup>1</sup>	0.19*** (0.07)	0.65
Amount income livestock sales last month (ETB)	241 (479)	1,614

Notes: The unit of observation is the household. Complete estimates in Table XX of Annex 3.

Statistical significance levels: \*\*\* 1%, \*\* 5%, \* 10%.

<sup>1</sup> Binary variable (yes/no) – the above statistics correspond to the fractions of 'yes' responses.

Source: C4ED analysis of endline data.

69. The qualitative discussion with beneficiaries were centred around their current dependence on a small variety of income sources and the barriers to more income diversification. The discussions revealed that lack of knowledge on alternative IGA options was the main barrier. At the same time, participants in most FGDs indicated their strong interest in learning about and engaging in alternative IGAs:

*“It is just lack of information about it [alternative IGA]. If we have known about it, we would have engaged in bee keeping for example. For instant, if we had the knowledge of this fishing, we may have engaged in. We don't know how and the way of using fish. Our men don't know how to properly make fish. They simply roast it and eat and when they come home, they smell like fish {laughter}.” (FGD, Siigole)*

*“I think before you simply get some money, it's better to have some knowledge in the ways you can earn money. So, to my perception, we need information and trainings for example on agricultural farming techniques, about the motor water engine and livestock disease and their preventions.” (FGD, Male, Gabal)*

### 2.1.5 Sub-EQ 1.5: Stability of income sources

70. A possible impact from income diversification may be an increase in income stability by diminishing the dependency on income sources that are prone to adverse livestock and farming shocks. Since the previous sub-EQs did not find any systematic effect on income diversification, the analysis in this subsection does not show any improvement of income stability due to SIIPE either.

71. Income stability was measured through two types of indicators: the number of months without income and the share of income generated from 'stable' income sources (permanent employment, pensions, businesses and PSNP).

72. There is no statistically significant effect of SIIPE on the number of months without income. In contrast, there is weak evidence that SIIPE reduces the share of income generated from 'stable' sources. In principle, this could reflect the possibility

<sup>21</sup> We cannot rule out that the observed effects have also been triggered by the additional days of community work – but which seems unlikely since no significant effects on total income and value of income generated from livestock sales were found.



that households' expectations of insurance payouts induce them to take more risk. Yet, the result is statistically not very robust and driven by the inclusion of PSNP transfer as 'stable' income source (Table XIX of Annex 3).

73. In sum, there is no robust evidence of short-term effects of SIPE on income stability. The results may potentially look different in the long term, particularly after the implementation of programme components focusing on alternative IGAs for beneficiaries.

#### **2.1.6 Sub-EQ 1.6: Income/protection of vulnerable household members**

74. Finally, sub-EQ 1.6 focuses on improved protection of children, aged 5 to 17 years, as vulnerable household members. Outcomes of interest are the share of children being absent from school, the share of children engaged in economic activity and the share of household members below 18 years being married or in consensual union. No effects are found yet, which may indicate that it takes time until effects on long-term outcomes such as school enrolment, child labour or child marriage can be found (results available on request in the supplementary appendix).

## **2.2 EQ 2: Did programme activities and services lead to improved awareness, understanding and use of insurance and financial tools and products?**

### **Key findings and conclusions – Evaluation Question 2**

- The programme has improved the awareness of insurance and SIIPE, but its beneficiaries still lack a deeper understanding of both. In particular, very few beneficiaries know the correct insurance period and how payouts are triggered.
- Beneficiaries' willingness to pay (WTP) for livestock insurance is relatively close to market premiums – but only on average. The fact that almost half of the current insurance holders would not be willing to pay anything implies that they might abandon the scheme if subsidies are phased out. SIIPE has helped maintain the general WTP of some beneficiaries.
- The automatic registration of SIIPE participants on a mobile money platform has laid the foundation for further financial inclusion, but the actual use of these accounts has been very limited so far.

75. This EQ analyses beneficiaries' understanding and use of different insurance and financial tools. Specifically, it discusses the understanding of insurance and SIIPE (sub-EQ 2.1), the willingness to pay for it (sub-EQ 2.2), the use of financial coping strategies (sub-EQ 2.3) and mobile banking (sub-EQ 2.4).

76. Overall the programme enhanced its participants' *awareness* of insurance in general and of SIIPE in particular (sub-EQ 2.1). Yet, even beneficiary households still lack a deeper understanding of the concept of insurance and the functioning of SIIPE. When tested in for their specific knowledge in the survey, SIIPE insurance holders do not have a better average knowledge of neither of general insurance – and not even of SIIPE itself – than non-beneficiaries. Qualitative evidence suggests that this might be related to the fact that *kebele* officials responsible for the training of beneficiaries did not have sufficient knowledge themselves or had not been trained themselves yet at the time of the endline data collection. The high awareness but limited understanding of SIIPE has contributed to creating false expectations about its payouts.

77. The analysis also provides useful insights on the willingness to pay (WTP) for livestock insurance – and thus the perspectives for unsubsidized insurance in the long run. The WTP per animal has not changed much since the baseline *on average*, but it has become more 'polarized' within both ST and PC groups. While more households than before are no longer willing to pay anything for livestock insurance (the programme has prevented this share from rising even further in the beneficiary group), WTP has increased for the remaining households. The *average* WTP per TLU is about 60 to 85 percent of commercial market premiums. However, more than 40 percent of all beneficiaries indicated that they would not pay anything for livestock insurance simply because they cannot afford it. In any case, these numbers should be interpreted with caution since survey-elicited WTP is strongly driven by temporary factors such as imminent risks and the cash-flow situation of respondents.

78. There were no short-term programme effects on the use of financial coping mechanisms by households (sub-EQ 2.3).

79. Since SIIPE participants were automatically registered on the mobile money platform *HelloCash*, SIIPE sharply increased access to mobile banking. However, insurance holders have not much used their new accounts used so far. In the control group, a much smaller fraction of households reports to have an account, although those who have one are more likely to use it. For either reason, the use of mobile financial services has remained low in both household groups. On a positive note, even though SIIPE has not yet enhanced the actual *use* of mobile money in the beneficiary population, the improvement in *access* to these services is an important stepping stone towards further financial inclusion.

80. Table 5 below provides the mean values of key outcome indicators for EQ 2, measured at endline across beneficiary households. Endline mean values for the full list of indicators for EQ 2 are given in Table XX of Annex 2 and detailed impact estimation results are reported in Table XX and Table XXI of Annex 3.

**Table 5: Endline values of selected outcome indicators for EQ 2 (by sub-EQ)**

<b>2.1 Understanding of SIIPE as an insurance product</b>			
<b>Panel A: Awareness and understanding of insurance and SIIPE</b>		<b>Panel B: Detailed understanding of SIIPE</b> (10 test questions; correct/incorrect answer = 1/0)	
Has heard of insurance <sup>1,2</sup>	78%	Q1: TLU coverage <sup>1</sup>	26%
Claims to know livestock insurance <sup>1,2</sup>	58%	Q2: Responsible actor for premium <sup>1</sup>	15%
Has heard of SIIPE <sup>1,2</sup>	65%	Q3: Amount of premium <sup>1</sup>	10%
Claims to at least somewhat understand insurance <sup>1,2</sup>	47%	Q4: Number of PW days for PW households <sup>1</sup>	27%
		Q5: Number of PW days for DS households <sup>1</sup>	18%
Test of insurance knowledge: No. of correct responses to 7 test questions	3	Q6: Reason for payout trigger <sup>1</sup>	15%
		Q7: No. of months/years covered by premium <sup>1</sup>	0%
Tested of SIIPE knowledge: No. of correct responses to test 10 questions	3	Q8: Number of seasons covered by premium <sup>1</sup>	19%
		Q9: Number of possible payouts <sup>1</sup>	0%
<b>Panel C: Perception of insurance</b> (% of respondents agreeing with below statements)		Q10: Maximum amount of payout <sup>1</sup>	13%
Insurance is valuable (time and money) <sup>1</sup>	83%		
Insurance enrolment process is easy <sup>1</sup>	10%		
Length of the payout process is appropriate <sup>1</sup>	4%		
<b>2.2: Willingness to pay (WTP) for livestock insurance</b>		<b>2.4 Access to and use of financial services</b>	
Is willing to pay something for livestock insurance <sup>1</sup>	47%	Has mobile banking account (source: Belcash) <sup>1</sup>	100%
WTP for a camel (in ETB) <sup>3</sup>	214	Has mobile banking account (self-reported) <sup>1</sup>	32%
WTP for a cow (in ETB) <sup>3</sup>	128	Uses mobile banking account (conditional on self-report of having one) <sup>1</sup>	25%
WTP for a goat or sheep (in ETB) <sup>3</sup>	55	Has formal bank account <sup>1</sup>	0%
WTP for one TLU (in ETB) <sup>3</sup>	277	Participates in Rotating Savings and Credit Association or Merry-Go-Round system <sup>1</sup>	1%
<b>2.3 Financial coping mechanisms</b>			
Coping through credit uptake <sup>1</sup>	88%		
Obtained credit for food <sup>1</sup>	59%		

Notes: The unit of observation is the household. Average endline values for SIIPE beneficiaries. The complete list of indicators for SIIPE beneficiary and PC households is presented in Table X of Annex 2.

<sup>1</sup> Binary variable (yes/no) – the above statistics correspond to the fractions of ‘yes’ responses.

<sup>2</sup> Self-reported awareness or knowledge.

<sup>3</sup> Amount that the household reported to be willing to pay to insure one unit of the given animal category for one year. The reported values are averages across all beneficiaries, where those not willing to pay are assigned a WTP of zero. WTP averages among only those with WTP >= are 456 ETB for camel, 274 ETB for cow, 118 ETB for goat.

Source: C4ED analysis of endline data.

### 2.2.1 Sub-EQ 2.1: Understanding of SIIPE as an insurance product

81. The impact analysis shows that the programme has improved beneficiaries' *awareness* of insurance in general and SIIPE in particular. However, the programme did not lead to a better *understanding* of more specific aspects of insurance – and more strikingly, not even to a much better understanding of SIIPE itself: insurance holders still have a similarly low knowledge of SIIPE as non-beneficiaries.

82. In terms of insurance awareness, SIIPE beneficiaries are 25/28/40 percentage points more likely to have heard about general insurance/livestock insurance/SIIPE, respectively, than non-beneficiaries (Table 6 below and Table XX of Annex 3).

**Table 6: Programme effects on awareness & understanding of insurance & SIIPE**

Outcome variable	Estimated effect (with standard error)	Comparison group mean (endline)
Has heard of insurance <sup>1,2</sup>	0.25*** (0.09)	44%
Knows of livestock insurance <sup>1,2</sup>	0.28*** (0.08)	26%
Has heard of SIIPE <sup>1,2</sup>	0.40*** (0.08)	31%
At least somewhat understands insurance <sup>1,2</sup>	0.25*** (0.08)	18%
Knowledge of insurance: Number of correct responses to 7 test questions	0.39 (0.51)	3.114
Knowledge of SIIPE: Number of correct responses to test 10 questions	0.38 (0.69)	2.125

Notes: The unit of observation is the household. Complete results in Table XX of Annex 3.

Statistical significance levels: \*\*\* 1%, \*\* 5%, \* 10%.

<sup>1</sup> Binary variable (yes =1, no = 0).

<sup>2</sup> Self-reported.

Source: C4ED analysis of endline data.

83. Regarding the understanding of insurance, 25 percentage points more beneficiaries than control households claimed to understand the concept of insurance. However, these gains in *self-reported* understanding of insurance do not carry forward to *actual* insurance knowledge as tested through a set of specific survey questions.

84. Surprisingly, SIIPE insurance holders do not even have a better average knowledge of SIIPE than non-beneficiaries, which has remained very low. The set of questions related to SIIPE knowledge is listed in Table 5, Panel B. The average beneficiary answered only 2-3 out of the 10 open questions on SIIPE correctly, especially those on public work subsidisation and the number of TLUs covered by SIIPE. In contrast, virtually none of the beneficiaries correctly stated that SIIPE covers only a total period of seven months per year, but largely believed instead that insurance coverage is throughout the whole year. Similarly, none of the beneficiaries was able to correctly identify that up to four payouts may be made per year. These responses demonstrate that beneficiaries are not aware of the fact that the insurance only covers the two rainy seasons per year. Moreover, only few respondents (13 percent) knew the maximum amount of payout, even though the information was stated on the SIIPE registration cards. Test questions asked in the FGDs further confirmed the low knowledge. There are no significant differences between male- and female-headed households in terms of insurance/SIIPE knowledge (Table XVI of Annex 2, Panel G).

85. The qualitative data provide some explanations of these results, showing that awareness and understanding amongst beneficiaries were mainly created in two steps: i) prior to programme implementation, during the listing of households for the SIIPE eligibility assessment, and ii) during implementation, through information

disseminated by the *kebele* officials and in the mobile banking registration. Of the four *kebele* officials interviewed for this evaluation, two had not yet been trained by WFP staff (because they joined the programme later) and the other two did not fully understand the SIIPE modalities. Their capacity for training SIIPE beneficiaries in their areas has thus been limited.

86. The high awareness but limited understanding of general insurance and SIIPE has created a certain tension between the perceived value of SIIPE and false expectations about its payouts. On the one hand, 83.2 percent of the beneficiaries consider that (general) insurance is valuable in terms of money and time. On the other hand, in the opinion of WFP and BoLPD focal personnel, the limited understanding of SIIPE has been responsible for generating expectations that payouts would take place in 2018<sup>22</sup>. For example, even at the time of the qualitative interviews (conducted outside a payout window), interviewees across all FGDs, stated that they were waiting for payouts due to the drought they faced.

### **2.2.2 Sub-EQ 2.2: Willingness to pay for livestock insurance**

87. An important outcome for the sustainability of SIIPE is beneficiaries' willingness to pay (WTP) for livestock insurance. Elicited WTP via survey questions always depends on the state of mind of surveyed households as most people never fully separate the abstract concept of *willingness* to pay and *ability* to pay. Willingness to pay depends on the perceived utility of insurance at the time of the survey, which is often driven by temporary factors. Specifically, perceived utility is higher for an imminent risk as compared to risks in the (far) future, and it may fluctuate with current cash-flows (e.g. WTP might be higher after PSNP benefits have been paid out). WTP also depends on the perceived probability that the insurance really pays out and pays on time, i.e. on the trust in the insurance provider and the timing of cash-flow. Here, the risk of disappointment is imminent. Once households perceive that insurance payouts are not being made in line with their understanding, WTP may drop to zero<sup>23</sup>. In sum, the perceived WTP can thus only be considered as suggestive evidence for actual take-up if people had to buy insurance.

88. The survey captured WTP in two steps. It first asked households whether they would be willing to pay *some* money for livestock insurance (*'general WTP'*). Those who answered 'yes' were then asked to state how many ETB they would be willing to pay per year to insure one animal (camel, cow or shoat; *'WTP per animal'*).

89. In comparison to the baseline, the general WTP sharply declined in both sample groups: from 76% to 47% in the ST group and from 69% to 27% in the PC group (Table X of Annex 2, Panel D). This trend is in line with WTP being driven by temporary factors. The impact estimates indicate a statistically significant effect of

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<sup>22</sup> Other (implicit) complaints from beneficiaries are reflected in the facts that only 9.6 percent perceived the insurance enrolment process as easy and only 3.5 percent think that the length of the payout process is not too long. However, these statements do not seem justified. SIIPE beneficiaries were enrolled without having to actively take care of the registration. Moreover, expected payout process (once it will be triggered) through mobile money accounts is expected to be quick.

<sup>23</sup> For example, several beneficiaries mentioned that insurance did not pay out despite drought, hence they could have lost trust and be less convinced of insurance. More generally, a prevalent variable influencing the WTP, as identified in the literature, is awareness and understanding of the insurance programme since individuals are not willing to pay for an elusive programme and without fully grasping the potential benefits (Jokhio, 2016; Singh and Hlophe, 2017).

SIPE on general WTP for livestock insurance. The programme has kept the general WTP 24 percentage points higher in the beneficiary group relative to the PC group (Table XXI of Annex 3).

90. The WTP per animal – for households that indicated a general WTP – has increased since the baseline. Overall, WTP has thus become more ‘polarized’: while a part of ST and PC households have abandoned their general WTP (likely those with a previously positive but low general WTP), others have increased their WTP per animal. Altogether, the average WTP per animal has not much changed since the baseline if one includes the zeros for those not willing to pay. At endline, the WTP per animal in the ST population was 214 ETB (7.49 USD<sup>24</sup>) for camels, 128 ETB (4.49 USD) for cows and 55 ETB (1.93 USD) for shoats (Table 5 above and Table X of Annex 2, Panel D). No programme effect was detected on WTP per animal in TLU terms (among those with a positive general WTP), see Table XXI of Annex 3).

91. WTP is crucial for the long-term sustainability of SIPE. According to a WFP representative, the full insurance coverage in exchange for participation in public works activities will eventually be phased out. One concern could be that, in contrast to commercial insurance programmes, SIPE targets vulnerable groups, who may not be willing or able to pay for commercial insurance. However, the survey data show that the average WTP of SIPE beneficiaries is not far away from commercial market premiums for livestock insurance. The WTP per TLU amounts to 277 ETB (9.72 USD)<sup>25</sup>. This corresponds to about 60 to 85 percent of the actual insurance premiums per TLU in the commercial market, which range from 321 ETB (11.8 USD) to 449 ETB (16.5 USD) depending on the district<sup>26</sup>. However, this average WTP per TLU is driven by some beneficiaries reporting a WTP above market rates while a roughly equal share of beneficiaries would not be willing to pay anything. Out of the latter, 93 percent (i.e. 44 percent of all beneficiaries) indicated that the main reason was lack of financial means (this finding is also supported by qualitative data). Low ability to pay may thus constrain actual uptake of insurance at market prices. These results are in line with Chantararat et al. (2009) who found that households were on average willing to pay less than the commercial market premium for index-based livestock insurance in Kenya.

### **2.2.3 Sub-EQ 2.3: Financial coping mechanisms**

92. Estimates of programme effects on the adoption of different coping mechanisms are presented under sub-EQ 1.3. Our impact analysis also estimated the

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<sup>24</sup> ETB values in this report have been converted to USD using a rate of 1 ETB = 0.035 USD, the average exchange rate over the endline data collection period (mid-February to mid-March 2019).

<sup>25</sup> In SIPE, the TLU conversion factors are 1 TLU = 1 cattle = 0.1 sheep or goats = 1.4 camels. The willingness-to-pay per TLU is thus calculated as:  $WTP \text{ per TLU} = [(WTP \text{ per cow}/1) + (WTP \text{ per camel}/1.4) + (WTP \text{ per shoats}/0.1)]/3$ . Note that the average WTP for 1 TLU is much higher than for the individual animal categories. This is because the actual ‘equivalence scales’ between different animal categories used by pastoralists in the study areas differ substantially from the TLU conversion rates. For example, SIPE households are willing to pay the same amount to insure 1 cow as for approximately 3 goats, while the TLU conversion rates implies 1 cow = 10 goats.

<sup>26</sup> The yearly premium is calculated based on the total sum insured per TLU (annual cost of feed needed to keep 1 TLU animal alive), weighted with a district-specific Unit Area of Insurance. The total sum insured per TLU is 2,800 ETB (the cost of feed per TLU and month is 400 ETB, multiplied by 7 months of insurance coverage per year). The Unit Areas of Insurance are 16.04, 12.65 and 11.46 percent for the districts of Adadle, Kebridahar and West Imey respectively.

potential effects on financial coping strategies (savings, credit uptake for livestock, food and other expenses), but did not find any<sup>27</sup>.

93. The survey data (Table X of Annex 2, Panel E) show that 87.5 percent of beneficiaries use credit to cope with drought; 59 percent buy food. Credit for livestock (23 percent) and own savings are less common coping strategies. Female-headed households stated to rely on own savings twice as often as male-headed households and indicated a higher rate of credit uptake (Table XVI of Annex 2, Panel I). Qualitative data found that pastoralists borrow in-kind and pay back in cash.

#### **2.2.4 Sub-EQ 2.4: Access to and use of financial services**

94. SIIPE participants were automatically registered on the mobile money platform *HelloCash* of the provider *Belcash*, with the aim of processing future SIIPE payouts and enhance financial inclusion. Financial inclusion, by leading to an increase in financial literacy, could in the longer term also positively influence interest and uptake of the insurance as detected by Cole et al. (2012). Our results from the impact analysis show that SIIPE increased registration for/access to mobile banking<sup>28</sup>, but not its actual use.

95. According to *Belcash*, 4,983 SIIPE beneficiaries were registered and have theoretically been able to use the services of *HelloCash* even without having received any SIIPE payouts yet. The impact on registration/access to mobile banking is thus large. The information from *Belcash* was contrasted with data from the survey. In the survey, the fraction of respondents who confirmed to have a mobile banking account was much smaller (32 percent). This likely reflects the fact that many of the beneficiaries had never used their account and were thus not aware of it by the time of the survey (see below) and that some households, albeit registered on the *HelloCash* platform by the programme, do not own any mobile phone.

96. The mobile banking access created through SIIPE represents a substantial expansion of financial inclusion, considering that only 1.3 percent of beneficiaries participate in informal savings groups, such as Rotating Credit and Savings Associations or Merry-Go-Round, and almost no households have a formal bank account (Table 6 and Panel X of Annex 2, Panel F).

97. In contrast to *access* to mobile banking, SIIPE had no effect on the *actual use* of mobile banking, whether the analysis was limited to only those who reported having an account or not. The use of mobile banking services has been generally limited – among SIIPE beneficiaries, this is because many households have an account (self-reported: 32 percent, *Belcash* data: 100 percent) but do not use it (only 25 percent); whereas among non-beneficiaries, only few households have an account (self-reported: 5 percent) but those who do tend to actually use it (70 percent), see Table 6 and Table X of Annex 2, Panel F. Probably this reflects the fact that registration for mobile banking was not demand-based, but automatically done by the programme for all beneficiaries, whereas in the PC group, only those households opened an account who actually intended to use it. Active use was higher in male-headed households (Table XVI of Annex 2, Panel J).

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<sup>27</sup> These results are available on request in the supplementary annex.

<sup>28</sup> Mobile banking allows registered users to perform financial transactions and services using their mobile phone through a mobile banking platform (here: *HelloCash*). Financial services include the sending and receiving of money, as well as mobile phone top-up and saving of money on the platform.

98. For SIIPE beneficiaries, the low usage of mobile banking in our endline survey is corroborated by secondary data from *HelloCash* (Table XVII of Annex 2). BelCash user records for 3,142 beneficiaries who were registered between 19 June and 5 July 2018 as part of SIIPE<sup>29</sup> show that only 7.5 percent of them used their mobile banking account to cash-in money and 6 percent used it for cashing-out money. Person-to-Person transactions, such as sending or receiving remittances, were conducted by only 7.5 percent of the registered users. Mobile phone top-ups using *HelloCash* were performed by only 5.5 percent (Table XVII of Annex 2).

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<sup>29</sup> Secondary data contained a total of 3,429 observations. Only observations were kept that were clearly registered through SIIPE starting from June 2018 as part of a group registration (several registrations per day).



### **2.3 EQ 3: To which extent (and how) has SIIPE strengthened the ability of pastoralists to keep their animals alive?**

#### **Key findings and conclusions – Evaluation Question 3**

- Beneficiaries would spend relatively more of their hypothetical payouts on food than on livestock-related items.
- Total herd size of pastoralist households has remained constant over the study period – even though livestock losses were large, amounting to one fifth of the baseline livestock or 500 USD in value. These losses were mainly compensated through new animals born or received as gifts.
- In the short term, SIIPE has slightly increased average livestock losses, apparently because the (false) expectation of receiving insurance payouts has led some beneficiaries to delay sales of animals at the risk of perishing. With insurance payouts, one would expect a positive effect on livestock protection in the long run.

99. Livestock protection is one of the main aims of SIIPE. This EQ analyses to which extent beneficiaries would spend their insurance payouts (if they received any) on livestock. This is followed by detailed livestock accounting for the study period to identify the patterns of, and programme effects on fluctuations in livestock holdings (especially reductions).

100. In the hypothetical scenario of insurance payouts, households would plan to spend the largest share on food (44 percent) while only 28 percent of the payouts would be spent on livestock care/maintenance – somewhat contrary to the intention of the programme (sub-EQ 3.1).

101. Livestock accounting (sub-EQ 3.3) shows that the average total herd size has not changed much since the baseline. In one year, households lost roughly one fifth of their baseline livestock (6.24 animals or 2.57 TLUs in the ST group, worth about 500 USD), but they compensated these losses mainly through livestock births and gifts received (7.77 animals or 2.43 TLUs). In contrast, livestock offtakes, sales and purchases were rather low, each accounting for less than one animal or half a TLU.

102. There is weak evidence that, paradoxically, SIIPE beneficiaries lost slightly more sheep and goats than control households in the short run. This result is consistent with anecdotal evidence that some beneficiaries postponed the selling of animals at risk of perishing in the hope for insurance payouts, which then never happened. With insurance payouts, it seems more likely that the positive effect of livestock protection would dominate, e.g. through the increased use of veterinary medicines and services in times of drought (see previous sub-EQ 1.3) although this has not been reflected in actual expenditure yet (sub-EQ 3.2). No other short-term effects of SIIPE on livestock accounting variables were observed.

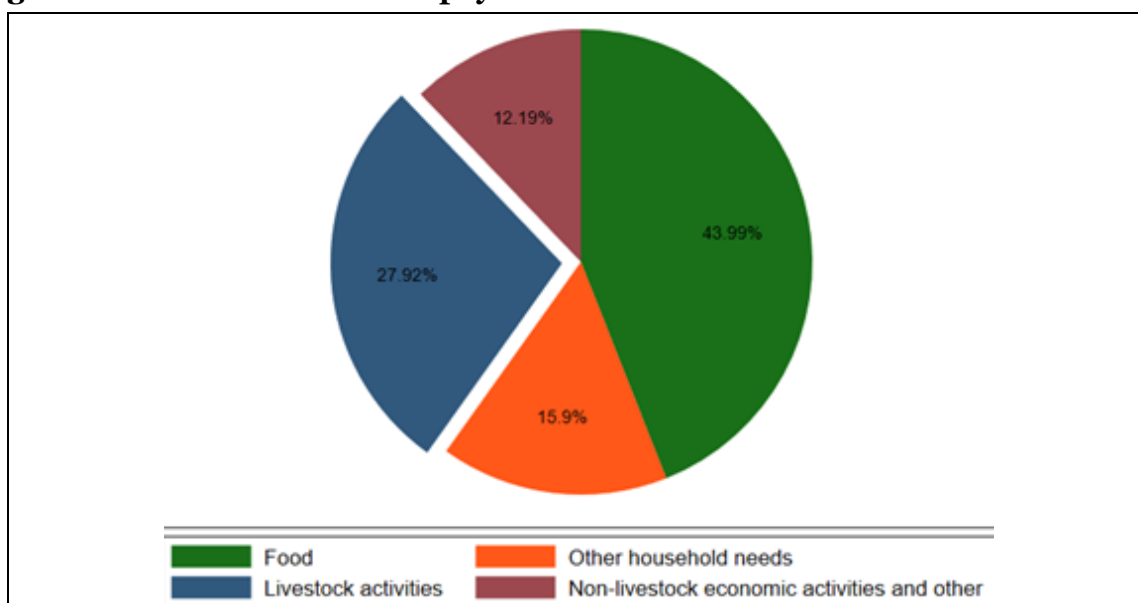
### 2.3.1 Sub-EQ 3.1: Planned use of SIPE payouts

103. During the study period no insurance payout took place. Therefore, sub-EQ 3.1 can only examine the *hypothetical* use of potential payouts in the future by beneficiaries who indicated to be aware of SIPE<sup>30</sup>.

104. Specifically, beneficiary households were asked on which items they would hypothetically spend their payout. The figure below shows that households would spend the largest part (44 percent) on food, followed by livestock-related activities (28 percent), other household-related needs (such as education, health, clothing; 16 percent) and non-livestock economic activities (12 percent). Male-headed households would spend a larger share of the payout on livestock than female-headed households, who seem to prioritise other household needs (Table XVI of Annex 2).

105. While SIPE foresees that households spend their potential insurance payouts on livestock-related expenses<sup>31</sup>, the findings from the survey clearly indicate payouts would likely be spent on a broader range of items. These findings are consistent with the beneficiaries' limited understanding of the details of the programme (see previous Sub-EQ 2.1), as well as the fact that the actual use of payouts cannot be enforced and is thus unlikely to be followed by food-insecure households in the hardship of drought.

**Figure 1: Planned use of SIPE payouts**



Source: C4ED analysis of endline survey data from N = 183 SIPE beneficiaries.

### 2.3.2 Sub-EQ 3.2: Investments in livestock-care

106. While SIPE increased the use of veterinary medicines or services to cope with drought (sub-EQ 1.3), the impact estimates do not show any statistically significant effect (see sub-EQ 1.1) on actual expenditure on veterinary medicines/services, forage/fodder, water and other inputs for livestock care in normal times. This is not surprising since beneficiaries have not received any payouts yet.

<sup>30</sup> The question on planned use of payout was not asked to PC households as they will not receive any.

<sup>31</sup> For example, the purpose of the payouts is clearly stated on the backside of the SIPE cards provided to registered beneficiary households.

### 2.3.3 Sub-EQ 3.3: Livestock accounting: losses, offtakes and sales

107. SIIPE aims to mitigate the need of pastoralists to reduce their livestock holdings, especially in times of (or in response to) drought. To understand the contextual challenge and estimate the effectiveness of the programme in this respect, this sub-EQ presents results from livestock accounting, which disentangles the sources and patterns of fluctuations in livestock holdings. Three main sources of livestock reduction are analysed: (i) losses, (ii) offtakes and (iii) sales<sup>32</sup>. Our analysis focuses mainly on describing the patterns of livestock reductions (such as reasons and seasonality) and estimating the programme effects on livestock reductions.

108. In the following, changes in livestock holdings were identified for the period from January 2018 to February 2019 for each of the insured animal categories owned by households: camels, cows and shoats, see the values of the main indicators in Table 7 below. The full list of indicators for livestock accounting is given in Tables XII to XIV of Annex 2.

**Table 7: Endline values of selected outcome indicators for sub-EQ 3.3**

<b>Livestock holdings (baseline and endline)</b>			
Livestock in Jan 2018 (no. of animals)	27.53	Livestock in Feb 2019 (no. of animals)	25.93
Livestock in Jan 2018 (TLU)	10.19	Livestock in Feb 2019 (TLU)	9.29
<b>Livestock losses since baseline</b>			
Livestock lost (no. of animals)	6.24	Has lost livestock due to drought*	77%
Livestock lost (TLU)	2.57	Has lost livestock due to accident or disease*	31%
<b>Livestock offtakes since baseline</b>			
Livestock taken off (no. of animals)	0.38	Has taken off livestock for gifting*	41%
Livestock taken off (TLU) in 2018-19	0.12	Has taken off livestock for slaughtering*	35%
<b>Livestock sales since baseline</b>			
Livestock sold (no. of animals)	3.07	Has sold livestock for food *	82%
Livestock sold (TLU)	0.83		
<b>Livestock purchases since baseline</b>			
Livestock purchased (No. of animals)	0.32		
Livestock purchased (TLU)	0.17		
<b>Livestock intakes since baseline</b>			
Livestock taken in (no. of animals)	7.77		
Livestock taken in (TLU)	2.43		

Notes: The unit of observation is the household. Average values of selected indicators for SIIPE beneficiaries. The complete list of indicators for SIIPE beneficiary and PC households is presented Tables XII-XIV of Annex 2. Respondents were asked and proofed on the stock and flows of animals for each insured category. The variables are related by the following formula:  
 Livestock owned in Feb 2019 = Livestock owned in Jan 2018 + [(livestock purchased + livestock taken in – livestock lost – livestock taken off – livestock sold) between Jan 2018 and Jan 2019]. The number of livestock units can be expressed in number of animals or in TLU.  
 \* Binary variable (yes/no) – the above statistics correspond to the fractions of ‘yes’ responses.

Source: C4ED analysis of endline data.

109. The average herd size per pastoralist household has not changed much since the baseline (28 animals in 2018 against 26 animals in 2019). This is also the case for

<sup>32</sup> The original impact evaluation matrix included two separate sub-EQs for the potential programme effects on livestock losses and offtakes (former sub-EQ 3.3) and on livestock sales (former sub-EQ 3.4). However, since both form part of the same livestock accounting exercise and no insurance payouts were made, we have merged these two sub-EQs into one new sub-EQ 3.3: “To which extent has the programme reduced livestock deaths and affected livestock off-take and sales?”.

each animal category (Table XII of Annex 2, Panel A). The animal composition of herds has also remained constant, with shoats representing by far the largest share (74 to 80 percent).

110. While overall herd size has remained almost constant, there were substantial in- and out-movements of livestock. Pastoralists faced high livestock losses (6.24 animals or 2.57 TLUs), but which were compensated in roughly equal size by intakes of livestock through birth and gifts (7.77 animals or 2.43 TLUs, see Table XII of Annex 2 for details). In contrast, livestock offtakes, sales and purchases were rather low, each accounting for less than one animal or half a TLU.

### Livestock losses

111. Households lost an average of 6.2 animals (2.6 TLU) over the one-year period: one cow, one camel and four shoats (Table XII of Annex 2, Panel B). This amounts to slightly more than one fifth of the livestock units owned in early 2018. The value of lost livestock is between 15,000 and 20,000 ETB (about 500 USD), depending upon whether value is measured at purchasing or selling prices. Livestock losses are not systematically different in function of the gender of the household head.

112. We find evidence that SIIPE has somewhat increased livestock losses (see Table 8 below). Even though the results are not very precise for losses measured in TLU or in monetary units (see Table XXII of Annex 3), the estimation results indicate an increase in the loss of shoats of about 1.7 to 2 units - roughly 10% of the baseline holdings. The estimated effect on the losses of livestock remains statistically significant across various specifications, including PSM with control for baseline livestock losses in past year. Although the evidence is somewhat weak, it cannot be ruled out that SIIPE beneficiaries had larger livestock losses, in particular shoats. A possible explanation could be a behavioural effect: SIIPE beneficiaries possibly waited too long with selling animals at risk of perishing because they had been hoping for insurance payout, which then never happened. In contrast, in Jensen et al. (2015), livestock insurance did reduce distress sales during the 2011 East African drought<sup>33</sup>. Since that drought was more severe than the drought experienced during the SIIPE pilot, payout certainty was also higher. In a scenario where insurance had paid out, we would thus expect that SIIPE reduces livestock losses – but without payouts, it may lead to slightly larger losses in the short term.

**Table 8: Programme effects on livestock losses**

Outcome variable	Estimated effect (with standard error)	Comparison group mean (endline)
Number of animals lost since baseline	1.70* (0.87)	5.10
Number of shoats lost since baseline	1.70*** (0.63)	3.52

Note: The unit of observation is the household. Complete results in Table XXII of Annex 3. Number of observations: 840. Significance levels: \*\*\* 1%, \*\* 5%, \* 10%.

Source: C4ED analysis of endline data.

113. The main reported reason of livestock death was lack of food during drought (77.4 percent of beneficiary households lost some livestock for this reason), followed by accident or disease (30.8 percent), see Panel C of Table XII (Annex 2) for all accounted reasons. The second reason may partially overlap with the first because

<sup>33</sup> Furthermore, an evaluation of a different livestock-based index insurance in Southern Kenya found that being insured led to reductions in psychological stress and fear of livestock loss (Gebrekidan et al., 2019).

the incidence of livestock diseases is further exacerbated by the weakening of animals during drought. In qualitative interviews, the prevalence of livestock diseases (e.g. Anthrax) was a recurrent theme. Some interviewees mentioned that diseases were due to the fodder shortages in times of drought that weakened the animals. In terms of seasonality, the survey data reveal that livestock losses were more frequent in the *Jilal* dry seasons of 2018 and 2019 (see Panel G of Table XII of Annex 2).

### Livestock offtakes

114. In contrast to losses of livestock, offtakes were rare: on average only 0.38 animals (0.12 TLU), mostly shoats (82 percent) between the baseline and endline survey. This low average across all households is driven by the fact that only a small share of households (14 and 11 percent in the ST and PC group respectively) reported at least some offtakes. These households took off an average of 2.70 animals (0.82 TLU), which corresponds to about 10 percent of their livestock holdings at baseline. The average value of offtakes ranges is approximately 1,000 ETB (34 USD; Table XIII of Annex 2, Panel A). The most cited reasons for offtakes were gifting animals to others in need (40.7 percent) and slaughtering (35.2 percent). The full list of reasons is reported in Panel B of Table XIII. Offtakes do not exhibit any systematic seasonality (Table XIII, Panel C).

115. There is no evidence of an effect of SIIPE neither on the number of off-taken livestock (Table XXIII of Annex 3) nor on its value.

### Livestock sales

116. Between the baseline and endline, beneficiaries sold an average of 3 animals, largely (2.6) shoats. Female-headed households sold only half (2) of the animals as male-headed households (4). Overall, households sold 11 percent of their January 2018 livestock holdings. In TLU terms, sales amount to 0.83 units or 8 percent of the 2018 TLU holding level. Sales evaluated at the average selling price amount to 4,234 ETB (121 USD). Most households (81.5 percent) indicated that the main reason for selling livestock was the need for money to purchase food for the household. In contrast to sales, purchases of livestock were rare: beneficiaries only bought 0.32 animals (0.17 in TLU terms) over the study period (Table XIV of Annex 2, Panel D).

117. The survey data show that household sold only few animals over the year, despite their high levels of food insecurity (see EQ 4) and despite distress sales of livestock being the most frequently mentioned coping mechanism for dealing with drought (see sub-EQ 1.3). Qualitative data suggested that this pattern is explained by timing of livestock sales. Households tend to keep livestock hoping for a recovery of their livelihoods (and since livestock is their main asset) until food shortages become so severe that they cannot defer livestock sales any longer. At that time, though, the livestock has become too weak and its selling prices in the market has dropped. The discussions with beneficiaries also found that SIIPE payouts have further fuelled beneficiaries' hopes for improvement and might have tempted them to delay sales even further.

118. Livestock sales exhibited some seasonality in the pilot year, peaking in March 2018 and January 2019. This confirms the late timing of sales. For example, in the second half of March 2018, rains were already starting again after a drought.

The quantitative estimates do not find any short-term effect of SIIPE on livestock sales, whatever outcome indicator was used, whether in overall terms or by animal category, or whether in animal count or TLU terms (Table XXIV of Annex 3).

## **2.4 EQ 4: Has the food-security of pastoralists and their families improved as a consequence of the programme?**

### **Key findings and conclusions – Evaluation Question 4**

- There are no visible short-term programme impacts on food security of beneficiary households. This is in line with the lack of effects on livestock protection or income diversification/stability as intermediate outcomes.
- The survey data show widespread but moderate levels of food insecurity – on average; but especially the nutritional status of children varies widely across households and female-headed households tend to be slightly less food insecure.
- There is weak evidence of slightly lower dietary diversification induced by SIIPE, apparently due to stronger reliance on grains to meet the calorie needs for the physical effort of the additional public work required from insurance holders.

119. EQ 4 analyses three dimensions of food security: sufficiency of food intake and child nutrition (sub-EQ 4.1), dietary diversification (sub-EQ 4.2) and food expenditure (sub-EQ.4.3). According to the programme logic, SIIPE aims to eventually improve the food security of its beneficiaries mainly through improved livestock protection and enhanced income-generating activities.

120. The quantitative impact analysis for this EQ does not find any short-term effects of SIIPE on food security yet. If anything, there is weak evidence of slightly lower dietary diversification induced by SIIPE, apparently due to stronger reliance on grains to meet the calorie needs for the physical effort of the additional public work required from insurance holders. The absence of visible improvements in food security is consistent with the similar lack of short-term effects on the ‘intermediate’ outcomes of livestock protection (EQ 3) and IGAs (sub-EQ 1.4). However, positive programme effects on food security may become visible in the longer term<sup>34</sup>, especially once the first insurance payouts have taken place and beneficiaries have started to diversify their IGAs.

121. The literature generally finds positive effects of a comparable insurance program, IBLI, on food consumption of insured households (CTA, 2018; Keno et al., 2018). IBLI enhances the insured pastoralists welfare measured in an increase of the per capita weekly food consumption. Such effects are not identified for SIIPE in the short term.

122. Besides the impact estimates, the survey and qualitative data provide useful insights into the empirical food security situation in which the programme operates. Overall the data show that food security is a major concern among pastoralist households.

123. In terms of sufficiency of food intake, the data presented here align well with the evidence in sub-EQs 1.3 and 3.3 that food consumption is highly prone to drought. Beneficiary households show on average moderate levels of food insecurity. The bulk of them experienced insufficient food intake at least once (but usually more often) during the month preceding the interview; this was also confirmed by

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<sup>34</sup> Such as the positive effects of a comparable insurance program (IBLI) on weekly per-capita food consumption of insured households, as shown in CTA (2018) and Keno et al. (2018).

qualitative findings. Similarly, children in sample households display moderate malnutrition *on average*, although their individual levels of (mal)nutrition vary widely. The survey data also corroborate that dietary diversification (measured among women) is extremely low in the programme setting, with heavy reliance on grains and no woman in the sample reaching the dietary diversification levels that would satisfy standard micronutrient needs. The previous deficiencies in food intake and diversification occur despite the observation in the survey that food accounts for more than two thirds of the total expenditure of households.

124. The data also identified some gender imbalances in food (in)security. Households headed by women tend to present lower average levels of insufficient food intake and child malnutrition, potentially influenced by the fact that they represent a larger share of those PSPN beneficiaries who receive unconditional transfers without having to participate in public works.

125. Table 9 below summarises the average endline values of selected outcome indicators for EQ 4. The full summary statistics are reported in Table XIV of Annex 2. PSM estimates of SIIPE effects are displayed in Table XXV of Annex 3. Further results are available in the supplementary annex upon request.

**Table 9: Endline values of selected outcome indicators for EQ 4 (by sub-EQ)**

4.1: Food intake and child nutrition		4.2: Dietary diversification	
<u>Household Food Insecurity Access Score (HFIAS)</u> <i>N = 384 households</i>		<i>N= 351 women at reproductive age</i>	
Total HFIAS (0-27)	12.98	MDD-W Score (0-10)	1.65
Fewer than 3 meals per day (HFIAS Q6) <sup>1,2</sup>	86%	Ate grains, white roots and tubers <sup>3</sup>	97%
All day and night hungry (HFIAS Q9) <sup>1,2</sup>	48%	Ate dairy products <sup>3</sup>	25%
Smaller meals than needed (HFIAS Q5) <sup>1,2</sup>	88%	Ate other vegetables <sup>3</sup>	26%
Went to sleep at night hungry (HIAS Q8) <sup>1,2</sup>	69%		
<u>Child nutrition</u> <i>N = 236 children</i>		4.3: Food expenditure	
Mid upper arm circumference (MUAC) in cm	13.48	<i>N = 384 households</i>	
MUAC result: severely acutely malnourished	5%	Total monthly expenditure (ETB)	2,536
MUAC result: moderately acutely malnourished	13%	> half of food bought on the market <sup>1,2</sup>	53%
MUAC result: at risk of acute malnutrition	30%	Share of food in total expenditure	68%
MUAC result: well nourished	53%		

Notes: Units of observation as indicated in the different panels. Average values of selected indicators for SIIPE beneficiaries. The complete list of indicators for beneficiary and PC households is presented Table XV of Annex 2.

<sup>1</sup> Binary variable (yes/no) – the above statistics correspond to the fractions of ‘yes’ responses.

<sup>2</sup> Any time in the past four weeks. <sup>3</sup> On the day prior to the interview.

Source: C4ED analysis of endline data.

### 2.4.1 Sub-EQ 4.1: Sufficiency of food intake, nutritional status of children

#### Sufficiency of food intake

126. Our analysis measures the sufficiency of food intake through the Household Food Insecurity Access Score (HFIAS), a tool widely used across countries and in different cultural contexts (Coates et al. 2007).<sup>35</sup> To calculate the HFIAS, the person primarily responsible for food preparation and meals in the household was asked whether any household member had experienced food insecurity occurrences over

<sup>35</sup> HFIAS was developed and tested by the Food and Nutrition Technical Assistance project of USAID.

the previous four weeks. The HFIAS builds on nine questions that are grouped in three overarching domains of food insecurity:

- i) anxiety/uncertainty about the household food supply (Q1),
- ii) insufficient quality of food in terms of variety and preferences (Q2-Q4),
- iii) insufficient food intake and its physical consequences (Q5-Q9).<sup>36</sup>

127. The number of food-insecurity occurrences identified under each question are summed up into the HFIAS, ranging from 0 to 27 points, with the lower the score the better the household's food access.<sup>37</sup>

128. Overall, the survey data (Table XV of Annex 2, Panel A) show that food insecurity is a common challenge in the study setting. The average HFIAS score of beneficiary households is 12.98, indicating moderate food insecurity. Frequent episodes of food insecurity experienced by households in the month prior to the interview (either often, sometimes or rarely) include: having fewer than three meals per day (86.2 percent), having to reduce the size of meals (88 percent), going to sleep at night hungry (68.7 percent) and not eating anything for 24 hours (47.6 percent). A similar picture emerged from qualitative discussions, in which several participants indicated that they would prefer to eat three to four times a day, but often had to go with only one or two meals per day.

129. The gender dimension of food insecurity was analysed in two ways: a comparison of HFIAS results between female- and male-headed households (quantitative survey) and intra-household differences in food intake (qualitative interviews).

130. Female-headed households are somewhat less food insecure than male-headed households: their average HFIAS is 1.6 points lower, and they are 12.8 percentage points less likely to have experienced a full day and night without food in the month prior to the endline survey (Table XVI of Annex 2, Panel N). These results are in line with the fact that households headed by a woman without any adult male household member are classified as Direct Support beneficiaries and receive monthly unconditional transfers under PSNP.

131. Within households, the qualitative interviews did not identify any clear order of food intake among household members. In Gabal, participants in FGDs and KIIs agreed that women, rather than men, would be the first within their households to be

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<sup>36</sup> The nine questions include: 1) Worry that their household would not have enough food, 2) Not able to eat the kinds of foods preferred because of lack of resources, 3) Eat a limited variety of foods due to a lack of resources, 4) Eat some foods that they really did not want to eat because of lack of resources to obtain other types of food, 5) Eat a smaller meal at breakfast, lunch, or dinner than they felt they needed because there was not enough food, 6) Eat less than three meals in a day because there was not enough food, 7) No food to eat of any kind and no way to get more through purchases, your garden, or farm, or from storage, 8) Go to sleep at night hungry because there was not enough food, 9) Go a whole day and night without eating anything because there was not enough food.

<sup>37</sup> Within each of the nine questions, the respondent is asked about the occurrence of a food-insecure symptoms to any of her household members. If yes, the respondent indicates how frequently the specific symptom was experienced ('rarely' = 1-2 times in the past four weeks, 'sometimes' = 3-10 times in the past four weeks, and 'often' = more than 10 times in the past four weeks). Each household therefore receives a score from 0-27 based on a simple sum of the frequency of occurrence of each food insecurity symptom, where 'never' = 0 points, 'rarely' = 1 point, 'sometimes' = 2 points, and 'often' = 3 points. The higher the score, the higher the degree of household food insecurity experienced in the previous four weeks.



affected by insufficient food intake. The contrary was stated by an interviewee in Todob. Interviewees across different settings indicated that adults would aim for their children to be the last household members affected by food insecurity.

132. While food insecurity is widespread in the SIIPE pilot districts, there is no evidence in our quantitative estimates that SIIPE has reduced food insecurity in the first pilot year. There is no effect of SIIPE on the total HFIAS nor its underlying indicators, such as the likelihood of fewer or smaller meals, going to sleep at night hungry, or spending a full day and night (results available on request in the supplementary annex). This lack of short-term programme effects on food (in)security is consistent with the finding in EQ 3 above that SIIPE has not improved livestock protection, which (if it had happened) would improve beneficiaries' food access through home consumption of livestock products and purchases of food with money from livestock sales<sup>38</sup>.

### Child nutritional status

133. Besides general food insecurity at household level, the analysis also studied the nutritional status of children (aged 6 to 59 months) in particular. Children in this age range are particularly vulnerable and usually most affected by food insecurity. The indicator used in this analysis is the mid-upper arm circumference (MUAC). The MUAC is a simple and low-cost method and tends to be less susceptible to measurement error than other anthropometric measures such as the weight for height and height for age (Rasmussen et. al 2012). The average MUAC of children in beneficiary households is 13.48 cm. MUAC cut-offs recommended by the World Health Organization were used to classify children's nutritional status: severe acute malnutrition (5.1 percent of the children in beneficiary households), moderate acute malnutrition (12.7 percent), at risk for acute malnutrition (29.7 percent), and well-nourished (52.5 percent)<sup>39</sup>; see Table 9 above and Table XV of Annex 2, Panel B.

134. Child nutritional status, just as the previous measures of general food insecurity at household level, differs by the gender of the household head. While 62.9 percent of children in female-headed households are well-nourished based on their MUACs, this is only the case for 46.3 percent of children in male-headed households. The reverse holds for the proportions of acutely malnourished children (20.2 and 35.4 percent of those staying in households headed by women and men respectively (all Table XVI of Annex 2, Panel N). The impact estimates do not show any effect of SIIPE child nutritional status after the first year of the programme; the potential effects may only become visible in the longer term.

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<sup>38</sup> For example, a female FGD participant in Dalad confirmed that "Our lives depend on the livestock that we have. So, when the drought happened our livestock died, and we couldn't get milk or meat. Also, if they [the livestock] die, you are not able to get something to eat because usually when you sell your livestock, you can buy food [from the money earned]."

<sup>39</sup> Following the World Health Organization guidelines, MUAC cut-offs are:

- MUAC < 11.0 cm: severe acute malnutrition.
- 11.0 cm < MUAC < 12.5 cm: moderate acute malnutrition.
- 12.5 cm < MUAC < 13.5 cm: at risk of acute malnutrition.
- MUAC > 13.5 cm: well nourished.

### 2.4.1 Sub-EQ 4.2: Dietary diversification

135. Dietary diversification was assessed using the Minimum Dietary Diversity for Women index (MDD-W)<sup>40</sup>. This index focuses on women of reproductive age (15 to 49 years) since this group has higher nutritional requirements compared to man and is therefore nutritionally more vulnerable, especially during pregnancy and lactation. Moreover, women in the current study setting are usually responsible for food preparation and thus tend to be the most knowledgeable household member regarding the ingredients of meals<sup>41</sup>. The MDD-W procedure essentially registers all food consumed by the respondent on the day before the interview<sup>42</sup>. Food is then classified into ten different main food groups,<sup>43</sup> and the MDD-W index counts from how many different food groups the woman consumed food on the previous day. Women with a diet from five or more different food groups are likely to meet their micronutrient needs.

136. Overall dietary diversification is low. Women in beneficiary households consumed food from less than two (out of ten) different food groups on average. The three main food groups consumed by beneficiaries were: cereals (97 percent; mostly processed to flatbread), vegetables (26 percent; mostly tomatoes and onions), and dairy products (25 percent; in the form of milk or milk powder; see Table 9 above). No woman indicated to have consumed ingredients from five or more food groups, the minimum for meeting all micronutrient needs<sup>44</sup>. More generally, qualitative interviews revealed that pastoralist households generally rely i) on food transfers from PSNP or NGOs and ii) in-kind food credits, mainly from family or community members, to maintain their levels of food intake especially in times of drought. Interviewees emphasized that food transfers of type (i) were usually of the same kind, e.g. only grains or peas, thus contributing to food security but not to dietary diversity.

137. Impact estimates suggest that women in beneficiary households consume on average from 0.4 food groups less than their counterparts in Pure Control *kebeles*. In particular, there is weak evidence that SIIPE has increased the likelihood that women have only eaten grain by about 20 percent, while it slightly reduced the consumption of dairy and vegetables (Table XXV of Annex 3). Both contributed to a lower dietary diversity. These results should be interpreted with caution. The MDD-W indicator was only introduced in the endline, and it was not possible to test its

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<sup>40</sup> The MDD-W was developed by the Food and Nutrition Technical Assistance project in cooperation with the Food and Agriculture Organization (FAO).

<sup>41</sup> The survey aimed to interview the woman (aged 15 to 49 years) in the household who was the main responsible person for food preparation. If she was not available within the re-visiting period, another woman aged 15 to 49 years living in the household was interviewed. However, the former represents the large majority of cases (79 percent).

<sup>42</sup> Only ingredients with a minimum consumption of 15 grams on that day were recorded.

<sup>43</sup> (1) grains, white roots and tubers, and plantains, (2) pulses, (3) nuts and seeds, (4) dairy, (5) meat and fish, (6) eggs, (7) dark green leafy vegetables, (8) other vitamin-A-rich fruits and vegetables, (9) other vegetables and (10) other fruits.

<sup>44</sup> Micronutrient sufficiency also depends more specifically on the consumption of: i) dark green leafy vegetables, ii) other vitamin-A-rich fruits and vegetables (e.g. ripe mango or pumpkin), iii) other vegetables (e.g. onions or tomatoes), and iv) other fruits (e.g. banana). Products from i) are particularly rich in vitamin A and products from ii) contain high doses of vitamin A and vitamin C. Products from iii) and iv) do not contain these vitamins, but still contribute to a healthy diet through their phenolics, flavonoids and fibre. None of the responding women indicated to have consumed anything from i), ii) or iv).

balance at baseline to assess the validity to PSM estimates nor to control for any potential baseline differences.

138. Nevertheless, the previous result would seem very plausible. In the first year of the SIIPE pilot, beneficiaries were required to ‘advance’ some physical effort – in the form of additional workdays under PSNP – for which they may have decided to increase their calorie intake from more grains. In contrast, they still have not received any insurance payouts that would allow them to diversify their diet, and there is no short-term programme effect on diversification of income-generating activities either (see sub-EQ 1.4).

#### **2.4.2 Sub-EQ 4.3: Food expenditure**

139. Finally, food expenditure was measured in two different ways: in absolute terms (ETB) and as a share of total expenditure. Beneficiary households spent on average 2,536 ETB (88.76 USD) per month on food. This represents a large share of total monthly household expenditure (68.2 percent) compared to other expenditure items. There is no significant difference in food expenditure between female-compared to male-headed households (Table XVI of Annex 2, Panel P).

140. The quantitative analysis did not find any programme effect on any of the food expenditure indicators. Again, the situation may differ in the long term, e.g. if SIIPE leads to increased income through livestock protection, engagement in alternative IGAs or direct spending of future payouts on food.

### 3. CONCLUSIONS AND RECOMMENDATIONS

141. Based on the findings presented in the previous section, an overall assessment that responds to the evaluation questions is provided below. This is followed by seven recommendations for improvement of SIIPE.

#### 3.1 Overall assessment and conclusions

142. For the overall assessment of SIIPE and the, one needs to keep in mind that this report only covers the first year of the SIIPE pilot and can thus only analyse the short-term effects of the programme. The study results need to be interpreted in light of two relevant events. First, the index insurance has not been triggered and has thus not paid out. This means that the main effects of insurance in cushioning hardship and protecting assets by providing cash when needed cannot be observed yet. Second, a period of violence in the study area has delayed the implementation of some programme components, in particular the 'Insurance for Asset' approach. These two events imply that many of the effects expected from insurance are not yet observable in the short run. Another follow-up data collection is advised for the future (see Recommendation 5 further below).

143. While there has been no insurance payout, pastoralist households did perceive the period before the survey as a prolonged drought and did report hardship because of arid conditions and lack of rains (99% reported having been exposed to drought.) The evaluation findings should thus be seen in the context of hardship during the months ahead of the survey.

144. In principle, SIIPE can affect beneficiaries in several ways. The main effect would be expected after an insurance payout, which would cover households in severe need. This effect is not yet observable as no payout has happened. Insurance can also have effects even in the absence of a payout, as households might change their behaviour knowing that they are insured. Such behavioural effects largely depend upon expectations of beneficiaries with respect to the likelihood of a payout, trust in the insurer and their expectations about the timing of payout. These effects may need time to unfold since households have no previous experience with index insurance (and the occurrence of conflict might also have affected their expectations).

145. Besides insurance, SIIPE may also affect household behaviour through other components. These include training of beneficiaries on the insurance and income generating activities. Since the latter has not been implemented yet, its potential effects have thus not been observable in the short run either.

146. In contrast, two other components have been implemented as foreseen and have produced some effects (see below): community works under SIIPE, which households have provided as a type of in-kind payments for insurance, and registration on mobile money platforms.

147. In general, the quantitative impact analysis yields only few statistically significant effects in the short run, which is to be expected given the absence of insurance payout, delays in implementation due to conflict and the short-observation period of one year. The impact evaluation results are backed by the qualitative evidence collected.

148. **Evaluation Question 1** examined **behavioural changes**, that is, the extent to which SIIPE has affected productive decisions and livelihoods of beneficiary households. Insurance coverage alone, without any payouts in the study period, has not been sufficient to produce any impacts on livestock-related investment. SIIPE has not led yet to more income diversification or stability either, which can be explained by the postponement of training sessions on income-generating activities. In particular, pastoralists' livelihoods continue to predominantly depend on livestock and livestock sales. The programme has increased the chance that beneficiaries expect to rely on veterinary medicines and services to cope with drought.

149. Positive effects of SIIPE are more evident at the community level. Communities reported clear benefits from the SIIPE public work activities introduced under SIIPE's 'Insurance for Assets' approach. By focusing on water management and grazing land preparation, these activities differ from the standard PSNP public works (e.g. road construction, waste disposal, sanitation). As a result, water and pastureland availability has improved and solidarity has increased in the communities.

150. **Evaluation Question 2** analysed **insurance awareness and understanding, and financial inclusion**. As a consequence of the programme, awareness of insurance and SIIPE is quite high, although exact knowledge about index insurance and its advantages and disadvantages has remained rather low. While detailed knowledge about insurance may not be of key importance, it can lead to disappointment if expectations are too high. SIIPE beneficiaries have been overall rather confident that a payout would happen in case of drought and have also assumed that their entire herd is insured. The scarce knowledge of SIIPE extends to *kebele* officials, who are responsible for training and interacting with beneficiaries in SIIPE activities.

151. In general, a relatively large willingness to pay for livestock insurance is reported, but this only applies to roughly half of the beneficiary households. The other half is not willing to pay anything, which would potentially lead them to abandon the insurance scheme if subsidies are phased out. SIIPE has helped maintain a higher share of beneficiaries willing to pay for livestock insurance relative to the control group. However, these results should be taken with caution as they have likely been affected by psychological distress and cash-flow during the prolonged drought experienced prior and during the endline period.

152. As a by-product of SIIPE, mobile money accounts were opened, which are intended for allowing quick insurance payouts. The programme has thus strongly increased mobile money access but has had no significant effect on the actual use of these accounts, which has remained low. Nevertheless, the mobile money registration represents an important first step towards financial inclusion in a setting where only a tiny fraction of beneficiaries have access to informal savings groups or formal bank accounts.

153. **Evaluation Question 3** examined **livestock protection**, that is, the extent to which SIIPE has strengthened the ability to keep livestock alive. In the hypothetical scenario of insurance payouts, the potential effect would depend on whether these payouts would actually be spent (at least partially) on livestock protection. Survey respondents indicated that they would – but that buying food for their households would have a higher priority.

154. Livestock accounting over the study period showed that the overall size of livestock herds owned by pastoralist households has not changed much since the baseline. Livestock losses (especially of sheep and goats) were large, amounting to one fifth of the baseline livestock or 500 USD in value, although these were compensated through new animals born or received as gifts. The large gross losses underline the relevance of livestock insurance in the Somali region.

155. There has been no visible improvement in livestock protection resulting from the programme, presumably again due to the absence of payouts. In the short term, SIIPE seems to have slightly increased average losses of shoats, apparently because the (false) expectation of receiving insurance payouts has led some beneficiaries to delay sales/offtakes of animals at the risk of perishing. With payouts, one would expect a positive effect on livestock protection in the long run.

156. **Evaluation Question 4** analysed food security, specifically whether SIIPE stimulated the food intake, dietary diversification and food expenditure of pastoralists and their families. Again, no large effects can be expected – and have not been found – since the insurance did not pay out and there were almost no effects on the intermediate outcomes towards better food security (income diversification, livestock protection) either.

157. Households face on average moderate insufficiency of food intake. Female-headed households are somewhat less food insecure. Children are on average modestly malnourished but with large variation in individual levels. While food insecurity is a concern, an even larger concern is low dietary diversity. Half of the women in reproductive age interviewed in beneficiary households consume only grains, a pattern that has been slightly reinforced through SIIPE, potentially to meet the calorie needs for the additional public work required from insurance holders.

158. In general, the findings in this report corroborate or complement results in other impact studies of livestock insurance - especially on coping mechanisms and the role of beneficiary expectations. For example, the current study confirms the result in Jensen et al. (2015) that livestock insurance would increase investment in veterinary services in times of drought. Yet, while Janzen et al. (2018) and Gebrekidan et al. (2019) find that livestock insurance reduces distress sales of livestock, this evaluation shows that such behavioural changes may depend on the expectations of insurance payout formed by beneficiaries.

### **3.2 Recommendations**

159. Based on the findings and conclusions of this evaluation, the recommendations of the evaluation team are outlined below. The recommendations are divided in two large clusters – insurance product and other programme components – and ordered by level of priority<sup>45</sup>. The target group for each recommendation is identified.

#### **Cluster A: Recommendations on the insurance product**

160. Several beneficiaries expressed their disappointment of not having received any payouts despite having experienced (severe) drought in the study period. This deception was mainly driven by their limited understanding of SIIPE insurance

<sup>45</sup> Reflecting the urgency of action and the resulting scale of expected improvement.

(recommendations for solving this issue are presented as R1 and R2 below), and potentially also related to the way how the underlying NDVI was calculated (see R3 below).

**R1: Consider increasing the insurance coverage of risks other than pastures**

*Priority: high*

*Target group: Insurance companies, WFP ETHCO*

161. Current insurance policy covers risks only for water, veterinary service and pasture risks, for the seasonal cover period of *Gu* season (for the index interval of March to June) and *Deyr* season (October to December). However, beneficiaries are interested that insurance covers the entire 12 months of a year, or not only 'catastrophic' but also medium risks. This would help pastoralists to learn about payout patterns and how the underlying vegetation index is related to their real life.

**R2: Explain the limitations and risks of index-based insurance**

*Priority: medium*

*Target group: WFP ETHCO, insurance companies*

162. To avoid that false expectations about the insurance (especially pay-outs) lead beneficiaries to take decisions that may decrease their welfare, beneficiaries should be well informed about the insurance policy and how it works. Awareness raising activities of SIIPE should spell out more clearly the limitations and risks of index-based livestock insurance to prevent disappointments of insurance holders.

**R3: Continue addressing the basis risk issues in calculations of the vegetation index**

*Priority: medium*

*Target group: WFP VAM Unit, WFP ETHCO, insurance companies*

163. Some FGD and KII participants have expressed their concern that the vegetation index may not accurately reflect actual drought conditions because, even during drought, certain areas are covered by evergreen plants and shrubs, but which are not edible by the animals. The filtering of satellite images should be adjusted to correctly account for this fact.

**Cluster B: Recommendations on other programme components**

**R4: Rigorously implement training of trainers and beneficiaries; improve training materials**

*Priority: high*

*Target group: WFP ETHCO*

164. The analysis has identified two main shortcomings in the training of beneficiaries. First, even though *kebele* officials were instructed as trainers by programme staff, their actual understanding of SIIPE was still limited after the training – and so was the knowledge of insurance holders trained by the officials. The training of *kebele* officials should hence be closely supervised by WFP to ensure

adequate transfer of knowledge about the programme. To further enhance the effectiveness of training sessions (for both trainers and beneficiaries), improved materials such as pictorials and/or audio materials are recommendable to foster the understanding of SIIPE insurance. Similar material was employed by ILRI for the training of higher-level SIIPE personnel.

165. Second, several *kebele* officials had been newly appointed during the political disruptions, but they had still not been trained at the time of the endline survey, leaving some *kebeles* without knowledgeable counterpart. These issues should be remedied by consequently offering training-of-trainer sessions also to new *kebele* officials and WFP local staff after replacements.

**R5: Conduct a follow-up data collection in 2020/21 to capture the full (including longer-term) programme effects**

*Priority: high*

*Target group: WFP ETHCO and Regional Evaluation Management*

166. A complete assessment of the full effects of SIIPE has not been possible in this evaluation due to external constraints: the short study period of one year, the absence of insurance payouts and delays in implementation due to conflict. Consequently, the effects found in this short-term analysis tend to be few, small in size or not very robust yet – whereas one may expect larger positive effects in the long run.

167. To understand the full effects of SIIPE, it is recommended to carry out another follow-up household survey in 2020 or 2021 using the same control group design. This would require WFP and its partners to refrain from implementing programme activities in the Pure Control *kebeles*. In the SIIPE pilot *kebeles*, new activities (such as IGA training) should be harmonised to the extent possible. Gender should play a larger role in the follow-up evaluation since some new programme activities will specifically targeted to female beneficiaries. To minimise sample attrition, the data collection should take place around the dates of PSNP payments to households. Flexibility in the timing of the data collection is crucial, especially to wait until the first insurance payouts have been made and programme effects fully unfold.

**R6: Support the implementation and monitoring of public work activities**

*Priority: medium*

*Target group: WFP ETHCO and PSNP project officers*

168. SIIPE public work activities introduced through the IfA approach have produced the first positive effects on community assets. However, the potential of these activities has not been fully exploited because of difficulties (partially related to the outbreak of conflict) in coordinating and initiating them effectively and on time.

169. In the future, these activities should be carried out to a similar extent across all communities. WFP (possibly through partner organisations) could strengthen the participation of communities in the identification of relevant activities and provide technical support/advisory for their implementation.

170. Moreover, an efficient monitoring system of the public works should be put in place – under SIIPE – to ensure that the execution and results of the activities can be traced by the programme directly.



## **R7: Foster the use of registered mobile money accounts**

*Priority: medium*

*Target group: WFP ETHCO and Belcash*

171. SIPE has successfully registered beneficiaries on a mobile money platform, yet these accounts have not been used much. Although financial inclusion itself is not a primary objective of the programme, an enhanced use of the accounts would not only yield secondary benefits at almost no extra costs but may also increase the efficiency and use of insurance payouts in the future.

172. It is thus recommended to stimulate the active use of mobile money even before the first insurance payouts, specifically by promoting it and explaining the corresponding mobile banking functions in the training sessions on income generating activities.

**Addis Ababa, August 2019**

**WFP Country Office Ethiopia**



**World Food Programme**