The USAID-funded Strengthening PSNP4 Institutions and Resilience (SPIR) Program, led by World Vision in a consortium with CARE and ORDA, is intended to help households in the PSNP4 program achieve food security for their households through a combination of savings, diversifying their sources of income through income generating activities (IGAs), and skills training that can help them graduate from food assistance, institutional capacity building of those involved in implementation of PSNP4. SPIR supports 526,444 direct project participants (158,456 vulnerable households) in the Amhara and Oromia regions of Ethiopia.

INTEGRATION OF PARTICIPATORY SCENARIO PLANNING (PSP) INTO WOREDA-LEVEL EARLY WARNING SYSTEMS (EWS) IN ETHIOPIA

Introduction

Climate change is increasing the severity and frequency of climate events such as drought and flooding. PSP has addressed a number of challenges with the functionality of the EWS. Since the introduction of PSP into EWS, there has been a reinvigoration of indigenous knowledge within the community EWS.
Overview

In Ethiopia, agriculture is a major part of Ethiopia’s socio-economic fabric, contributing over 40 percent of the national GDP and employing around 80 percent of the population. Smallholder farmers predominantly drive Ethiopia’s agriculture sector. Climate change is increasing the severity and frequency of climate events such as drought and flooding due to variability and unpredictability of rainfall. This has led to a 50-90 percent reduction in crop production in chronically food insecure parts of the country, resulting in the need for humanitarian assistance and impacting long-term development outcomes. The current set-up of early warning systems in Ethiopia lacks the functionality needed to support informed decision making and early action. Effective early warning systems (EWS) can support early actions which mitigate the worst disaster impacts, reduce the scale of the humanitarian intervention needed and protect development gains.

This brief presents the learning from integrating Participatory Scenario Planning (PSP) into woreda level EWS in the Oromia region in Ethiopia carried out under the SPIR program. It draws on findings from a study carried out in two woredas (Chiro and Gemechis), which sought to understand different stakeholders’ perceptions of the changes in EWS since the introduction of PSP by SPIR program in 2017, and the impact on people’s decision making and early actions in response to climate shocks and stresses. The findings explored below show that PSP has addressed a number of challenges with the set-up of the current EWS and supports calls for sustaining and scaling up the approach.

Methodology

A qualitative study was conducted in July 2021 in two SPIR operational woredas – Chiro and Gemechis. Focus group discussions (FGDs) were conducted with the EWS and DRR committees in both woredas as well as six kebele level EWS and DRR committees – one in each of the three different agroclimatic zones (highland, midland, lowland) in both woredas. In addition, one FGD with community members was held in each kebele. Three key informant interviews (KIIIs) were conducted with representatives from the Regional Meteorological Agency as well as six traditional forecasters to ensure their views were captured. Additionally, a KII was conducted with a senior agro-meteorologist focal point at Oromia Bureau of Agriculture and Natural Resources (OBANR).

The limited scope of the study meant that it was not possible to conduct interviews in a control woreda to directly compare and contrast functioning of EWS in SPIR and non-SPIR woredas, but interviewees in SPIR woredas were asked to compare current status after integration of PSP into EWS with previous situation to assess impact of PSP.

Early Warning Systems in Ethiopia

The limited availability of climate information poses a significant challenge for managing, planning and responding to severe weather events in Ethiopia. A combination of insufficient observational infrastructure (e.g., automatic weather stations and hydrology gauging stations) and low capacity to analyse and model the weather, climate and environment, leads to inadequate information being available to support climate-related decision making. This weak observational and analytical capability compounds the difficulty to foresee and manage extreme weather events, and to plan to mitigate the long-term impacts of climate change on society and the economy. Moreover, the National Strategy and Policy on Disaster Risk Management (2013) clarified that the practice of EW has not been fully utilized by early warning or disaster assessment information in the event of a disaster response, rather it is predominantly being provided based on the findings of biannual seasonal assessments conducted after the rainy seasons.

Challenges of the Current EWS in SPIR Operational Woredas

In SPIR operational woredas, the existing woreda level EWS has had limited effectiveness in supporting households to make informed decisions for crop and livestock production. Due to a loose working relationship between early warning committees at the woreda and kebele levels, limited involvement of indigenous forecasters and meteorological forecasting that is not location specific, communities were not able to get accurate, timely and relevant early warning information. Downscaling and translating of climate forecasts to the local context is essential, as actors need climate information that...
is relevant to the geographical scales for which decisions are to be made: for example, a river basin or an agro-climatic zone-specific early warning information – however this was previously not available. The lack of accuracy and context specificity in the information available meant it did not help community in identification, prioritization and tackling of specific shocks based on likely scenarios, the community, then, lacked trust in the information and therefore were hesitant to use it for decision making.

Before introduction of PSP, another challenge was that early warning information was not delivered in a timely manner and was received too late for taking action at the community level. In some cases, there had been a delay of one month or more after the initial forecast information is produced by NMA. This means the EW information is received by farmers too late to make informed decisions and often even after the climate shock or stress has happened. Dissemination of EW information has been a huge challenge; national and regional level forecasts which are general and not woreda specific are shared with communication channels i.e TV and radio followed by letters and phone calls between the woreda and kebele levels. As a result, EW info often didn’t reach the village level and got stuck with a few individuals. The gap was mainly due to lack of clarity around roles and responsibilities between the woreda and kebele level Early Warning committees—compounded by weak linkages and limited skills to support dissemination and use of early warning information, hindering the flow of EW info down to villages.

### Integration of PSP in EWS

The SPIR program applied CARE’s Participatory Scenario Planning (PSP) approach to help farmers to adapt to changing climate through use of seasonal weather forecasts for livelihood decisions. Starting in 2017, PSP began by bringing together woreda and kebele EW committees, indigenous forecasters, and meteorology forecasters on a two-day workshop conducted twice each year before the start of the two rainy seasons. The output of the workshop was co-produced advisories based on likely scenarios and disseminated to communities through kebele and woreda early warning structures.

### The Benefits of Integrating PSP in Woreda-Level EWS

Based on the findings from the qualitative study, PSP has addressed a number of challenges with the functionality of the EWS identified above, including improved accuracy of information, timing and mode of dissemination, and coordination between stakeholders. The accuracy of early warning information provided by the woreda and kebele level has improved thanks to the blending of scientific information from the NMA and indigenous knowledge from traditional forecasters. During the FGDS, woreda EW committee members confirmed that the co-produced indigenous and scientific forecast matches with the actual reality on the ground. This has encouraged community members to have greater trust in the information. They are confident to take action based on the EW information and as a result have experienced reduction of losses in crops, livestock and natural resources during times of shock and stress. In 2020, Gemechis woreda EW committee disseminated EW information to high altitude located kebeles about an outbreak of crop diseases. The community took steps, based on the forecast, to focus on timely weeding and apply mechanical crop disease control that was estimated to prevent crop yield loss by at least 50%. This demonstrates

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6 For seasonal forecasting for Meher and Belg main rainy seasons, the National Meteorological Agency releases an official forecast and EW information to all zones in Ethiopia. Other actors, like regional NMA, woreda EW & DRR committees and the process of PSP follow on with localised information after the national release.

7 Kebele EW & DRR committee comprises 7 members: kebele chairperson, kebele secretary, health extension worker, two Development Agent, women affairs, community member

8 Woreda Early warning and DRR committee comprises of about 10 sectoral offices: EW, Crop, livestock, health, irrigation, education, women affairs,


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**Participatory Scenario Planning (PSP)**

CARE’s Participatory Scenario Planning (PSP) approach is a co-production process that brings together stakeholders to share weather predictions and seasonal forecast information drawn from scientific and traditional sources and local knowledge, collectively analyse the information, develop potential scenarios for the season, develop action plans for most likely scenarios as well as scenarios with lower probabilities, generate advisories for different sectors and stakeholders, and agree communications methods for disseminating forecasts and advisories.
that integration of PSP into EWS has enhanced the use of EW information. For example, FGD respondents indicated that in Gewgaw kebele of Gemechis woreda 15 out of 20 farmers are using the EW advisories to make informed agricultural decisions, which is a significant increase over previous years when it was estimated only 3 out of 20 farmers used EW information.

The timing of information has also significantly improved thanks to the inclusion of PSP. After the PSP forum takes place, the co-produced EW information reaches the community within two weeks of the announcement of seasonal early warning information at the national level. This happens through dissemination by email to over 60 development actors as well as word of mouth by community actors. This is an improvement of nearly a month, and means the information reaches the community with adequate time for taking action. For example, for meher season (June-Sept), information reaches the community in the second week of June which is sufficient time for making planting or preparedness decisions.

Impact of Integration of PSP into EWS on Key Stakeholder Groups

Community-Level benefits

**Agricultural decision making**

Thanks to the improved accuracy of the early warning information and accompanying advisories, communities have been able to make timely and informed decisions such as selecting early maturing and drought tolerant seed type/crop as well as timely planting and harvesting. Thanks to the clear EW messages contained in the advisories, farmers have been shown to choose one crop over another. For example, in 2020 meher season because of predicted hailstorms in Gemechis, 70 percent of farmers who had originally prepared cultivated land for planting sorghum fortunately decided to shift to maize crop which is better at withstanding hailstorms. The farmer’s decision helped them to harvest a reasonable quantity of produce per plot of land that year, mitigating the impact of the hailstorms. In Kasehja village of Gemechis woreda, respondents covered by the key informant’s interview confirmed that about 75 percent of farmers are using early warning information and advisories to make farming decisions.

**Disaster Preparedness Activities**

Through the advisories, communities feel that their risk knowledge is increasing and that they can understand and interpret actions to take on their farmlands. Communities have jointly implemented risk reduction measures to reduce the impacts of shocks and stresses predicted via the early warning messages. For example, planting forage seedlings (elephant or dasho grass) across hillsides to mitigate flooding by reducing run-off and increasing water absorption and other measures to reduce upstream and downstream flooding. In times of predicted shock or stress such as an extended dry season, they preserve forage grasses for livestock fodder, save money and cereals for potential food shortages and engage in other income generating activities or wage labour to reduce the need for negative coping strategies.

![Figure 1: Indigenous Forecasters presenting their predictions in 2019 at Ehilo and Gemechis](image)

**Women’s Decision Making and Participation**

Women are using the improved early warning information for more informed decision making, resulting in positive outcomes for their families as well as being empowered with new roles and responsibilities. Women were often limited from participating in community meetings because they took place in the mornings when they were tending to their household duties. However, PSP forums are facilitated at a favourable time, preferably in the mid-day after households have prepared foods and fed their children so women are able to actively participate in the workshops and are part of the collective decision making around advisories. This means the advisories produced take into account the needs and capacities of women. In the kebele EW committee, women constitute 43% of membership and help to run the kebele level EW data collection, interpretation, and dissemination. PSP forums also play an active role in disseminating the information to other women. In Homicho Rihana kebele of Gemechis, a woman farmer – Zara Mumed – managed to produce 37qt of wheat/ha by following the information in the early warning advisories during the 2020 meher season. She chose to use selected seeds and agricultural inputs and sowed late, as the rainy season was predicted to finish late.

Women also use the EW information to start engaging in alternative income generating activities. These include shoat fattening from saved fodder and petty trading when harvests

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10 Meher season is the main cropping season in Ethiopia is from months of June –September
11 Refers to near average production per hectare in the area
12 Kebele EW committees have 7 members of which Health Extension Worker, Development Agent and Kebele Women Affairs Representative are women
13 Average production rate for wheat in West Haraghe is 45qt/ha
are predicted to be poor. In addition, PSP has created a platform for women especially those with indigenous skills of forecasting to come to the forefront. For example, in Gemechis woreda, Asegedech Derib (38), has emerged as a female indigenous forecaster and has been taking part in PSP forums with her male counterparts. She has broken the notion that women cannot be indigenous forecasters.

Community members especially women are now paying attention to her, for example, at PSP workshops and Village Economic and Social Association (VESA) platforms.

Regional Bureau and Extension Services

The introduction of PSP into woreda level EWS has also helped to strengthen extension services. Extension Agents (agriculture, livestock, health, WASH, etc.) provide their seasonal extension services based on EW information which helps to improve their relevance and targeting. For example, health extension workers integrate support for specific seasonal shocks (e.g., malaria, food shortage, scabies, etc) into their routine health services and agricultural extension agents provide services such as ensuring the availability of inputs and advising on crop selection. PSP plays a significant role in creating an opportunity to bring the key sector offices together to integrate their roles for community services and facilitate improved role playing that assist sector offices with carrying out their assigned roles in a way which is tailored to the specific season.

PSP has also helped to create greater demand for information and services from regional bureaus. The Oromia Bureau of Agriculture and Natural Resources (OBANR) through its agro-meteorology department liaises with Ministry of Agriculture (MoA), National and Regional Meteorology agency to provides 10 days, monthly and seasonal forecasts that cover the 21 zones in the Oromia region. Through woreda EW committees, the bureau collects data every seven days, consolidates with meteorology, and share the forecast back with the woredas. In woredas with PSP, Tilahun Dandesa focal point for OBANR says that woreda early warning committees are very active in sharing EW data and in disseminating advisories.

Indigenous Forecasters

Since the introduction of PSP into EWS, there has been a reinvigoration of indigenous knowledge within the community EWS. Indigenous forecasters were not previously considered as a stakeholder within the formal kebele early warning system and their knowledge was not harmonized with meteorological forecasts. Since being included in the PSP process, they feel their role is valued and are motivated to engage with early warning and to take on a dissemination role. They have been inspired to enrich their traditional knowledge with scientific knowledge and see it as complementary rather than conflicting. They also play a role in continuing to support the village with understanding and using early warning information and providing trainings to their communities in collaboration with the kebele EW committees. The community trusts the involvement of indigenous forecasters and values their contribution to the EWS. Indigenous forecaster, Ibrahim Hassen (40), in Chiro woreda explains,

"As indigenous forecasters, PSP provided to us a golden opportunity to serve our community with more realistic prediction. My analytical skills have massively been enhanced in light of exploring additional EW signals in one hand and understanding the meteorological ways of forecasting on the other. I have my own notebook to capture new knowledge."

Ibrahim Hassen

National Meteorology Agency—Eastern and Central Oromia

The main value of the inclusion of PSP into EWS for the regional meteorology agency is the improved coordination across different administrative levels and the increase in demand from users for the information they produce. PSP has linked regional meteorology agency, woreda and kebele committees and indigenous forecasters into one system through the multistakeholder platforms which happen in advance of each
rainy season, improving the flow of early warning information between the national and local level. Previously, the lowest administrative level that the NMA had linkages to was the zonal level – with no way to reach out to the kebele level. The PSP process has now enabled them to connect with woreda and kebele level structures. Regional meteorology agency has been able to provide technical training to woreda EW and DRR committees on meteorological predictions and techniques for producing advisories, which has resulted in increased demand from EW committees for early warning and forecast information. A spill-over effect has been seen in nearby woredas like Mieso, Tulo and Ancher in West Hararghe, who have also started to demand regular EW information from their woreda and regional meteorology agency. Non-PSNP households are also practicing the use of climate information.

**Kebele- and Woreda-Level EWS Committees**

One of the biggest changes noted in the study due to the integration of PSP in EWS has been the incremental change in the understanding and motivation of kebele and woreda level EWS committees. Thanks to improved linkages and technical training from regional meteorology agency through the PSP process, the woreda EW committees are taking a more proactive role in EWS, they are becoming alert and conscious of early warning signals and actively reach out to regional meteorology agency to clarify EW indicators and information. For example, EW committees and communities are actively requesting information for real time decision making; as a result, groups have been set up on the telegram messaging app to disseminate 3-day, 10 day, monthly and seasonal early warning information from regional meteorology agency, which reaches the community within one day.

**Recommendations for Sustaining and Scaling PSP in Regional Structures**

Based on the findings from the study emphasising the value of the PSP approach in strengthening woreda level EWS, the following are recommendations for sustaining and scaling the approach in regional structures:

- Oromia Region Bureau of Agriculture and Natural Resource Management should link woredas to regional meteorological agencies more strategically for formal flow of communication, including beyond PSP operational woredas.
- Sectoral integration at regional level should collaborate on EW, sharing information relevant to health, nutrition, water and other sectors for planning and extension services that help strengthen woreda level multi-sectoral EW & DRR committees.
- The evidence from PSP indicated that indigenous forecasters have contributed to acceptance of climate information by community and hence regional government office should acknowledge their role formally within the EW system.
- PSP EW information dissemination channels can also be taken to other non-PSP woredas as they have been effective in reaching out to a larger number of community members.
- PSP initiated the use of electronic and social media for EW information sharing namely, telegram, group email, and Facebook which is effective in reaching a large number of people very quickly. Regional bureaus and NMA should use these platforms and make sure the information shared is genuine and minimize fake sources.
- Woreda EW & DRR committees should continue to improve dissemination channels in order to reach out to all farmers and encourage use of early warning information for decisions making.
- Continuous improvement should be made on articulating scenario-based advisory messages by all committee members.
- Decision makers at the national and regional levels should actively engage and support the efforts of NMA to address the demands of end users, including supporting budget allocation for EWS by regional bureaus for woredas.