Better forecasting delivers impact for climate field schools in The Philippines

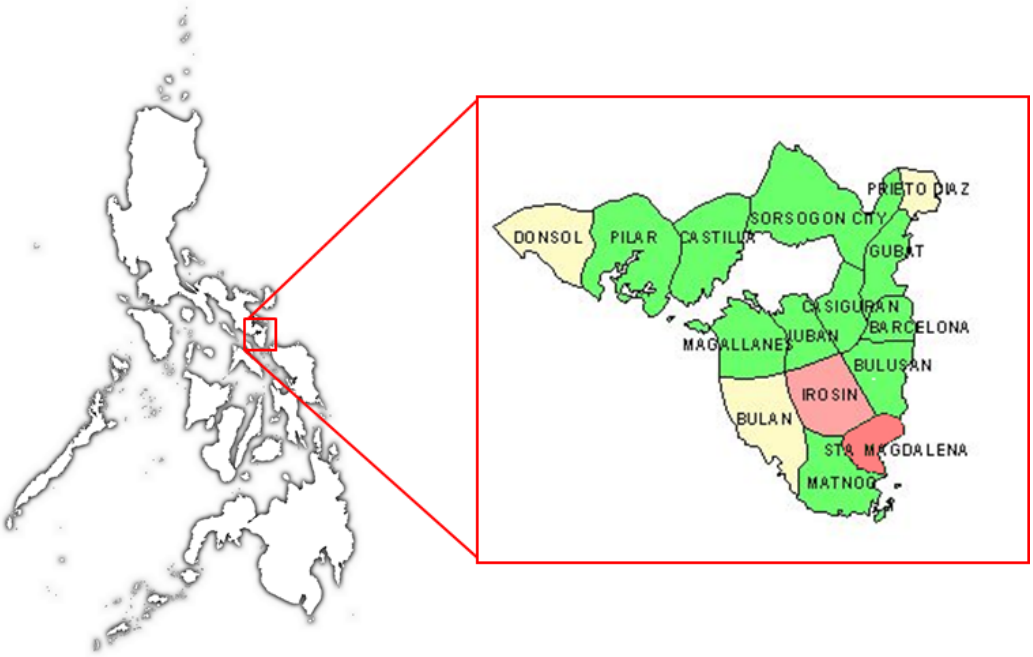
A community member in a vegetable garden, with maize behind him. Diversifying into maize and horticulture is one adaptation strategy

This document is a summary of an impact assessment carried out in the Philippines. Read the full impact assessment: "Developing Climate Services in The Philippines".

Since 2007, Christian Aid's partner Rice Watch Action Network (R1) has been helping small-scale farmers adapt to a changing environment through an approach called the Climate Resiliency Field School (CrFS). Given the success of the initiative, it has now been expanded to 33 areas or local governments across The Philippines.

In the Climate Resiliency Field Schools, farmer members receive a season-long training programme[1] with a focus on sustainable, agro-ecologically based, climate resilient agriculture. The groups learn from on-farm experimentation with improved local rice varieties. Through training on a wide variety of issues, they bring their own substantial knowledge as experienced farmers to the process.

Training in meteorology is especially emphasised but also on a wide variety of agricultural issues, such as integrated pest management,



soil fertility and system of rice intensification (SRI), an agro-ecological approach that uses less seed and water.

The CrFS are implemented through a close partnership between various agencies. Our partner R1, who provides technical advice and training for a year; the Local Government Unit (LGU) Agriculture Office, whose staff implement the field schools and then continue to provide climate forecasts and technical support in following years; and the Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA), the county's meteorological agency, who provides forecasts, advice and training.

Each LGU sets up an automatic weather station, which links to PAGASA and becomes part of their expanded network of climate measuring points, thereby improving weather forecasting for the nation as well as the local area. The municipality votes a budget to enable the LGU to implement the approach and Christian Aid supports R1 to carry out their technical and training role.

In 2016, Christian Aid carried out an in-depth impact assessment[2] of two municipalities implementing the field schools – Irosin, where the field schools group members were well established since the work began in 2011 and Santa Magdalena, with field schools in their first year of implementation.

Both municipalities are located in Sorsogon Province, at the southern tip of Luzon. This area is relatively vulnerable to climate change, even by risk assessment measures in The Philippines[3]. It is in the "very high" category of vulnerability to future rainfall changes and temperature increases, and its location in the main typhoon belt means the area is also highly vulnerable to cyclones. The project area sits under the 4th most active volcano in the country, although this also means access to fertile land.

Group members rely largely on agriculture for their livelihood - rice being the staple crop, together with livestock (mainly pigs and

poultry), coconut, fruit and vegetables. Their own assessment of the changing climate risks they face mirrors the scientific forecast. The farmers talked about stronger typhoons, increased drought and longer dry spells, more intense rainfall when it does rain and more frequent periods of intense heat and heatwave. Average temperature in the area has already increased by well over 1°C since the end of the 19th century[4].

The impact of the climate field schools on farmers

The aim of the assessment was to understand the impact of being a member of the CrFS on the resilience of the communities involved, their agricultural livelihoods and especially their ability to successfully use improved weather and climate forecasts to anticipate climate risk.

Two methods were used – a sample survey of 150 farmers, about 30% of group membership across the two areas, and eight focus group discussions with groups, group leaders and local Government agricultural staff. This enabled farmers' responses to be cross-checked to strengthen the reliability of the information collected. It also allowed a more flexible and in-depth discussion of the impact that is harder to measure quantitatively, such as the variety of decisions made using forecasts.

The main forecast that group members use is the 10-day forecast that they receive mainly through a climate noticeboard established at community level – 64% report receiving most of their information on likely rainfall, temperature, etc. in this way. About 45% also reported receiving early warning messages (mainly typhoons) not through the usual TV sources, but from the weatherboards, suggesting that these have contributed positively to the near complete coverage of the early warning system.

Group leaders also attend a twice-yearly seasonal forecast forum and then relay this information back to other members. The following scores were obtained when farmers were asked about timeliness and reliability of the methods.

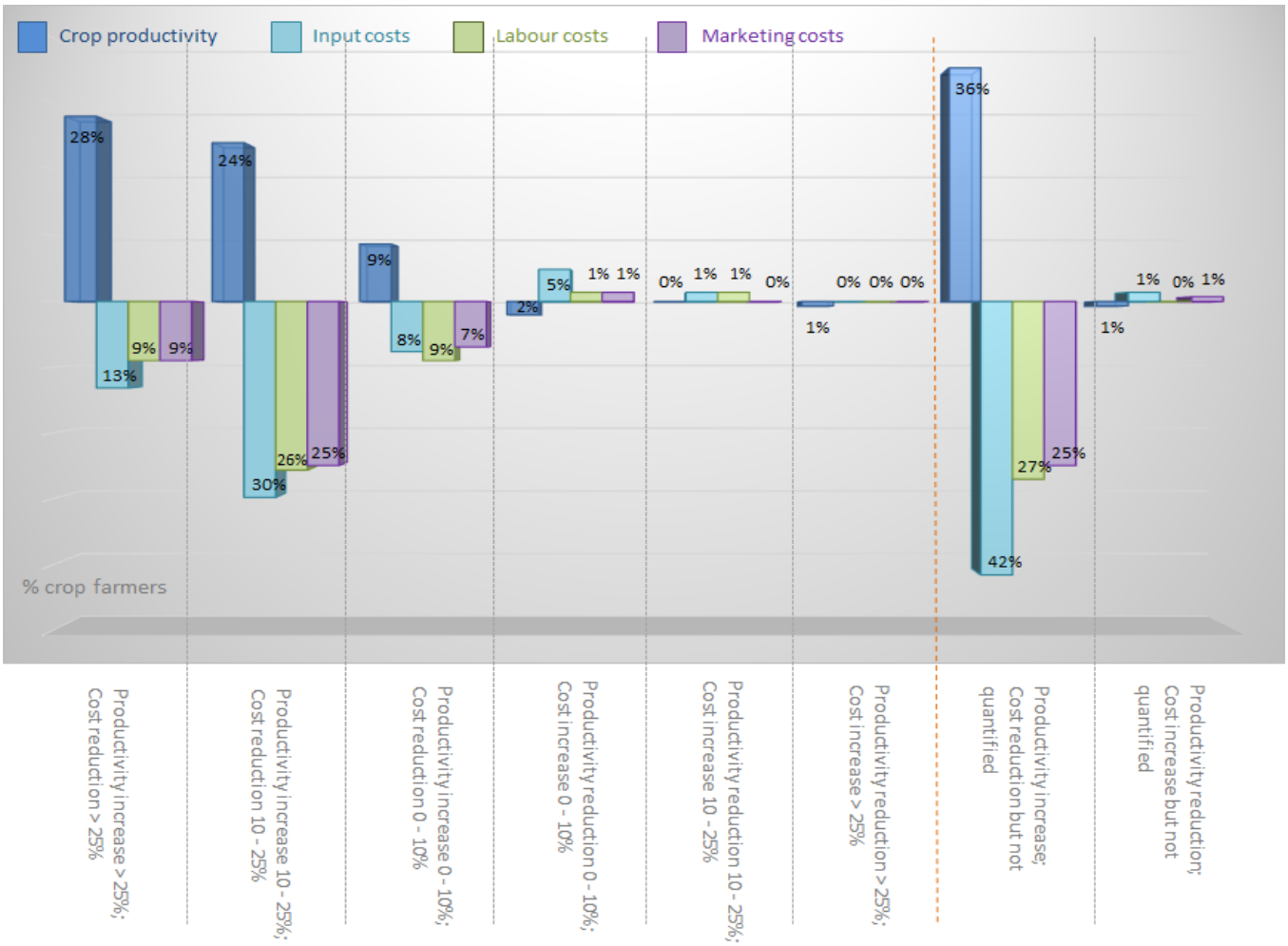
The weatherboard received a 90%+ score and the seasonal climate forum an 80-90% score for timeliness of information. In terms of reliability, 37% of group members assessed the 10-day forecast as correct 90-100% of the time and a further 58% as correct 60-90% of the time.

Focus groups highlighted how the training helped them to understand other regular forecasts, such as those on TV and radio. They cited a variety of agricultural decisions that were improved by the seasonal forecast. For example, for adjusting the cropping calendar and planting dates, planning ahead to ensure the right organic pesticides are available, selecting the right crops or crop varieties, especially when planting rain-fed crops such as maize, cassava and sweet potato rather than rice if drought is forecast, and choosing the right planting time and early maturing, drought-resistant crop varieties in El Nino drought years

The 10-day forecast was highlighted as increasing confidence and decisiveness about decision-making, mainly for adjustments made during the crop-growing season. These include changing crop sowing dates and vegetable planting times, managing irrigation and crop mulching to conserve soil moisture, and improved and preventative pest control.

The increased capacity to anticipate is seen as essential to a more agro-ecologically sustainable approach that delivers better resilience. This means a switch away from toxic chemical inputs to bio-fertilisers and bio-pesticides. Adjusting harvesting time and post-harvest drying also benefits from forecasts, with a properly dried rice crop less likely to suffer losses in storage.

Agricultural advice was generally considered essential (39%) or important and greatly improving forecast use (54%). Over 80% of group members reported receiving advice on crop or crop variety



choice, planting timing and crop pest and disease management. Around 60% confirmed support on soil and water management and livestock disease control.

Together the forecasts, advice and training received has substantially improved productivity, reduced costs and there is some indication that damage has been avoided, especially for crop production activities.

As the chart below shows, 52% of group members estimated a productivity increase of 10% or more due to forecasts and a further 36% confirmed a positive effect but could not be more specific about the increase.

Likewise, 34 - 43% confirmed reduced input, labour and marketing costs of 10% or more due to more efficient use of inputs. A further 25 - 42% confirmed a general reduction. Broadly similar results were registered for livestock production, especially through disease and heat stress management. On-farm trials confirm these productivity benefits. R1's on-farm trial yield results across 20 local rice varieties show a range of 8 – 11.7 tonnes/hectare, which compares favourably with average production of only 4 tonnes/ hectares for the province[5], this mainly conventional hybrid rice production. Many of these improved local varieties also score highly for drought, pest and

disease resistance, traits which are just as important as yield to climate resilience.

Impact of the CrFS on crop productivity, input, labour and marketing costs

CrFSs have used the approach to expand their access to markets, particularly for rice varieties not available due to the expansion of less resilient hybrid monocultures, with the CrFS logo becoming a trademark of quality produce. Groups in Irosin now have 29 improved local varieties of rice developed through on-farm multiplication and seed banking for use through the SRI approach, from an initial five varieties.

In 2011 when the project started, the municipality was dominated by just two hybrids. Sustainably-produced local rice attracts a 30-40% price dividend due to consumer preferences for taste and quality, which translates as 55 pesos versus 35 pesos per kilo for conventional rice.

One interesting difference between the formal survey and the focus groups was the clearer descriptions of forecast-based decision-making from the latter. Results in the formal survey suggested lower levels of seasonal and long-term forecast use, whereas focus groups emphasised their importance and relevance to a wider range of decisions, including the motivation to switch to more resilient, agro-ecological methods to protect their lives and livelihoods from future climate change.

Overall user satisfaction was high, with 69% intending to expand their use of forecasts and a further 28% intending to continue use at current levels. There is also high demand for additional forecast resources, with increased coverage of weatherboards for the 10-day forecast, more frequent forecast updates and expanding forecast use through SMS access the clear favourites.

Given their vulnerability to climate change and the multiple benefits that communities derive from the CrFS approach, scale-up to other areas and other countries could play an important strategic role in building sustainable public – private – civil society partnerships for climate resilience.

[1] Climate Resiliency Field School Workbook – R1.

[2] This summary is based on Developing Climate Services in the Philippines – Richard Ewbank, Christian Aid Programme Review (July 2016)

[3] Mapping Philippine Vulnerability to Environmental Disasters, http://vm.observatory.ph/findings.html

[4] Berkeley Earth Surface Temperature Group, http://berkeleyearth.org/

[5] See Rice Farming in The Philippines: Some facts and opportunities – Bruce Tolentino, Deputy Director-General, International Rice Research Institute (IRRI, September 2015); and http://philippinericeinfo.ph/data-products/region-5-2015-2nd-semester/