

DUMANGAS ON THE GO: THE CLIMATE FIELD SCHOOL OF DUMANGAS

Local Government Unit
Dumangas, Iloilo, Philippines



Strengthening
Climate
Resilience

SCR

Case Study
Summary
PHILIPPINES

Which of the three pillars does this project or policy intervention best illustrate?

- Tackling Exposure to Changing Hazards and Disaster Impacts
- Enhancing Adaptive Capacity
- Addressing Poverty, Vulnerability and their Causes

Iloilo holds the distinction of being the first province in the Philippines to hold classes for farmers on climate management for agriculture. The **Climate Field School (CFS)** project started in 2007. In 2008, it was instrumental in the increase of rice production in Dumangas, surpassing the municipality of Pototan (also in Iloilo), as the biggest rice producer in Western Visayas. Dumangas continued to be one of the dominant rice producers in 2009. Credit is due to the CFS in Dumangas for building the capacity of farmers to monitor changing weather and climate patterns, and adjust their farming practices, which resulted in higher agricultural yield despite the continuous presence of hazards and climate threats in the province.

The program has graduated 181 farmers so far who are now able to use what they learned for climate forecast interpretation and then translation into agricultural management options and other applications. These farmers are now also able to identify available management options in order to mitigate climate related risks. They now understand the process of climate forecast interpretation, translation, and communication for agricultural applications. All of this knowledge when collectively put into practice has helped increase the farmers' annual agricultural production yield, and has therefore helped to improve and strengthen their livelihood and food security.



The **Municipality of Dumangas**, a coastal town in the Province of Iloilo, Philippines, experiences two extreme conditions: *flooding* during the rainy season and *drought* during the dry season. Flood is the perennial problem of the town which causes heavy damages to crops, livestock, properties, infrastructures, fishery products and livelihood. During the dry season, the supply of water coming from the national irrigation system is not enough to irrigate the extensive farmlands of Dumangas. Drought then also causes heavy damages on crops and livelihood.

To respond, the Local Government Unit (LGU) of Dumangas has implemented the **Climate Field School (CFS) for Farmers** project as an innovative disaster risk reduction and climate change adaptation strategy for agriculture. The climate field school is equipped with an agro-meteorological station, a facility that forecasts weather conditions. Its seasonal climate forecasting helps farmers in field preparation, selection of the optimal rice seeds and the kind of cash crops that they can plant for the particular season. The Dumangas climate field school is the first in the country. It was made possible through the coordination and collaboration between the *Asian Disaster Preparedness Center (ADPC)*, the *Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA)*, *Iloilo Provincial Agriculture Office*, with support from the *Office of the Foreign Disaster Assistance of USAID*, and the *Local Government Unit (LGU) of Dumangas*. The overall goal of the project is to reduce disaster risks and enhance the capacity of farmers, extension workers, rural women and other stakeholders to understand the role of climate in plants propagation, growth and development as well as its relationship to plants pests and diseases; and also to help stakeholders learn how to incorporate weather and climate information in decision making in agriculture. Since it was implemented in 2007, a total of 181 farmers have benefitted from the project and graduated from the course. The pioneering Climate Field School (CFS) for farmers in Dumangas, has helped the town become the top rice producing municipality in Iloilo province, with farmers now able to use knowledge they have gained to apply better agricultural practices in the face of continuous threat of climate-related risks and hazards.

The Dumangas experience does not only highlight the importance of building resilient communities to weather uncertainties brought about by climate change but also the need to empower local institutions so they can formulate climate responses, to creatively use local resources to be cost effective, to create and sustain an inclusive participatory institutional system for efficiency, and to find champions to mainstream climate change mitigation and adaptation measures.

The Climate Field School (CFS) for Farmers

The Need for Climate Forecast Applications on Agriculture

Dumangas, due to its geographic location, is exposed to recurring climate risks, namely floods from August to December and drought from March to May. These climate risks have caused significant agriculture production losses, as well as infrastructure damage and displacement of households. Extreme climatic events like La Niña and El Niño exacerbate these climate risks, which in turn periodically subject food security and poverty to further pressure. The negative impacts prompted the municipal government of Dumangas to implement mitigation measures and integrate climate risk management into agriculture.

In the past, farmers observed an indigenous practice called “*tubong-tubong*” wherein weather is observed for the first 12 days of the year, each day was believed to represent the weather for each month of the coming year. Despite the lack of scientific evidence on the usefulness and reliability of this practice, it was evident that some form of seasonal climate information was needed to guide farmers in agricultural decisions. To respond to the need for localized weather and climate data, the Municipality of Dumangas has established a local Agro-Meteorological station that assists the weather bureau PAGASA to issue forecasts that advise farmers on crop and farming issues. (*Agrometeorology is the study of the effects of changing climate and weather patterns on agriculture*)

The Climate Field School (CFS) program was also established to build the capacity of farmers and agriculture extension workers to understand and apply climate information to farming technology, cropping decision-making, and in order to reduce their risks to flood and drought risks. The CFS was developed to be an end-to-end institutional system (*from forecasting and analysis to application*) for the generation and application of locally-tailored climate information tools; and to build capacity to apply these in real-time to reduce the impacts of disasters.

The Agro-Met Station

The Dumangas Agro-Met Station is a climate change and forecasting center established in 2002 by the local government of Dumangas in cooperation with ADPC, PAGASA, and the International Research Institute for Climate Prediction (IRICP). The CFS makes use of the station for the forecast of local weather conditions. Its seasonal climate forecasting helps farmers in field preparation, selection of the appropriate rice seeds and the kind of cash crops that they can plant for the particular season. The station collects observation data, and sends to PAGASA office in Manila for interpretation. These are then sent back to Dumangas for dissemination to farmers, fishpond operators, government units and other stakeholders, translated in simple terms. The forecasts advise the farmers what to expect, possible scenarios and recommend course of action. The CFS also makes use of other instruments such as an early warning device on disaster preparedness, and rain gauges established in eight areas in the province within the Jalaur River basin to measure rainfall and river activity.



From topmost left, counter-clockwise: CFS Participants viewing different weather instruments at the Agro-Met station; During the CFS training; Participants taking notes during the training; the Dumangas Agro-Met Station; Facilities of the community based flood and drought forecasting & warning system in Dumangas

The Program

The CFS is designed as a 2-tier training program and was conducted over a period of 12 weeks. The farmers are taught how to read climate forecast, side by side with their indigenous knowledge on climatic phenomenon in relation to agriculture.

The curriculum includes:

- Module 1: Climate, Pest and Crop Growth and Development
- Module 2: Cropping Systems and Climate – Related Risks
- Module 3: Weather and Climate
- Module 4: Observation of Weather and Climate Parameters
- Module 5: Weather and Climate Information Products and Sources (*Temperature, Rainfall, Evaporation Rate, Humidity*)
- Module 6: Forecast Generation
- Module 7: Climate Forecast Interpretation, Translation and Communication
- Module 8: Incorporating Climate Forecast in Decision Making
- Module 9: Understanding Forward and Backward Institutional Linkages of Agriculture Sector

Other topics include land preparation, weather forecasting, use of fertilizer, pest management and soil analysis, etc. Climate forecast information is integrated in farming in the CFS. The CFS also teaches farmers about climate change and its impact on agriculture.

Project Components / Strategies

- ◆ Trainings of Trainers - the Climate Field School also conducted a Training of Trainers (TOT) for the Agricultural Technologists who collaborated on the development of modules and the conduct of the 12 weeks training session for the farmers' group.
- ◆ Training of farmers / stakeholders
- ◆ Farming Practices of graduates of Climate Field School (CFS)
- ◆ Education, Information, Communication
- ◆ Monitoring and Evaluation of climate products
- ◆ Integration to integrated Pest Management
- ◆ Data from AGRO-Met Station were relayed to Barangay Level

CFS Implementation

88 farmers graduated during the first batch of training in 2007 which covered 4 pilot communities (Bacong, PDMS, Nanding Lopez and Sulangan). In 2008, 93 farmers graduated from 3 other communities (Bantud Fabrica, Pulao and Paloc Bigque). In the implementation of the climate field school certain criteria were adapted for the selection of the beneficiary communities. Each group should include one irrigated, one non-irrigated, and one coastal community. As part of LGU strategies and initiatives, plans to provide funding support for the sustainability of the project will be included in the annual budget of the municipality and / or the 20% IRA Development Fund.

From the top: Agricultural field and crops in Dumangas damaged by flood; CFS demonstration site; Some of the graduates of the Climate Field School

The Philippines is located along the path of weather disturbances and Dumangas is geographically located in the catch basin of one of the major tributaries in the province of Iloilo. The Municipality of Dumangas has always been at the mercy of natural disasters and is particularly prone to two extreme conditions: flooding during rainy season, and drought during the dry season. 10,260 hectares or 80% of the total area of the municipality are under water during flooding. Dumangas is also located at the tail end of the Jalaur-Suage Rivers Irrigation System with a dilapidated 1954 model run-off-the-river dam which

results to insufficient water supply during dry season, leading to drought. Dumangas has seen much of its resources go to waste during these extreme climatic occurrences. For years, the impact of climate change has widely been felt by farmers, fishermen and fish producers. Floods and drought lead to damages to crops, fishponds, poultry, livestock and other properties; damages to infrastructures including roads, bridges, telephone lines, electrical lines, etc.; destruction of lives; health risks; etc. Droughts are considered far worse than flooding and typhoon in terms of loss of crops.



Lessons Learned

- ◆ From the time the seeds are sown until the plants are harvested and stored, they are at the mercy of weather conditions, especially during the critical periods in their growth and development.
- ◆ Delay in the outbreaks of rain, untimely or excessive rains, droughts and similar weather events can seriously affect the development and yield of crops.
- ◆ Weather also affects scheduling of agricultural operations such as delay in plowing and harrowing. This in turn affects farmer's productivity due to late farm preparation.
- ◆ Climate and weather contribute to the variability of crop yields, variety, cultural operations and other factors as well.
- ◆ Agricultural production remains dependent on weather and climate despite introduction of modern technology. Evidently, weather is one of the major factors which control growth and development of crops.
- ◆ It is therefore imperative that farmer be given information on climate and weather conditions prevailing in the local area. They must be aware of the role played by the weather elements such as rainfall, temperature and others on his farm production.
- ◆ Weather forecast was developed and tailored to guide the scheduling of the different farming operations. Forecasting helps farmers in making decisions and plans for farming operations.
- ◆ The CFS has become an effective strategy for incorporating climate into agricultural planning and practices and for coping with climate-related hazards such as typhoons.
- ◆ Institutionalizing an end-to-end climate information, generation and application system on a sustainable basis will enhance disaster preparedness and climate change adaptation.
- ◆ The adverse impacts of climate cannot only be mitigated, but can also be made cost effective through adaptation strategies that are based on thorough study and understanding of such impacts. This has been documented in the experience of the area during the El Niño events with timely forecasts that helped turn potential disaster into actual production surpluses.
- ◆ Managing climate can also be profitable: obtaining the right information and understanding that information can enable farmers to maintain a competitive edge for producing and earning more.
- ◆ The CFS needs to be developed further so that farmers will have their own capacity to deal with natural hazards. The sustainability of this endeavor would continually benefit farmers if given priority by stakeholders - especially the Local Chief Executive.
- ◆ Sustainability and political will in the implementation of CFS is necessary to attain success.

“The impact of Climate Change cannot be prevented but its effects can be mitigated through proper climate adaptation and innovation. So let us not worry of the cost of climate change adaptation programs but let us be concerned of protecting and uplifting the lives of our people.”

**- Hon. Ronaldo Golez
Municipal Mayor of Dumangas**



Resources:

"Case Study/Experience in Disaster Risk Reduction and Climate Change Adaptation Municipality of Dumangas Province of Iloilo", Municipality of Dumangas, Iloilo, Philippines

Documentation Report of OHK Learning Event on "Humanitarian Response and Disaster Risk Management", 13 – 20 January 2008, Center for Disaster Preparedness, Philippines



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Strengthening Climate Resilience (SCR) is a DfID funded programme that aims to enhance the ability of governments and civil-society organisations in developing countries to build the resilience of communities to disasters and climate change as part of their development work. The programme seeks to develop a 'climate smart' approach to managing disaster risk and development with the aim to protect society from the threats posed by climate change.

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