Climate hazard forecasting and monitoring for improved Disaster Risk Reduction in the Philippines

Main hazards monitored in the Philippines

Cyclone

Flood

Possible source of information

The Index for Risk Management (INFORM) is a global, **open-source risk assessment for humanitarian crisis and disasters.** It is designed to **support decision-makers in areas of prevention, preparedness and response**. INFORM is a collaboration of the Inter-Agency Standing Committee Reference Group[1] on Risk, Early Warning and Preparedness and the European Commission (INFORM, 2018). The information from **INFORM is also linked to the ALERT platform**.

Key Features:

- A downloadable annual global risk index (to understand and measure the risk of humanitarian crises and disasters)
- Country profiles detailing a country's general risk profile looking at hazard, vulnerability and coping capacity trends

INFORMs Website: http://www.inform-index.org/

Forecast and Monitoring Information

Forecast and monitoring information can help access information on:

- **Tropical cyclone and storm warnings,**
- **Anticipated wind speed**,
- **Anticipated amount of rain**.

Users often access these indicators on a **sub-national level** or for monitoring **impacts on a specific sector**.

[1] Partners include: acaps, European Commission, FAO, GFDRR, IDMC, the Red Cross Red Crescent, IOM, UNOCHA, OECD, START network, DfiD, UNDP, UNDPA, UNEP, UNFPA, UNHCR, UNICEF, UNISDR, UNU-EHS, UNWomen, USAid, WFP and WHO.

Sources of information for forecast and monitoring information

PAGASA

The Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) is the **governmental body** that predicts and monitors climate and weather in the Philippines. PAGASA is currently undergoing internal changes and moving towards impact-oriented indicators of early warning information. **Their new website will be up and running by May 2018** (Republic of the Philippines, 2017).

PAGASAs Early Warning information includes:

- Seasonal forecasts incl. ENSO advisory
- Monthly forecasts
- Weekly forecasts
- Daily and hourly forecasts
- Weather bulletins and weather advisory for tropical cyclones, storms and floods
- Warning alerts for heavy rainfall and gale warnings
- Flood bulletins
- Storm surge bulletins

https://www1.pagasa.dost.gov.ph/index.php/products-and-services

How do organisations in the Philippines use the information from PAGASA?

- **Seasonal forecasts, ENSO advisories and monthly forecasts:** used to make tactical and strategic preparedness plans for the coming season. Currently mainly used for drought preparedness and adjustments in agricultural programmes.
  Actions associated: design or review preparedness plans
- **Weekly and daily forecasts and the warning alerts:** Used for cyclone, storm and flood events. The information can be accessed on PAGASAs website or through traditional media (TV and Radio), social media (Facebook and twitter) or via SMS.
  Actions associated: sharing information with partners and preparing to respond.

National Disaster Risk Reduction Management Council

NDRRMC is a working group of various government, non-government, civil society and private sector organisations. It is administered by the Office of Civil Defence under the department of National Defence. NDRRMC is **responsible for ensuring the protection and welfare of people during disasters or emergencies** (UNOOSA, 2017).
NDRRMCs products and services focus on monitoring ongoing hazards. Monitoring early stages of hazards, as well as during and after an event, enables users to prepare to respond and adjust their response during the event.

NDRRMCs weather monitoring products and services:

- Weather advisory for low-pressure areas
- Flood bulletins and advisories
- Tropical cyclone bulletins
- Severe weather bulletins on tropical storms
- Situation Reports on ongoing disasters including impacts and action recommendations

http://www.ndrrmc.gov.ph/

Global Disaster Alert and Coordination System

GDACS is a cooperation framework between the United Nations, the European Commission and disaster managers worldwide. **It is designed to improve alerts, information exchange and coordination** in the first phase after major rapid-onset disasters (GDACS, 2018).

GDACS products:

- Provides short-term forecasts and monitoring information on cyclones, flooding and earthquakes for coming and past 4 days
- Provides impact situation reports on the ongoing hazard events

http://www.gdacs.org/

Tropical Storm Risk (TSR)

TSR **predicts and maps tropical storm activity worldwide.** The public TSR website **provides forecasts** and information **to improve basic risk awareness and decision-making** regarding tropical storms. The TSR Business service and web site offers **real-time products** and **detailed mapping** and prediction of tropical storm impacts worldwide (Tropical Storm Risk, 2017).

TSRs products:

- Short-term storm and cyclone forecasts
- Seasonal storm and cyclone forecasts (however they have historically low skill and large uncertainties)

http://www.tropicalstormrisk.com/

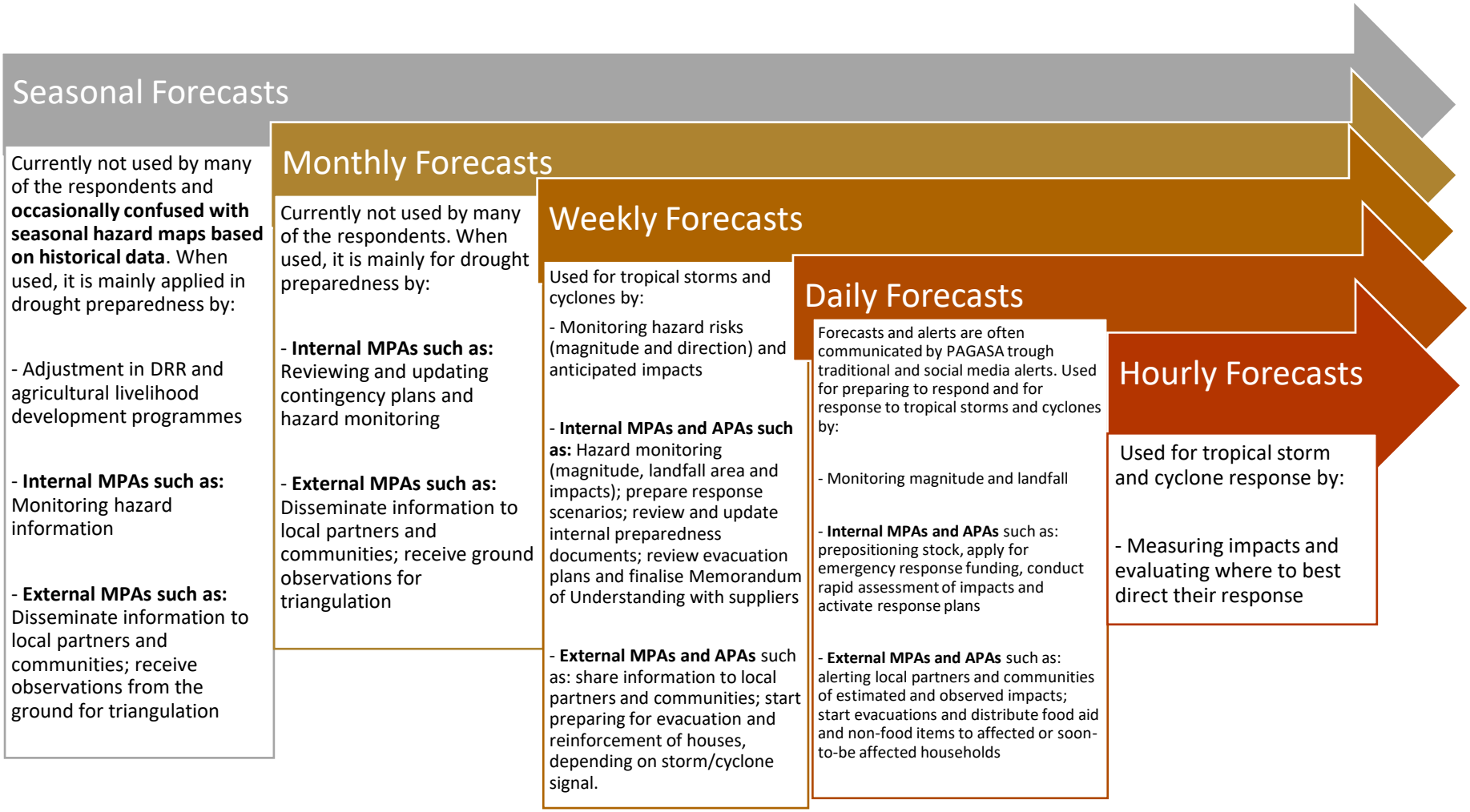
Moving from a linear towards a circular use of hazard forecasting

PAGASA is increasingly promoting users to take a s**trategic and tactical approach** to hazard preparedness planning (FGD#2, 2018). Currently **users often prepare to respond based on short-term forecasts,** resulting in a general preparedness phase based on hazard maps. Therefore, preparedness to response is often a linear process (illustrated in figure 1). By **using seasonal and monthly forecasts** users could better **tailor their minimum preparedness** actions, as the climate and weather information would reflect the specifics of the upcoming season. To enable this process, organisations and PAGASA might need to **co-create** forecasts to ensure that the hazard information being produced is relevant for users. This could help users move from preparing to respond to preparing to avoid for certain hazards.

ALERT

UNIVERSITY OF SUSSEX

Illustration of the use of forecast information in the Philippines as a linear process



Best Practices

There are many potential opportunities with linking forecasts for humanitarian preparedness actions to the online preparedness platform ALERT, for both short and long-term forecasts. One benefit of acting in advance is the opportunity to avoid negative impacts of different hazard events. Below are two examples of best-practiced forecast-based action in the Philippines:

Using seasonal forecasts for drought preparedness.

After receiving a seasonal forecast that indicated a lack of rain was likely to result in a drought, an NGO decided to adjust its livelihood development programmes focusing on agricultural activity. They also disseminated the information to communities identified at risk of the potential drought. By sharing the information, the community could prepare themselves by changing from one crop to a less water intensive crop. The planning helped the community manage their water resources better which lead to a perceived decrease of negative impacts caused by the drought (FGD#2, 2018). Although it is difficult to quantify the negative impacts avoided, this example illustrates how planning based on forecast information could be a low-cost example of how to better manage drought.

Using short-term forecasts to prepare to respond to tropical cyclones.

When uploading information from their emergency plan to the ALERT platform, one NGO found that they managed to maintain and track a general minimum level of preparedness. After receiving a short-term forecast anticipating a cyclone the NGO decided to trigger internal and external preparedness actions. The internal actions involved activating the already agreed Memorandum of Understanding with suppliers to start supplying food and non-food items to their partner organisations. The NGO also disseminated the forecast information to local partners that were active in the area where the cyclone was predicted to hit. Despite this action not being triggered automatically by the forecasts, nor requiring the NGO to activate the red alert level, this example illustrates how NGOs currently use forecast information on a case-to-case basis to update their contingency plans and implement internal and external actions (NGO#5, 2018)