ANTICIPATORY ACTION FOR DROUGHT IN NUSA TENGGARA TIMUR, INDONESIA

Project Documentation by Yayasan Plan International Indonesia

The ASEAN Framework on Anticipatory Action in Disaster Management defines Anticipatory Action (AA) as a set of interventions carried out when a hazard poses imminent danger based on a forecast, early warning, or pre-disaster risk analysis. AA is taken by an individual or organization before an anticipated disaster to mitigate its impact on people, assets, and infrastructure that are likely to be affected. AA is different from other types of disaster response because all the activities take place 'before an anticipated disaster'. However, AA is also different from other types of disaster preparedness, prevention, and resilience building because it is 'based on a forecast [or] early warning'. AA relates to a specific 'imminent danger', and aims to reduce the impacts of that specific event, rather than aiming to generally build long-term resilience and reduce people's vulnerability to a hazard. AA is activated by pre-agreed and risk-informed triggers, making it different from general preparedness activities, for example, stocking grain reserves or building flood defences.[1]

The Phenomena in Nusa Tenggara Timur (NTT)

The BMKG press release on March 7th, 2023, predicted the dry season in NTT in 2023 would arrive earlier. The rainfall during the dry season is drier than usual. The peak of the dry season is predicted to occur in October 2023. This prediction is strengthened by the forecast of increasing chances of El Nino in the second semester of 2023 published by the World Meteorological Organization (WMO) in its latest Global Climate State report issued in March 2023.

In April 2023, the NTT government issued the Governor's Decree No. 172 / KEP / HK / 2023 concerning emergency preparedness for drought and forest and land fires in NTT, valid for 6 months until 27 October 2023. This decision was made based on predictions from the Meteorology, Climatology, and Geophysics Agency (BMKG) NTT, which shows that NTT Province starts a dry season below normal or drier than usual. It is predicted that there will be an increased risk of meteorological drought disasters forest and land fires, which can disrupt people's lives and livelihoods.

In the rainfall mapping analysis of the BMKG's on May-August 2023, the NTT generally experiences low rainfall (0 – 50 mm) and is predicted to have very low rainfall (0 – 20 mm), with a 91-100% probability. The BMKG published on September 10th, 2023 – the early warning of meteorological drought in several areas of Indonesia in three classifications: ready (level I), alert (level II), and prepared (level III), where NTT falls under prepared classification.

BMKG update on September 20th, 2023, reported the days without rain in NTT generally experience a very long (31 - 60 days) to extremely long (60 days). The areas covered extremely long (> 60 days) include Sikka, East Sumba, Sabu Raijua, Rote Ndao, Kupang, Timor Tengah Utara, Belu, East Flores, and Lembata.

Another rainfall projection released by BMKG on September 30th, 2023, in most areas in NTT, is very low, or less than 20 mm per day with a probability of more than 90%. This meteorological drought warning will occur on the first and second 10-day of October, 2023. NTT has a probability of a late rainy season in November-December 2023. Areas that are potentially impacted by a meteorological drought in NTT are Nagekeo, Lembata, Timor Tengah Selatan, Sumba, Kupang, Belu, Manggarai, and Ngada.

Fig. 1. A woman in Kab. Manggarai, NTT, is carrying a jerrycans to search for clean water during drought in NTT.

① Risk Information, Forecasting and Early Warning System

Plan Indonesia collected risk information from the 169 communities in three districts in NTT where Plan has been working for many years: Nagekeo, Lembata, and Timor Tengah Selatan (TTS).

The groups most exposed to the drought are:
- Children and youth, particularly girls. Parents often ask this group to fetch water before school when the water sources are getting farther from home.
- Women, including pregnant, lactating, and elderly. Drought disrupts their hygiene practices, particularly during menstruation and domestic use for baby hygiene.
- People with disability. Most are forgotten and receive less water than other members of the family.
- People with certain diseases. This group may need more water than others, making it difficult to provide by the family during drought.

The communities have pre-existing vulnerabilities that shape the impact of drought:
- Poverty. People live in structural poverty according to the statistical agency (BPS) in 2022 in Nagekeo (11%), Lembata (27%), and TTS (26%).[2]
- Limited infrastructures such as roads, water pipelines and reservoirs.
- Limited water resources and its conservatory management.

- Existing stunting prevalence. NTT is the highest stunting in Indonesia for 35.4% of children under five in 2021. Within NTT, TTS has the highest percentage of stunting (48.3%), Nagekeo (28.1%), and Lembata (31.7%).[3]

Despite the vulnerabilities, communities have capacities to cope with drought:
- Community food barn (locally called Ume Bubu, Le'ba, Ebang, Kadha, Wetak, Levat) contains long-term food such as yam, cassava, and corn.
- Village fund, which is dedicated to the development agenda at the village.
- Village disaster preparedness team or volunteer groups and youth organizations (Karang Taruna or church youth), who can support the community.

Plan Indonesia held workshops with relevant government offices in three districts, to discuss the drought forecasts released by BMKG regularly. The information is used primarily to develop trigger mechanisms.

BMKG released a rainfall modelling since the early projections, which captured below starting from May 2023, showing that most area of NTT has a low level of rainfall intensity:
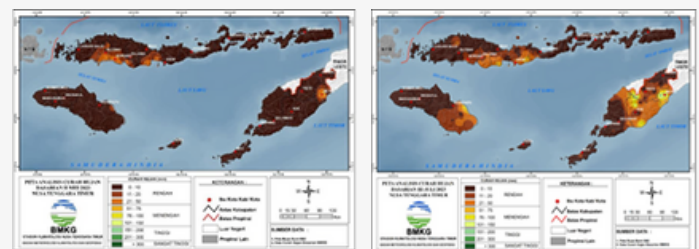

Fig. 2. Rainfall Mapping Analysis, May and July 2023

Range	Level
0 - 10	Low
10 - 20	Low
20 - 50	Low
50 - 75	Medium
75 - 100	Medium
100 - 150	Medium
150 - 200	High
200 - 300	High
> 300	Very High

Fig. 3. Rainfall Mapping Analysis, August and September 2023

Fig. 4. Rainfall Mapping Analysis, October 2023

Fig. 5. Rainfall Projection in 2nd ten-days of October 2023.

In addition to BMKG warning on the meteorological drought in NTT at the prepared category (level III) in October 2023, the communities agreed to use the below triggers as warning:

- Time to fetch water over 30 minutes (or much longer than usual).
- Distance to the new water sources over 500 meters (or much farther than usual).
- The usual water sources (bore wells, rivers, reservoirs) to fetch water start to dry.
- Family has to buy water due to inability to fetch water longer or farther.
- Increasing the price of rice.
- Declaration on alert of drought by the local government.

2 Planning, Operations, and Delivery

As the existing working areas, Plan Indonesia has been supporting the three districts (Nagekeo, Lembata, and TTS) in the preparedness as a long-term program. Activities conducted for preparedness such as:

- Facilitating the local government to develop on contingency planning.
- Facilitating the establishment of village preparedness team, which consists of young people representative, women and community leaders.
- Supporting capacity building on risk reduction and preparedness for local government and community, including local campaign.
- Supporting the youth groups to develop and implement risk reduction plan.
- Facilitating risk information sharing on hazards to communities, including promoting hygiene practices for children, women, and PwD
- Supporting in development water pipelines, reservoirs including rainwater harvesting and tree planting (ex. Bamboo).

Dealing with the 'imminent danger' of drought, based on BMKG's warning, Plan Indonesia facilitated communities to develop planning for different phases: readiness (June – August 2023), early action (September 2023), and early response (October 2023), as stated in below phases:
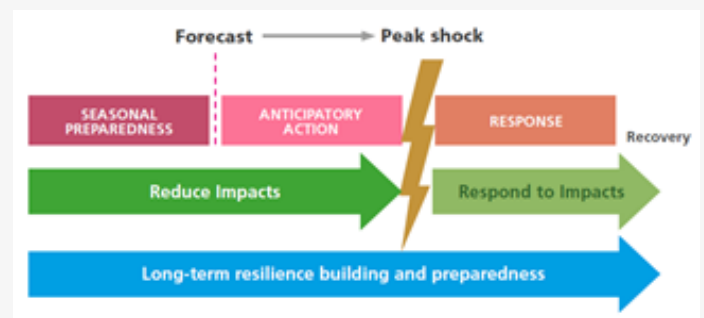

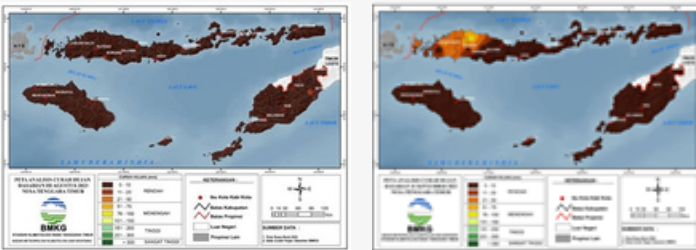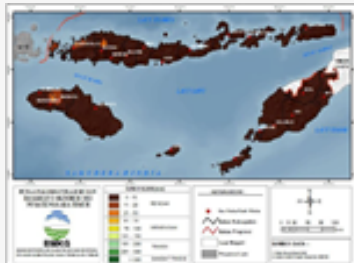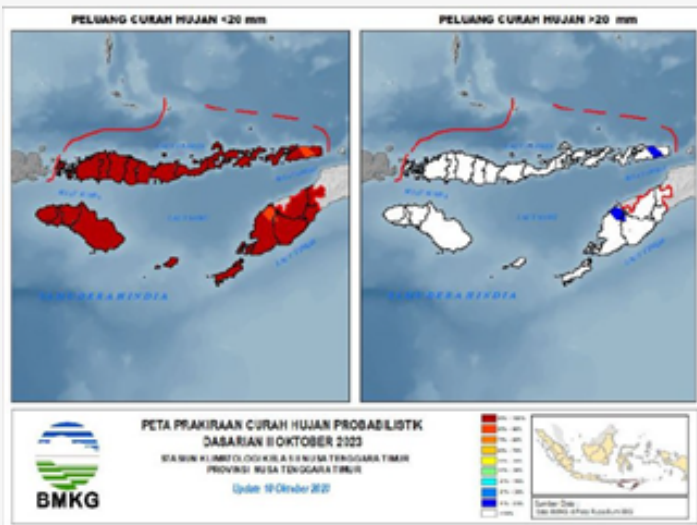Fig. 6. Adapted from the ASEAN Framework on Anticipatory Action in Disaster Management, TWGAA

The agreed protocol for early actions is activated based on trigger thresholds, as follows:
1. Readiness phase: El Nino projection with probability over 60%.
2. Early action phase: prepared (level III) warning on meteorological drought released.
3. Early response phase: extreme category (>60 days) without rain.

On June 9th, 2023, BMKG released a projection that El Nino would happen with a probability of 80%.[4] Activities in the readiness phase:
- Identification of most affected communities groups such as children, pregnant and lactating women, PwD.
- Facilitating workshops with local government and community to develop a 'ready to respond' action plan. For Lembata, the local authorities agreed to allocate a budget for early action and response.
- Supporting the development of bore wells, mainly for domestic use. In Nagekeo, it serves for 92 households (190m, 180f, 113b, 90g). While in TTS, it serves for 204 households (413m, 488g). The local government replicated the bore well in Nifulena village in TTS.
- Advocating local government to monitor commodity prices at the local markets.
- Promoting community-based child protection (CBCP) mechanisms, particularly preventing violence against children and women during stress periods due to drought.
- Promoting maintain hygiene practices with limited water available. The health center in Soe goes to school to promote hygiene practices during drought.
- Advocating village funds to support water supply (ex., Waitaman village in Lembata).

BMKG released a warning on meteorological drought on September 10th, 2023, on their platform CEWS, where NTT falls in prepared (level III).[5] The CEWS is a system developed by BMKG for climate risk monitoring, understandable, user-friendly early warnings for the public, and impact-based forecast.
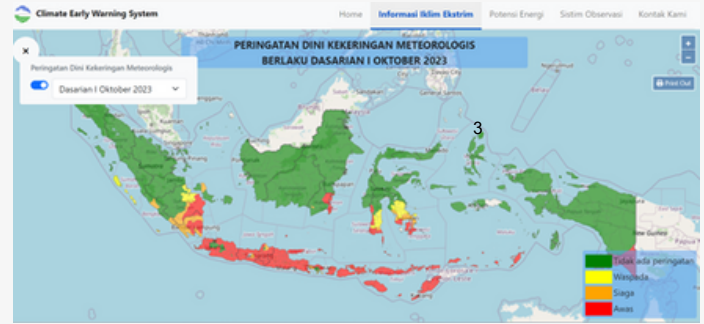

Fig. 7. Climate Early Warning System (CEWS) BMKG

Activities in the early action phase:
- Advocating the social offices to activate food barns, including sister village mechanisms where one community helps another community more impacted by drought. Special attention is mainly for nutrient needs for children, pregnant and lactating women, and PwD.
- Promote alternative food such as sorghum for consumption, which is a nutrient-rich cereal grain. In Lembata, rice prices increased from IDR 560K to IDR 790K for 50 kg.
- Market assessment on prime commodities to seek potential cash and voucher assistance (CVA) modality.

BMKG commences monitoring days without rain on September 30th, 2023, wherein three districts experienced extreme category (>60 days).[6]

Activities delivered in early response:
- Rapid need assessment (RNA) on drought, to identify impact and needs particularly for children and women.
- Water supply for 12 villages in Lembata and Negekeo benefitted 2,284 households (4,035m, 4,244f). The local government supported the water supply to six villages in Nagekeo.
- CVA amount IDR 350K for each family in Lembata benefitted 828 households (1,106m, 1,339f).
- Conducting a charity event (run for water) and local fundraising to support the water provision project in TTS, which has successfully collected IDR 1.5 billion.

Fig 8. Plan Indonesia distributes over one million liters of clean water to Lembata, NTT

③ Pre-Arranged Finance

Plan Indonesia allocated a contingency fund to be activated in the AA in NTT, particularly in three districts as Plan's working areas. However, the budget is limited, so advocacy for budget and fundraising is being promoted.

While the local government offices (including through village funds) have put their attention on budgeted programs on preparedness and AA, such as:
- Implementing action plans in the contingency planning
- Installing bore wells and water supply
- Promoting hygiene practices during drought for children by the health center

Some cooperatives, such as Ankara and Obor Mas in Lembata, provide credit for the community in case of emergency. Plan Indonesia has disbursed pre-arranged funds for 10,053 children in Lembata for IDR 250K each as emergency savings, which can be accessed when the children experience a disaster.

Challenges in implementing AA:
- Risk information sharing to remote communities. In 2021, NTT has 53% of very underdeveloped[7] villages, where TTS is the highest district. It leads to limited infrastructures for information, telecommunication, and transportation.
- Understanding local government and local actors for disaster management (DM) in NTT to acknowledge AA in the full spectrum of DM. Better understanding will allow local leadership and action on AA for recurrent drought in NTT.

Lesson learned:
- Preparedness and AA as part of long-term resilience strengthening in the community can better address the needs of children, women, and PwD if the risk information captures the impact of drought on these groups.
- AA is not a solitary project run by NGO/CSO only, yet it needs extensive collaboration with communities and local government to agree on the triggers, thresholds, and actions.

Reference:
1. Asia-Pacific Technical Working Group on Anticipatory Action. 2023. Technical Standards on Anticipatory Action in Asia and the Pacific, Bangkok.
2. https://ntt.bps.go.id/indicator/23/35/1/jumlah-penduduk-miskin-menurut-kabupaten-kota.html
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6. CEWS | Climate Early Warning System (bmkg.go.id)
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