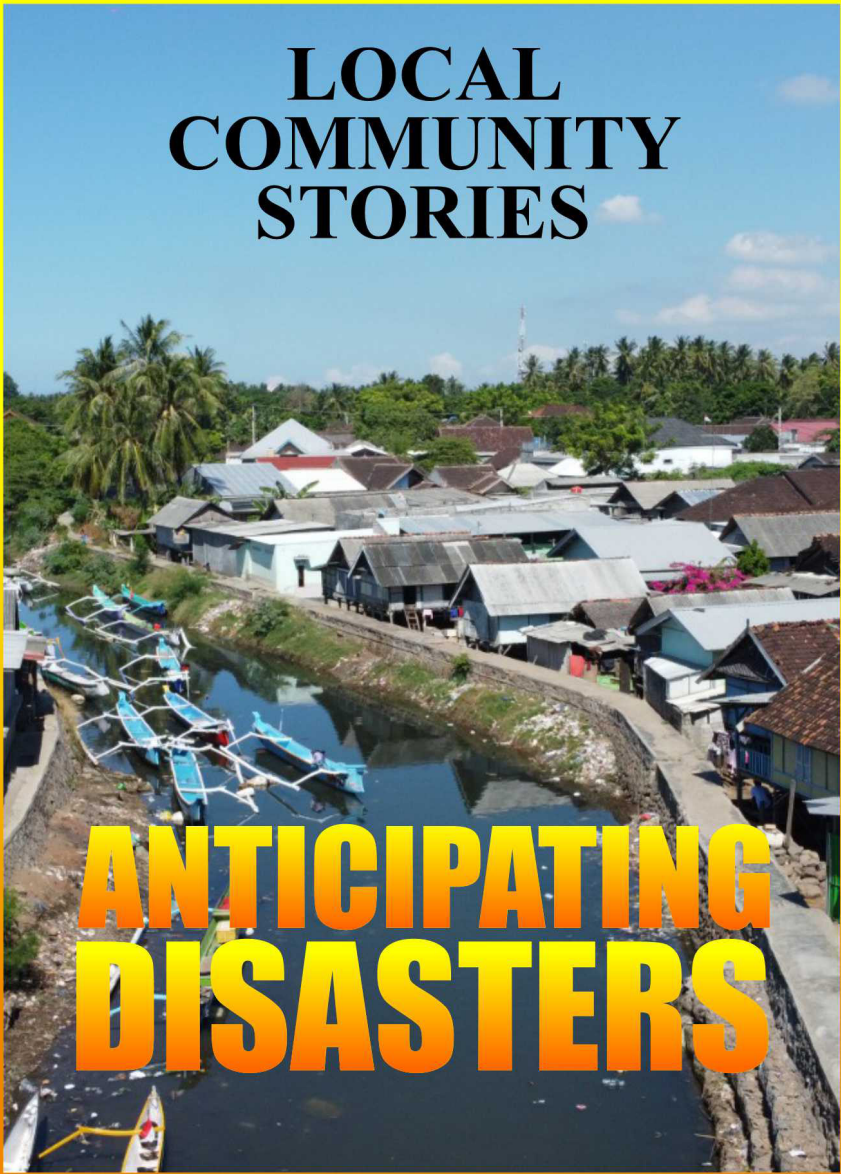


LOCAL COMMUNITY STORIES



**ANTICIPATING
DISASTERS**

LOCAL COMMUNITY STORIES

ANTICIPATING DISASTERS

Contributors

Authors	Title	Organisation
Bonar Saragih	Introduction: Anticipatory Actions in the Context of ToGETHER Program	Caritas Germany
Ayu Lestari	Four Communities in Aceh Tamiang Jointly Anticipating Floods	PKPA Medan
M. Azri Imaduddin	Communication Tradition, Foundation to Develop Anticipatory Actions	LPSDM Lombok
Tri Sulistyowati	Merapi-Alert Community Collaboration to Anticipate Disaster	YSI Yogyakarta
Ishak R.H. Woli	Advocacy: Creating Path To Be Free of Flood	YPAL Poso

Photographers		Supervisors	
Ayu Lestari	PKPA	Ismail Marzuki	PKPA
Nathan	YSI	Fadhil Abdullah	YPAL
Neno Ariyanto	YSI	Suparlan	YSI
Saripudin A.	YPAL	Siti Hadijah	LPSDM
Adit	LPSDM		

Editor:		Graphic Design & Layout	
Bonar Saragih	CGI	Neno Ariyanto	YSI
Margaretha Anike	CGI		

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Caritas Germany Indonesia,
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Preface

This concise book *“Local Community Stories to Anticipate Disasters”* is a second book by ToGETHER Program (Towards Greater Effectiveness and Timeliness in Humanitarian Emergency Response). Caritas Germany Indonesia published the first book *“Voices from the Villages: Local Communities in Humanitarian Actions,”* on June 2023. The first book described the experiences of local humanitarian partners in managing emergency response in a number of localities in Indonesia. The second book highlighted the experiences of four local humanitarian partners in developing system, mechanism and infrastructure for anticipatory action.

The objective of ToGETHER Program is to increase capacity of Local Humanitarian Partners as actors in implementing effective and timely humanitarian actions. At the beginning of program implementation, no less than fourteen capacity building training sessions and workshops proceeded, targeting local humanitarian partners – ranging from introduction of SPHERE training and Core Humanitarian Standard, Organizational Development Training, Logistical Management and Distribution using Cash Voucher Assistance (CVA), and Anticipatory Actions Workshops.

Evidence of improved capacity of Local Humanitarian Partners included capacity to respond to disasters, and in particular capacity to implement pilot anticipatory actions project, as elaborated in this concise book. Disaster response and anticipatory actions used funds from Humanitarian Operation and Innovation Facility (HOIFA) for this ToGETHER Program.

We thank all parties involved in the implementation of this pilot project, in particular:

- Merapi-Alert Community and the Village Government of Glagahharjo, Sleman, Yogyakarta Special Province.

- Village Disaster Alert Team, Village Communities and Village Governments of Seruni Mumbul, and Labuhan Lombok, East Lombok, West Nusa Tenggara
- SMART Network, Village Communities and Village Governments of Rantau Pakam and Teluk Halban, Bendahara Sub-district, and of Pangidam and Pantai Cempa, Bandar Pusaka Sub-district, Aceh Tamiang District
- Village Disaster-Alert Team, Village Communities and Village Governments of Meko and Bancea, Pamona Barat, Poso, Central Sulawesi
- And all parties which we cannot mention one-by-one

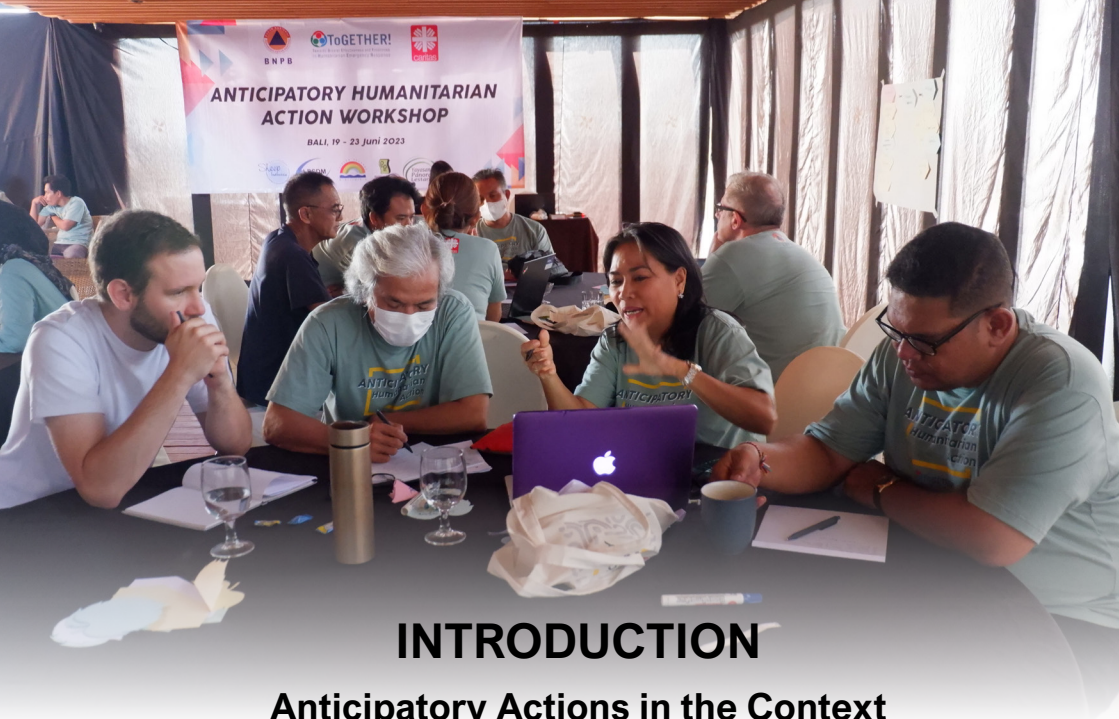
We are aware that the pilot project can only be applied and replicated when all learning processes are documented, studied and expanded. This concise book is intended as a means to document all lessons learned during pilot anticipatory actions project implementation in four disaster-prone districts where ToGETHER worked. We hope that this document can serve as a learning material for other communities wanting to develop system and infrastructure for anticipatory actions in their respective area. The ToGETHER Program will continue to expand the anticipatory actions, and we expect that readers will take time to give inputs to ToGETHER Program partners. We hope that this concise book can enrich disaster approaches and management in Indonesia.

Editor

Table of Content

Contributors	ii
Preface	iii
Table of Content	v
Introduction	01
1. Initial Introduction	01
2. Pilot Project - Anticipatory Actions	04
3. Actions	06
4. Contribution and Sustainability	08
 Four Communities in Aceh Tamiang together Anticipating Floods	 09
1. Designing Risk Information in Anticipatory Actions	09
2. Cash Aid	19
3. Building Partnership	20
 Advocacy: Creating Path to be Free from Flood in the Village of Meko, Pamona Barat, Poso District, Central Sulawesi Tengah	 23
1. History of Flood	23
2. “Mutual Help” Anticipating Disasters	28
3. BanTu and Initial Practice in Flood Anticipation Actions	36
4. Sustainability	39
 Community Tradition, Foundation for Developing Anticipatory Actions – the Villages of Seruni Mumbul and Labuhan Lombok, Pringgabaya Sub-district, East Lombok District, West Nusa Tenggara	 41
1. Amateur Radio and Fishing Communities	41
2. Anticipatory Actions	45
3. Building from What Is Available	55
 Merapi-Alert Community Collaborates for Disaster Anticipation	 57

1. Merapi: Between Hazards and Blessings	57
2. Collaboration to Build Infrastructure for Anticipatory Actions	60
3. Developing Early Warning Information System	62
4. Simulation – Activating Anticipatory Actions	68
5. Continuous Test-and Retesting of Knowledge	74
Terms	75
Abbreviation	78



INTRODUCTION

Anticipatory Actions in the Context of ToGETHER Program

1. Initial Introduction:

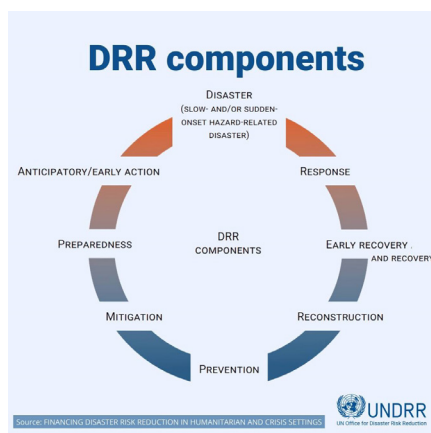
Most humanitarian practitioners and actors think that anticipatory actions in disaster management in Indonesia is new – not least for *Towards Greater Effectiveness and Timeliness in Humanitarian Emergency Response* (ToGETHER) program implementers. They agree that anticipatory actions is highly useful to prevent bigger loss from disasters. Study by *Save the Children England* revealed that anticipatory actions could lead to significant saving compared to traditional actions.¹ Fifty percent of humanitarian crisis can be predicted. This means that risk can be predicted and managed in advance. Yet, budget allocation for anticipatory actions is less than 1% compared to budget for emergency relief. So far, most anticipatory actions are performed by large organizations.²

1 Every £1 spent on food crisis anticipatory action in Ethiopia saved affected household £2.58 compared to traditional response. See, Atkinson, Emily: *Social Cost Benefit Analysis of the Early Action Fund*, Save the Children UK, 2018.

2 Weingärtner, L. and Spencer, A: *Mapping financial flows to humanitarian crises, financial flows mapping: The potential for a risk finance facility for civil society*. Paper 2. London: ODI and Start Network, 2019.

Indonesian NGO partners got to know Disaster Anticipatory Actions, or *Anticipatory Humanitarian Action (AHA)* in ToGETHER Program, through AHA workshop in June 2023.

The ASEAN framework defined anticipatory actions as: *a series of action implemented when a hazard is about to happen based on pre-hazard forecasting, early warning, or risk analysis. Individuals and organizations implement anticipatory actions prior to a hazard.*³ The decision to implement anticipatory actions is based on forecasting or collective risk analysis detailing when, where and how an event happens.



The main objective of anticipatory actions is humanitarian – to save lives and livelihood, and reduce loss and sufferings.⁴ In disaster management cycle, the *United Nation Office for Disaster Risk Reduction (UNDRR)* places anticipatory actions between preparedness and emergency response.

By reflecting closely at the concept and position of anticipatory actions, and experience in other countries, ToGETHER Program put together 9 core principles for anticipative actions:⁵

- Aim: prevention or at least mitigation of potential disaster impacts
- Forecast: This is a critical requirement. Without forecasting, there is no Anticipatory Actions. This principle is known as

3 Head of BNPB Regulation No. 2 Year 2024 on Early Warning System using terms like Anticipatory Action and defines Early Warning Actions as a series of actions by the government and/or communities to anticipate impacts that save lives, and reduce loss and damages from a disaster based on forecasting and early detection of potential hazard

4 ASEAN Framework on Anticipatory Action in Disaster Management. See, Anticipation Hub: “A short overview of anticipatory action,” <https://www.anticipation-hub.org/about/what-is-anticipatory-action>.

5 Dieter Rachbauer: “Anticipatory Humanitarian Action Core Principles and Lessons from Practice,” Bali, June 19–23, 2023

Forecast- based Action (FbA)

- Decision-making process is pre-determined based on thresholds and triggers
- Pre-defined thresholds: If thresholds are achieved, warning, funding, and/or actions start automatically.
- Pre-defined triggers: The triggers determine when and where to take actions before disaster strikes. The triggers determine when a hazard becomes a disaster which overwhelms community's capacity exposed to disaster risks.
- Actions are taken based on agreed contingency plan, or known as EAPs (Early Action Protocols).
- Actions are taken before hazard occurs
- Pool Funds should be available and distributed to affected communities.
- Anticipatory actions are not projects to be implemented for a specific period of time (project duration), but a framework for preparedness.

One important component of anticipatory actions, beyond actions taken and specific roles of each stakeholders or objective, threshold index and triggers, is the availability of aids.⁶

Financial aids or supports in anticipatory actions are of two types (1) financial support to build infrastructure for anticipatory actions, in the form of provision and development of early warning system, contingency planning, or stakeholder capacity building, etc. (often referred to as build money); and (2) cash or non-cash funds for affected communities (often referred to as fuel funds or fuel money) to be given prior to a disaster.⁷

In the context of anticipatory actions, pool funds in the form of cash or voucher is a must. This is given right after the trigger and threshold are attained, or before disaster strikes. If the hazard fail to materialize – or in other words, there is no disaster – the aid remains with the beneficiaries (no regret principle).

⁶ Anticipation Hub: *A short overview of anticipatory action*, April 2023. Pool funds – a scheme to collect, accumulate and distribute special disaster funds by a funding organisation, based on Presidential Regulation No. 75 Year 2021 <https://fiskal.kemenkeu.go.id/strategi-drfi/pooling>.

⁷ UNDRR: *"Anticipatory action (AA): Best practices and guiding principles for financial protocols of AA funds,"* Geneva, 2023.

The key components of anticipatory actions are elaborated diagrammatically as follows:

THREE KEY ELEMENTS OF ANTICIPATORY ACTIONS



Source: ASEAN Framework on Anticipatory Action in Disaster Management, 2022

2. Anticipatory Actions Pilot Project

After AHA workshop, four NGO partners (known as Local Humanitarian Partners – LHP in ToGETHER Project) started anticipatory action pilot project(s) in four areas to address a number of hazards.

- PKPA - Medan: Four Communities in Aceh Tamiang Together Anticipating Floods.
- YSI – Yogyakarta: Merapi-Alert Community Collaborates for Disaster Anticipation
- LPSDM – Lombok: Community Tradition, Foundation for Developing Anticipatory Actions – the Villages of Seruni Mumbul and Labuhan Lombok, Pringgabaya Sub-district,

East Lombok District, West Nusa Tenggara

- YPAL – Poso: Advocacy: Creating Path to be Free from Flood in the Village of Meko, Pamona Barat, Poso District, Central Sulawesi Tengah.

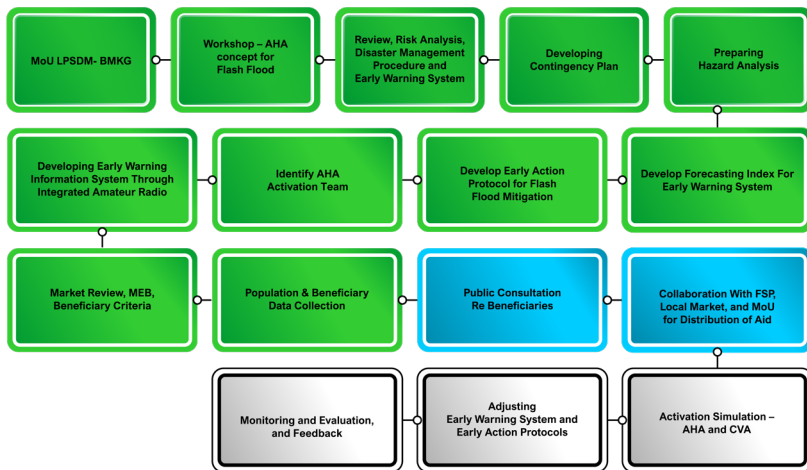


The four pilot projects have the same objective, in the same vein as the objective of anticipatory actions in general - to save lives and livelihood and reduce loss and suffering despite differences in hazards and local context.

Yet, implementing anticipatory actions in real life is not easy! Major challenge – to name a few – are: (1) finding individuals (information sources) who have credible knowledge and experience in drawing anticipatory action steps, particularly at local level; (2) coordinate and collaborate with stakeholders with capacity to provide scientific data and information as referral for forecasting index, including commitment and consistency of involvement; (3) integrate anticipatory actions into contingency plan; (4) developing common ground and consent with effected communities on hazard index, Disaster-Alert Team's tasks and functions, scopes of beneficiaries, and minimum expenditure basket; and (5) develop common commitment with financial service provider such as banks and PT Pos Indonesia.

3. What they did

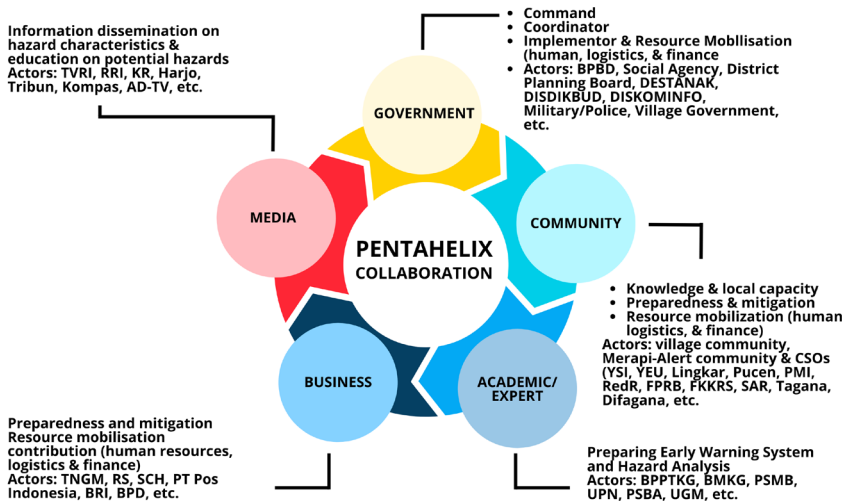
The pilot project conducted intensive desk review to deal with the problem – attending discussions, seminars, getting involved in Anticipatory Action working groups, developing communication and collaboration with NGO partners, such as YAKKUM Emergency Unit (YEU), People's Disaster Risk Reduction Network (PDRRN) in the Philippines, Save the Children, academics and research institutes such as Gadjah Mada University Disaster Study Centre and UPN Disaster Management Study Centre, as well as climate/weather information providers such as Global Atmosphere Watch (GAW), Indonesian Agency for Meteorology, Climatology, and Geophysical Agency (BMKG), Geological Disaster Research and Technology Development Centre/Volcanology and Geological Disaster Mitigation Centre (BPPTKG/PVMBG), National Disaster Management Authority (BNPB), Provincial/District Disaster Management Authorities BPBD, and others.



Each partner then designed its anticipatory action implementation steps and stages – with several revisions. The steps and stages designed by each partner were unique, in response to local context and types of hazards in each locality. LPSDM developed 16 steps to deal with flash flood and tidal floods, as illustrated in the chart on the next page, starting from information dissemination in communities to monitoring and evaluation of anticipatory action activation simulation.

In anticipating Mount Merapi eruption, YSI found that collaborative aspects and synergy amongst actors were detrimental to anticipatory action. The flow and roles of respective actor is illustrated below:

Pentahelix collaboration diagram



The implementation of the pilot projects are illustrated in the subsequent pages. Each writing focuses on experiences of specific and most urgent and important aspects as lessons. YSI, for example, focused on its experience in implementing anticipatory action to address Mount Merapi eruption from a collaborative aspect. As a researcher said, *“coordination remains a critical issue. Organisations often failed to balance threshold and triggers in a systematic way Collaboration with other agencies, whether public or private, was not always easy. Not all actions are complementary.”*⁸

LPSDM for its part emphasized the importance of using and expanding local knowledge in communities in order to enable communities to develop anticipatory action infrastructure. This aspect featured community-based anticipatory action infrastructure development.

YPAL described its experience in advocacy focusing on the roles and authority of private sector in managing water resources in Poso. YPAL developed strong partnership with village volunteers in the upper river for visual monitoring of the field, Global Atmosphere

⁸ Dieter Rachbauer, *ibid*

Watch – Indonesian Meteorology, Climatology and Geophysics Authority (GAW BMKG) for forecasting and monitoring of rainfall, and with private sector for prevention of flood from back-flow of lake water-level regulation for electricity generation (Water-Generated Electricity PT Poso Energy).

PKPA focused on its experience in collaboration, just like YSI, particularly with local NGO network. Its strong network with local NGOs was strategic, because local NGOs knew well the situation in the community and local government. This knowledge helped in effective and efficient disaster management by involving local communities and government. As an expert found, *“Local communities and organisations exposed to a certain risk, i.e flood or tropical storm, often have very comprehensive understanding of risk and vulnerabilities, including importance questions for humanitarian actors, about when a hazard overwhelmed a local community’s capacity respond on its own.”*⁹

All measures by LHP helped in the implementation of planned activities, and achieve the objective of the pilot projects to build anticipatory action infrastructures and systems in local communities.

4. Contribution and Sustainability

Full community and local government participation and contribution were vital to the success in anticipatory action and system infrastructure construction. Such contribution was not limited to the integration of anticipatory action budget into village budget, but most importantly also time, knowledge, and labour involved in the implementation of the pilot projects, which were unquantified.

There were anxieties about the sustainability of anticipatory action infrastructure. Sustainability here did not only mean funding, but also more importantly dissemination of knowledge and skills, maintenance, and management of built infrastructure. Sustainability was a unique challenge for LHP.

⁹ Sören Schneider: *“Building on Local Knowledge and Partnership to Facilitate Trigger Development and Scale up Anticipatory Action,”* August 2023, <https://www.chabertlin.org/blog/building-on-local-knowledge-and-partnerships-to-facilitate-trigger-development-and-scale-up-anticipatory-action-2/>



ACEH TAMIANG TOGETHER ANTICIPATING FLOOD

"Disaster impacts not only devastated individuals but also put a stopped to all village activities. This awareness led to common determination to take joint action. Communities did not take action on their own."

1. Design Risk Information in Anticipatory Action

Wednesday morning, 26 February 2024 the piercing, wailing sound of the siren:

eee.....ooo..... eeee.....oooo.....!

Followed by screams from a young man in blue shirt who ran to give people the warning. The young man cried "Flood....Flood..."

Not long after, people fill the village roads. They walked into the direction indicated by the green sign. The sign 'EVACUATION ROUTE' led to another green sign. This time, the sign said 'ASSEMBLY POINT.'

There, five men were putting an elderly into a stretcher and carried the stretcher to a big tent in the middle of the field. Two of the men wore orange life-vest, while two other men wore BABINSA uniform (NCOs). They then went straight to a group of women ready with first aid.¹⁰

But do not be alarmed. This was a simulation for anticipatory action of community in Rantau Pakam Village, Bendahara Sub-district, Aceh Tamiang District in anticipation of recurring floods in their village. Rantau Pakam was one of the four villages in Aceh Tamiang District attending the Focused Group Discussion on risk analysis conducted by PKPA (Child Protection and Analysis Centre), SMART consortium, and FSPA (Child Protection Stakeholder Forum). The FGD was one measure to promote community participation in Anticipatory Action Pilot Project implementation in Aceh Tamiang. The FGD involved village representatives who presented their ideas about ways to anticipate flood in Aceh Tamiang – without undermining other hazards, such as flash flood, landslides, and drought which presented different challenges. Three other villages in the FGD included Pengidam and Pante Cempa, Bandar Pusaka Sub-district, and Teluk Halban, from the same Sub-district as Rantau Pakam. The four villages were the focus of the Anticipatory Action Pilot Project implementation in Aceh Tamiang, by PKPA in partnership with the SMART Consortium and FSPA

The four villages in the pilot project had a large population, not less than 1,327 people, as follows.



10 The Video of this AA Simulation can be Accessed at https://www.youtube.com/watch?v=wDv_ZNQn8ps

Disaggregated Data of Beneficiaries

Village	House hold	People	Vulnerable groups						
			Elderly	Pregnant Women	Children (6-18)	Under-five y.o.	People with disability	widow	widow er
Ratau Pakam	312	1,151	61	18	117	102	10	55	10
Teluk Halban	233	834	30	13	248	76	4	33	4
Pengidam	287	1,027	54	24	52	151	9	37	5
Pantai Cempa	318	1,327	112	18	tbc	115	10	40	21

Source: *Anticipatory Action Pilot Project Proposal on Flood Hazard in Aceh Tamiang District*, March 31, 2024

The flood anticipatory action pilot project was a follow-up of the disaster response done in the past by PKPA in Aceh Tamiang. In the past, PKPA worked with the Villages of Teluk Halban and Rantau Pakam on HOIFA Project to recover from the 2023 flood in Aceh Tamiang.¹¹ In the current project implementation, partner communities acknowledged that flood was recurrent hazard, and that the communities had little knowledge about flood anticipatory actions. The village governments also acknowledged that they had minimum ability to coordinate with other parties, such as the District Disaster Management Authority and the Meteorology, Volcanology and Geophysics Authority.

The chief village of Pantai Cempa, Sabbri explained that flood was a recurring hazard in his village for many years. Major floods only occurred every two-three years and the community in general could predict when it would come. However, since 2019, it was more difficult to predict flood, as catchment areas disappeared. *“PKPA provided us with new information, particularly with regards to ways to reduce flood risk. To tell you the truth, we have never had such a program from other parties,”* he said.

¹¹ More detailed information about the disaster response in Aceh Tamiang by PKPA, see Ayu Lestari: *“Strengthening Local Capacity for disaster Response,”* in Bonar Saragih (Eds.): *Voices from Kampung: Local Community in Humanitaria Actions*, Caritas Germany Indonesia, Yogyakarta, September 2023

The head of Sukamaju Hamlet, in Pengidam Village, Iwan Hamdani also expressed a similar point. He also acknowledged that other parties, including the government, never offered flood anticipatory action program in the past. *“The government should have a budget, but in my opinion anticipatory action program is non-existent. For example, the District Disaster Management Authority team (or the Tagana team) had started an initiative to disseminate information about ways to deal with flood. In our village, however, there would likely be a flood when there is a heavy and continuous rainfall for 24 hours. This is why we think that this program is very relevant,”* he said.

Prior to the anticipatory action simulation, the village government, PKPA Foundation, SMART Consortium, FSPA and the District Government (re. Disaster Management Authority) in Aceh Tamiang agreed on a Standard Operating Procedure (SOP) for Early Warning System Information System. Development of the SOP started with a multi-stakeholder workshop on the draft Early Warning Information System in order to design an Upstream-Downstream Early Warning System. The draft

was refined during a workshop to develop and implement risk information and adaptive forecasting and early warning system with stakeholders.

The Standard Operational Procedure for Flood Early Warning System contained signs of flood hazard, both upstream and downstream. These signs were mutually agreed upon based on community experience. Muhammad Danial said that it was easier for the Village Chief of Pengidam Village to determine the threshold downstream, because the DESTANA team (Disaster Resilient Village) was able to coordinate directly with the upstream areas. If the upstream areas determined that there was a flood hazard, then the downstream areas had to be ready.

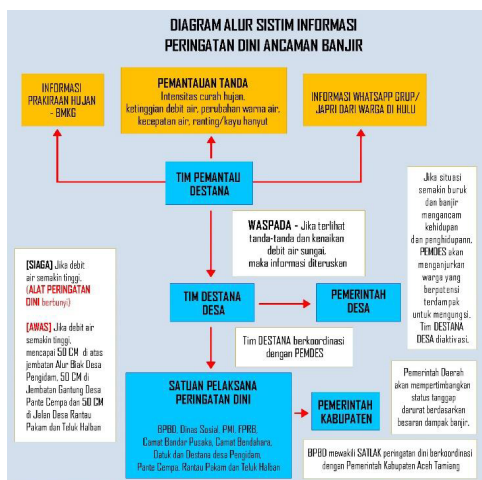
The weather warning from the BMKG is often not accurate.” Said a person from Rantau Pakam Village.

One Destana team member activated the siren during the anticipatory action simulation as explained at the beginning. It represented a mitigation step to warn communities of potential flood in the village, and it was articulated in the Flood Early Warning Standard Operational Procedure.

Destana team only activated the siren after making sure that the flood trigger signs were observed and the threshold condition indicating that community needed help was achieved.

DESTANA team consisted of select people willing to take the responsibility to always update hazard situation in the village, particularly flood. DESTANA team also disseminated the information to the community so that the latter prepared immediately and was willing to evacuate if the threshold was surpassed. Anticipatory action project was behind the initiative to establish DESTANA team, in conjunction with the village government. Village government and community selected DESTANA members.

It was interesting that the Villages of Pengidam and Rantau Pakam opted to select young people as DESTANA team members. They believed that young people were more alert to implement disaster preparedness on the field. The elderly people were assigned in advisory capacity. The decision was taken in view of future change of membership. DESTANA team members would have instruction (duties and functions) to anticipate disasters, including monitoring the threshold, early warning, providing first aid, save and evacuate lives, and provide logistics. Selected individual as DESTANA member would receive training, and instructions about their task in disaster preparedness. DESTANA team members and community would be involved in anticipatory action simulation, as described earlier, so that they could implement the information and skill they obtained in emergency situation.



INFORMASI RISIKO BENCANA BANJIR DESA PENGIDAM DAN PANTAI CEMPA

POTENSI RISIKO	INTENSITAS	DAMPAK
■ Pemukiman berdekatan/tetangga banjir	■ Sangat Terseksi	■ Terseksi
■ Terseksi hanyut / mati	■ Sangat Terseksi	■ Terseksi
■ Lahan pertanian terdampak / rusak / gagal panen (5 panen)	■ Sangat Terseksi	■ Terseksi
■ Akses transportasi terputus	■ Terseksi	■ Terseksi
■ Komunikasi / listrik terganggu	■ Terseksi	■ Terseksi
■ Kesehatan bagi kelompok rentan terganggu	■ Terseksi	■ Terseksi
■ Terjadi kecelakaan pengangkutan (dibuktikan korban jiwa)	■ Terseksi	■ Terseksi

INFORMASI RISIKO BENCANA BANJIR DESA PENGIDAM DAN PANTAI CEMPA

POTENSI RISIKO	INTENSITAS	DAMPAK
■ Komunikasi dalam pertemuan (kawatir dan kecurigaan)	■ Sangat Terseksi	■ Terseksi
■ Komunikasi informasi pertukaran	■ Terseksi	■ Terseksi
■ Terseksi hanyut / mati	■ Sangat Terseksi	■ Terseksi
■ Kesehatan masyarakat tidak aman (air kotor, banjir)	■ Sangat Terseksi	■ Terseksi
■ Fasilitas umum rusak	■ Terseksi	■ Terseksi
■ Komunikasi bencana dan pertolongan seketika	■ Sangat Terseksi	■ Terseksi
■ Komunikasi pertolongan rumah tangga	■ Sangat Terseksi	■ Terseksi



“Through simulation, we get to understand our task and responsibility in whatever field we are assigned. In the past, we did everything together when there was a disaster, no task division. We have done our own disaster anticipation – without proper science.”
Said one member of DESTANA in Pengidam Village. The village

chief of Rantau Pakam also expressed a same point, when he said that after the establishment of DESTANA, all coordination became more structured and no overlapping tasks.

There was one interesting thing for community during the simulation that later became new knowledge and experience – the involvement of the elderly people as members of the risk group. Community acknowledged that they became more aware of who were people at risk during a disaster. *“In the past, we only focused on ourselves and our family, to get the assistance needed. Now, we understand that there are other people at greater risk that must get first priority to be saved. The elderly and the under-five year old children must be the first priorities for first aid. We must also pay close attention to pregnant women, people with disability and sick people, particularly during evacuation.”* Said one Destana team member from Rantau Pakam Village.

Before the simulation, project team provided anticipatory action equipment to DESTANA team. Destana team gave much input with regards to the types of equipment they needed. Initially, program team offered 12 buoys, assuming that they would be most useful during flood.



Yet, DESTANA team and village stakeholders suggested life vests and boats to more easily help other people. The project team accepted such suggestion, hence it made changes by providing six buoys and six life vests. The need for rubber boats expressed by the four villages showed the urgency for their procurement. *"We need rubber boats during flood for our mobilisation. We submitted this request to the District Disaster Management Authority, but we have not gotten them. We also submitted this request to the government, but the latter did not respond to our request."* Said the village chief of Pengidam Village. In simulation, there was one interesting observation during cash aid distribution to priority beneficiaries in Rantau Pakam Village. DESTANA team, village officials, and project team faced a challenge – data collection missed two people

with disability, hence they were not included as beneficiaries. Subsequent deliberation and mutual agreement led to consent by each beneficiary to set aside ten thousand rupiah to the two people with disability. This consent allowed the two people with disability who were not included in the data to receive equal amount of cash aid as other beneficiaries. This showed a strong sense of sensitivity and solidarity in community affected by disaster. In the past, people only thought

About their own safety and that of their immediate family, but now people started to about overall solution for the village, because they understood that disaster impacted not just individuals, but the entire activities in the village.

There were many challenges that necessitated deliberation by all stakeholders, in the



absence of anticipatory action guidelines for evacuation. One such challenge involved decision to identify evacuation centre. Downstream Teluk Halban Village, for example, had a food storage built by the Agriculture Office. This storage was never used, but in emergency, it could become an alternative evacuation centre, not just aid storage for affected community.

Not all village had similar building as Teluk Halban Village. Other villages used high grounds for evacuation. This was one reason why people were reluctant to evacuate, because they felt safe at home. Another issue was that villages did not yet have evacuation centre for livestock. People chose to build elevated bed in their own house and stayed there throughout the flood period. It was not convenient, but people thought it was more effective, because they could keep watch on their house, livestock and valuables in the house.

“It was most difficult to ask people to evacuate. Our people were so accustomed to flood (1,000%), hence the difficulty to ask them to evacuate. They experienced flood when the dam broke in 2006. So most people chose

to stay so that they could save whatever valuables they had,” said the village treasurer of Rantau Pakam.

It was therefore vital for Destana team to set an agenda to disseminate information about flood signs, the threshold and risk. The information dissemination would happen regularly by targeting individuals or groups – i.e. *Perwiritan* group.¹²

DESTANA team in Rantau Pakam also planned an agenda for disaster emergency relief training for DESTANA volunteers established in 2024. It would submit a financial proposal for village funds to be used for the activity, while it would ask the District Disaster Management Authority and District Social Office for facilitators. Volunteers with capacity were expected to disseminate flood risk anticipation information and skill to the community or they could also become facilitators for similar training in other villages.

¹² Islamic religious prayer by women or men.

2. Cash Aid

The flood anticipatory action pilot project by PKPA and SMART Consortium in four villages in Aceh Tamiang District also introduced an aid mechanism known as *BanTu* (Cash and Non-Cash Aid). Normally, people raised funds to respond to disaster, and distributed the funds in the form of ready-made items such as food and medicine. This was not necessarily efficient, time-wise, as aid would collect and it would be days after the disaster before aid was distributed. Then, ready-made items may not always be effective because they did not meet people's immediate needs.



Fundraising in the BanTu Scheme happened long before a disaster occurred, and this happened in risk-areas in Aceh Tamiang that experienced regular floods. The fundraising may engaged many parties including individuals and private/business sector, even government disaster preparedness funds. Raised funds were saved and distributed when there was disaster emergency information – when a variety of triggers caused the water threshold to be surpassed. People were then able to get the cash and buy whatever they needed during evacuation. Then, people followed the evacuation protocol and went to designated evacuation centre(s).

“BanTu – as a preparation for disasters – was an innovation for us. It was cash to meet the needs of people. Direct logistical distribution may not meet people’s need. It also inherited a big in distribution, i.e. cooking oil may leak during distribution or sugar’s weight may not be right because there may have been problems with the scale.”
Said treasurer of Pengidam Village.

People welcomed the BanTu Scheme. They thought it did not make them a beggar waiting for assistance. Access to transport may have been cut off when assistance was given after the flood, and people found it difficult to buy what they needed. The village government also said that it would be good when the village funds were accommodating the BanTu Scheme. But it was not happening in reality, because use of village funds was limited to material purchase. The treasurer of Rantau Pakam also pointed to another issue – namely funds for disaster preparedness may only be used when the disaster engulfed most areas. The problem was that flood may only occurred in two or four sub-districts. Then, it was not possible to declare an emergency status. With current situation, assistance was only distributed after disaster happened.

3. Building Partnership

Flood occurred in Rantau Pakam Village in December 2023. The Village DETANA Team lobbied local companies to provide bags to be filled with soil. People intended to make embankments by piling the bags, in anticipation of flood. The DESTANA team communicated with District Disaster Management Authority in Aceh Tamiang for more bags. In the meantime, people volunteered to work on the embankments. The same flood occurred in Teluk Halban Village. But this one was slightly different, as people demanded that the Village Government and the District Disaster Management Authority provide them with heavy equipment to make embankments.





For their part, the Village Chief procured bags, sand and rocks with the help of the people. The two cases showed that local leaders were able to take the initiatives to coordinate for disaster preparedness. It was evident that these leaders took the initiatives after they were involved in a series of disaster anticipation program activities.

It is interesting that the disaster preparedness led to a paradigm shift in disaster response from emergency response to disaster risk mitigation. As shown in previous cases, we saw that anticipation activities were effective in triggering local initiatives. This would lead to many potential changes.

In principle, many parties, including village governments, District Disaster Management

Authority, and local communities had positive impression of these changes. There were, however, many challenges to their implementation. The analyst at the District Disaster Management Authority, Suci Faramudita Sari, M. Han. Said that the preparedness program was already implemented in the past, through structural mitigation by building embankments in villages.

Non-structural mitigation included improving local knowledge. The District Disaster Management Authority also initiated Resilient Village and Resilient Volunteers. The only issue was that the District Authority had limited budget. It did not manage Resilient Village

budget anymore since 2022, as the funds were managed through the village funds. This led to a stop to the program before any follow-up plans were prepared.

"We are interested in the training and workshop given by PKPA because it was different from what the District Disaster Management Authority had done. We realized that we had limited qualified resources. We hope that people who attended the training could transfer their disaster preparedness knowledge to other villages. We really hope that all villages in Aceh Tamiang would become resilient villages." She said. ()*



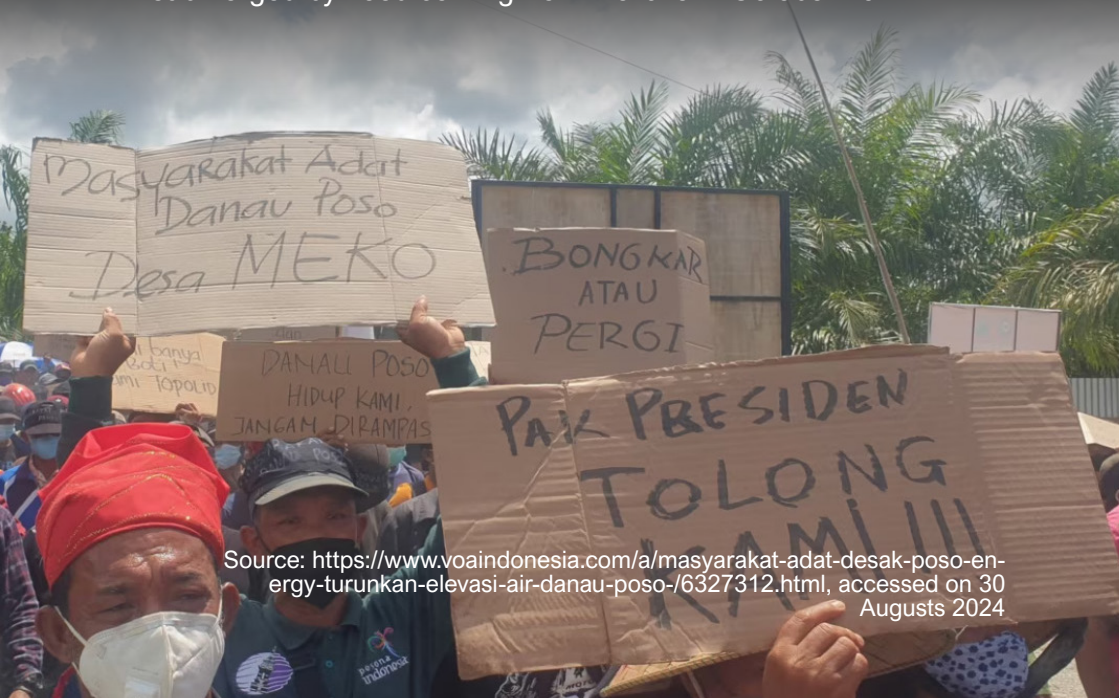
ADVOCACY: OPEN THE PATH TO BE FREE FROM FLOOD

**Meko Village, Pamona Barat, Poso District,
Central Sulawesi**

Through dialogue, differences in views and presumptions about the cause of flood turned into transparent and accountable agreement. This could lead to faster reduction of flood water that engulfed people's crops, by opening the dam when the trigger index and threshold were met.

1. History of Flood:

Monday, 22 November 2021, the silence in Tentena City, Poso District, Central Sulawesi, was broken by an Indigenous Pamona people's protest. They demanded that PT. Poso Energy stopped its operation of Water-Generated Electricity Facility in Poso 1 Dam, to make way for natural surface water flow in the lakes. They said that after the test in the facility in 2020, the lake water went up and flooded people's fields and livestock. Poso District Agriculture Office data suggested that there were 226 hectares of rice fields submerged by flood coming from the lake in October 2021.



Source: <https://www.voaindonesia.com/a/masyarakat-adat-desak-poso-energy-turunkan-elevasi-air-danau-poso-/6327312.html>, accessed on 30 August 2024

The protest involved 300 people from 21 villages around Poso Lake. One such participating village was Meko Village. As much as 96 hectares of rice fields were flooded in Meko Village, presumably from the operation of the water-generated electricity in Poso 1 Dam. The flood had serious economic consequences for 148 peasants in Meko Village. *“The issue was that rice fields were people’s livelihood,”* said I Gede Sukartana, the chief of Meko Village, Pamona Sub-district. PT Poso Energy said that: *“...there were differences in views between the people and us about the water elevation in the lake. As long as such differences remain, there would be no solution,”* said Irma Suriani, the head of Environment, Forestry and CSR Department of PT Poso Energy.¹³

Field study by Yayasan Panorama Alam Lestari (YPAL) in June 2023 found more details.¹⁴ Since 1998, flood often happened in Meko Village, particularly during the months of April – June, including floods coming from the overflow of the lake water on a five-year period. Meko Village was also susceptible to other hydro-meteorological hazards including drought, twisters, and landslides. The following table show the potential hazards in Meko Village.

TABLE: HAZARD PRESENTATION IN POSO

Type of Hazard	Specific Hazards
Geology	Earthquakes, twister, landslide
Hydro Meteorology	Flood, Flash flood, drought, landslide
Biology	Livestock virus (AFS), DBD, plant virus, rabies
Technology Failure	Exploding Electricity transmission Box
Environment	Fire, Fire in peat and other fields
Social	Fight amongst young people

As illustrated in above table, flood was the biggest hazard. In the last few years, floods in Meko Village increased, to once a month event. The pattern remained the same, however flood season changed starting in December to May. The latest flood happened

13 This was cited from Yoanes Litha: *“Masyarakat Adat Desak Poso Energy Turunkan Elevasi Air Danau Poso,”* VOA, 25 November 2021 <https://www.voaindonesia.com/a/masyarakat-adat-desak-poso-energy-turunkan-elevasi-air-danau-poso-/6327312>
14 YPAL: *“Final Report Project Anticipatory Humanitarian Report (AHA) Pembangunan System Antisipasi, Protokol Penyelamatan dan Mekanisme Pembiayaan Berbasis Perkiraan Untuk Kelompok Berisiko Terdampak Banjir,”* Maret 2024.

in May 2023. Most houses, particularly along the river banks, were inundated, so were rice fields. The flood was 10-100 cm deep, and forced hundreds of people to move to nearest relatives. Thank God there was no loss of life this time. Yet, people were unable to save their belonging. Sulawesi River Authority III conducted mitigation by building embankments, but they were unable to keep the flood and were broken.

The geographical position of Meko Village is susceptible to floods. The 90,000-hectare village – with its population of 3,223 people (889 families) – was located by Poso Lake and bordered with the Highland of Pamona Nature Conservation Area. Agriculture, plantation and forest were dominant features of the village.¹⁵

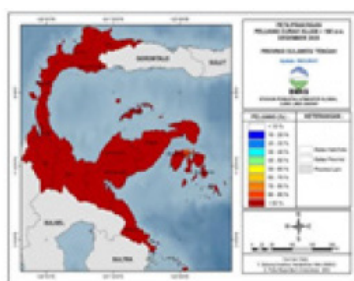
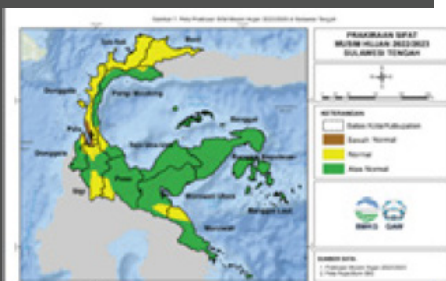
HH	People	No. Population		Elder	Children under 5 years	Children	Female head of family	Disabilities	Pregnant
		M	F						
889	3.194	1.499	1.695	306	132	744	64	20	18

Source: Field Assessment YPAL November 2023

There were three rivers in Meko Village - Meko, Ampu-ampu and Masea which originated in Pamona Selatan Sub-district, across the residential areas, into Poso Lake.



15 Meko Village was formally designated as a village in 2005. The indigenous inhabitants of Meko Village were Pamona people. But in 1982, there was a large migration into Meko Village of people from Bali and Java through transmigration. Now Meko inhabitants were diverse, of diverse ethnic groups, religions and cultures. They included people from Toraja, Bugis, Mori, Flores, Bada, Napu and others.



Map showing forecasting of seasonal rain in Central Sulawesi

The Village chief in Meko, I Gede Sukartana said that floods was becoming often because of three things. *First*, there was high rainfall, particularly between April and May. Global Atmosphere Watch (GAW) official site in Central Sulawesi indicated that Pamona Barat Sub-district would have above normal rainfall in November 2023 with a probability of 151 – 300 mm, while it would increase in December with a probability of 301 - 500 mm. This situation would continue until January 2024 with a probability of 201 – 400 mm, with above normal rain.¹⁶

Second, there was a high-level of sedimentation in the two rivers flowing in Meko Village. This sedimentation – Gede – consisted of piles of materials at the bottom of the Meko rivers.

16 Global Atmosphere Watch (GAW), October 2023

The long-term sedimentation caused shallower river. The rivers were then unable to keep the water flowing when rain fell.

One villager in Meko said, *“In the past, I saw logs flowing into the village during floods. Even the village ground was full of logs. On the water receded, people collected the wood that the floods brought and used them as firewood, before they had gas stove like today.”*¹⁷

Third, the increasing elevation of Poso Lake happened during long, heavy rain, and water did not flow into the lake, so instead water flowed to people’s houses. Regulating the lake’s water elevation was therefore crucial to the water elevation in Meko Village. This was even more so when the river

17 Author’s interview with Berlin Modjanggo – a community leader in Meko Village, 16 April 2024.

delta changed the water flow, so that the water did not flow into Lake Poso.

Although people were familiar with flood hazard, they did not know what to do. The village chief and the community talked frankly about this.

It was more difficult when the village chief said: *"Floods always came at night time or early morning when people were asleep, hence people were not prepared for the flood."* Just before the big flood in May 2023, for example, a village, Erlin Mosori (50) said innocently, *"rain fell in the afternoon. I had a hunch that there would be flood. But because of my minimal knowledge and alertness, I decided to sleep. It was a time when the lights went off."*

What people did during flood was no more than arranging a few tables in the house and put all their belongings and documents there. Almost everyone in the village did this. Each family did this independently, except when someone asked for help. People usually provide assistance to the elderly and people with disability.

When rain fell for one day and continued to intensify, the village government would issue a message for people to prepare without any instruction or guidance to evacuate. It gave the message via village speaker. When the big flood came in May 2023, the District Government of Poso, via its Disaster Emergency Management Office, came to provide assistance.



The Disaster Management Authority also provided other supports, such as food, tents and sleeping equipment, just like what other district authority would do. These were common type of assistance provided by the district governments, because they thought of disaster merely in terms of emergency situation. Hence, the assistance was also limited to emergency response, not more.

Prior to YPAL work in Meko Village, the village did not even have a contingency plan to guide its actions when disaster happened.

The long description about the disaster history in meko Village was meant to show that at least there were three types of vulnerability in the community and in village government:

- (1) Geographical location
- (2) Access to information and knowledge about disasters
- (3) Supports by outsiders

Sub-District	Resilience	Prepared-ness	Capacity
PAMONA BARAT	Middle	Low	Low

Table: Capacity of Poso District to deal with disasters

Source: Disaster Risk Analysis by Poso District

2. “Mutual Help” to Anticipate Disasters

“Flood is nothing new in Meko. It was possible to forecast flood. When dark cloud moved from southwest and northwest, and the mountain was covered in fog, there was likelihood of flood,” said Berlin.¹⁸ YPAL also had the same view.¹⁹ Then YPAL conducted a number of activities and approaches to develop system and infrastructure to predict flood hazards and did a number of actions to avoid loss of lives and asset in Meko Village.

YPAL started the activities by conducting a study and assessment to identify the types and severity of hazard in Poso District, particularly in Meko Village. This was a desk-review and consultative dialogue with a number of key stakeholders such as district disaster management authority, the Meteorological Office, Kasiguncu, Global Atmosphere Watch (GAW) of the Meteorology, Climatology, and Geophysics Office, and PT Poso Energy. This was a path to develop collaboration.

¹⁸ Author’s interview in Meko Village on 16 April 2024 di Desa Meko.

¹⁹ View that disaster – particularly hydro-meteorological – can be predicted to intensify after three YPAL staff attended an Anticipatory Humanitarian Action



YPAL obtained Disaster Risk Analysis from Poso District that was provided by the Disaster Management Authority. YPAL studied and analysed the document. YPAL also obtained telemetric information to measure river water volume from PT Poso Energy. At the same time, Global Atmosphere Watch (GAW) in Central Sulawesi provided data on rainy season in Central Sulawesi and rain forecast between November and December 2023. The four organisations explicitly offered their supports and commitments to work together with YPAL.²⁰

After that, YPAL conducted a field study to confirm the desk review and to identify needs in the community for hazard anticipation. The study led to more comprehensive understanding of the root causes and characters of hazards in Meko Village.²¹ This study led to a more comprehensive understanding about the root cause(s) and characters of hazard in Meko Village,²² which became the basis for developing strategies and steps to avoid flood hazard. This understanding then fed into “Development of Anticipatory System, Rescue Protocol, and Forecast-based Finance

20 Collaboration Commitment then became a formal Memorandum of Understanding (MoU).

21 Floods usually happened at night time before sunrise; floods season changed from April to June to December to May; Three key factors caused floods: capacity, instruments, and limited access to supports in hazard management

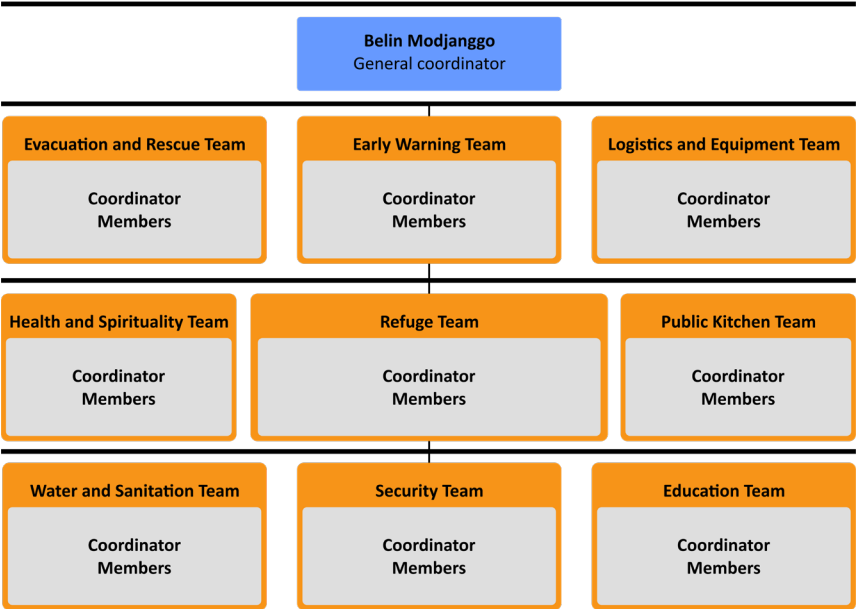
22 Floods generally occurred at night time before dawn; the flood period changed from April-June to December-May; three factors caused floods: capacity, instruments, and lack of access to supports to deal with hazards.

Mechanism for Flood High Risk groups.”

There were six key components in the development of anticipatory system.

- (1) Build infrastructure, mechanism and early warning system
- (2) Identify level of hazard with threshold index and triggers as reference for anticipatory action activities
- (3) Establish community groups for disaster management with support through village regulation
- (4) Develop collaboration agreement between Meko Village government downstream and Bancea Village upstream for visual information on weather and rainfall
- (5) Prepare contingency plan that covers flood anticipatory actions
- (6) Build infrastructure, system, and mechanism to provide cash aid

STRUCTURE
Community Group for Disaster Management
Meko Village



YPAL presented the first program framework to all stakeholders on 16 November 2023. A number of organisations and community leaders were present at this presentation, and all were enthusiastic and expressed their commitment to working with YPAL for this program.²³

On 23 November 2023, YPAL conducted a workshop on the establishment of Community Group for Disaster Management, which was formally adopted via Village Chief Decision No. 141/02/KMPB/DM/2024. YPAL explained disaster concept and management, and disaster policies in Indonesia. This disaster management highlighted the importance of KMPB roles and functions. YPAL and KMPB then conducted a joint workshop on 5-6 December 2023, involving all stakeholders in Meko Village.

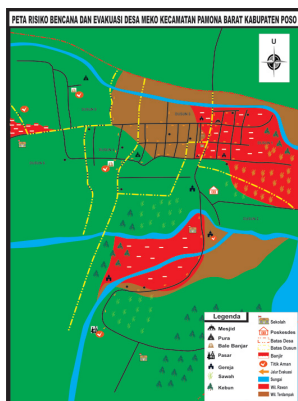
The workshop allowed village government and community in Meko Village to get an

²³ Attendees included: Sub-district and village governments, District Disaster Management Authority, District Social Office, Indonesian Red Cross in Poso, Bancea Village Government (upstream village), Indigenous institution, religious leaders, military/police, businesses, peasant groups, family welfare motivator, health workers, PT. Poso Energy, and other stakeholders

understanding of hazard

types, characters and times of event. YPAL then invited participants to conduct an analysis of hazards, vulnerabilities, capacity and risks in Meko Village. Their knowledge would serve as basis for preparing a contingency plan. YPAL conducted another workshop on How to Establish Early Warning System in Meko Village Hall in January 2024, just prior to the preparation of contingency plan. Participants of the workshop included District Disaster Management Authority in Poso, KMPB, volunteers of Bancea Village, BMKG (Meteorology, Climatology, and Geophysical Agency, Village Governments, and representatives of community groups in Meko Village.²⁴ The head of Poso Disaster Management Authority Prevention and Preparedness explained about the vulnerability level of Poso District and ways to develop synergy in infrastructure preparation at village-level. Global Atmosphere Watch of

²⁴ In the workshop, PT. Poso Energy was not present. YPAL then had face-to-face meeting at PT. Poso Energy office to propose collaboration and asked for PT. Poso Energy willingness to provide data on Poso Lake water level which PT. Poso Energy believed would not cause flood in Meko Village.



BMKG in Central Sulawesi, for its part, suggested that monitoring mechanism, forecast data, and understanding of the bases for the decision regarding trigger index and threshold. The data and index were in line with Poso Lake water elevation monitoring by PT Poso Energy.

HAZARD LEVEL

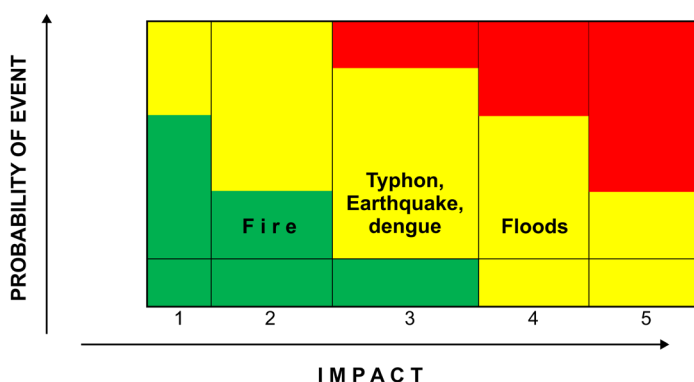
FLOOD EARLY WARNING SYSTEM IN MEKO VILLAGE



Local government and local community experience and knowledge, as well as scientific data presented by BMKG and PT Poso Energy established valid signs of hazard to come.

The workshop led to the establishment of Early Warning System that encompassed GAW-BMKG forecast procedure, Bancea volunteers, and PT Poso Energy as hazard level indicator, including one mid-level suggested by GAW-BMKG based on analysis of flood pattern in previous years. This gave community time for pre-activity preparation up to activation of anticipatory actions in at least two days.

TYPES OF HAZARD	FORECAST OF IMPACT	PROBABILITY OF EVENT	VALUE
Flood	4	2	6
Twisters	3	3	6
Fire	2	2	4
Dengue Fever	3	2	5
Earthquake	3	3	6



PROBABILITY OF EVENT		IMPACT FORECAST	
5	CERTAIN: Possibility 80-90%; may happen anytime and in near future	5	VERY SERIOUS: 80-99% of areas damaged, seriously damaged and paralysed, with a lot of potential loss of lives and injuries
4	MOST LIKELY: Possibility 60-80%; may happen this year or next year	4	SERIOUS: 60-80% of areas damaged and there could be potential loss of lives and injuries
3	PROBABLE: Possibility 40-60%; may happen and may not happen	3	MID: 40-60% of areas damaged
2	SMALL LIKELIHOOD: The possibility is 20-40%; small likelihood but may happen	2	MILD: 20-40% of areas damaged
1	VERY SMALL LIKELIHOOD: Possibility is below 20%; very small likelihood to happen	1	VERY MILD: Less than 20% of areas damaged

Matrix – Priority Hazard in Meko Village

YPAL, KMPB and the Village Government of Meko set up a disaster command post based in Meko and a forecast post in Bancea, after the completion of the workshop on the Development of an Early Warning System. The two posts were equipped with communication devices and handy talky to make it easy to disseminate information through volunteers in Bancea and Meko Villages.



Diagram – Hazard Forecast and Monitoring

The decision to select disaster villages as flood forecast/monitoring posts allowed direct observation of Meko River upstream weather. This made it possible for volunteers to disseminate information early to the command post in Meko Village when there was heavy rain, so that the latter was able to be prepared. YPAL already made an agreement with Indonesia Ham Radio (*Radio Antar Penduduk Indonesia* - RAPI) in Poso for installing a transmitter in Meko and Bancea Villages, and to give training on radio communication to KMPB and volunteers in Bancea Village. It was effective use of radio communication between Bancea and Meko Villages, and there was no problem even during extreme weather when the electricity was cut off.

Meanwhile, BMKG sent information via *WhatsApp* Group to the command post in Meko Village. BMKG would be doing intensive

monitoring, particularly in April-May, because the rainfall was generally above normal. Should weather became 'abnormal,' BMKG would send information immediately to the command post in Meko Village. The same also applied with PT Poso Energy. The company would give information via *WhatsApp* Group, should water elevation became 'abnormal.' Should water level threshold was observed, PT Poso Energy would prepare to open the dam gates (awaiting instruction from BMKG) so that Poso Lake water flowed more quickly and water level dropped.

KNPB Early Warning Group managed this whole process, as it acted as centre for information, monitoring, analyzing and early warning dispatch based on the level of hazard observed. It would provide warning via a loudspeaker to all people in Meko Village, and coordinated with the village and sub-district governments, when rain continued, and water became concentrated. Then Meko Village should inform the District Government of the situation.

Technically, the hazard level became a standard for KMPB Early Warning Group to analyse hazard

level. Emergency situation started when the Normal level moved up to Normal-Alert and Vigilant. When it reached a level of Alert – the hazard status rose to Emergency – that necessitated activation of anticipatory action. And when the level rose to On-Guard and Vigilant, the flood would happen in less than eight hours. The system already articulated the roles of each stakeholder and KMPB group at each level. This allowed actions to be taken gradually, including information dissemination about early warning, and instruction for evacuation to communities that could be potentially exposed to flood.

KMPB Early Action Protocol regulated activities that would be immediately implemented should status became emergency – (1) rescue and evacuation of communities and assets, (2) temporary provision of basic needs, and (3) protection of risk groups and refuge management. Actions during emergency response included: (1) rescue and evacuation of affected community in a comprehensive manner, (2) provision of basic needs during emergency phase, (3) refuge management and preparation for a transition from emergency to recovery (after flood).

YPAL had gradually prepared Draft Contingency Plan for Meko Village, after the establishment of KMPB, of Early Warning, and of anticipatory action activation. There were six key issues in the contingency plan:

1. Hazard characters
2. Scenario of event and impact assumption
3. Operational concept
4. Early warning system
5. Command Post organisational structure
6. Need forecast

YPAL presented the Draft Contingency Plan to all stakeholders during a workshop on Contingency Plan Preparation and Early Action Protocol on 20-21 February 2024.

In general, there was no objection to the contents and key themes contained in the draft. However, as in the word of wisdom, the devil is in the detail – as it took time to discuss Operational and Forecasting Plan of KMPB Group. It included discussion on Evacuation Planning Strategy and Organisational Structure of the Command Post for Emergency Response. The Village Government approved the Contingency Plan after a number of addition and amendment.

3. BanTu and Initial Flood Anticipatory Action Practice

One component of anticipatory action in disaster management was availability of cash and non-cash aid (BanTu) for affected people. BanTu was given “just-before” an event occurred. However, should disaster not happen, BanTu remained with the recipients (no-regret principle). YPAL was consistent with this principle. So from December 2023 up to February 2024, YPAL conducted a survey on Potential beneficiaries of BanTu, of market, and financial service providers (FSPs).

Taking guidance from inclusive principle in Gender Equality, Disability and Social Inclusion Perspective, YPAL prepared survey instrument to identify affected people worthy of BanTu. Survey and subsequent validation with village government(s) led to the number of 94 families, which consisted of:²⁵

²⁵ Indicator for identifying beneficiaries: elderly, people with disability, single parents, and pregnant women



HAMLET	NEIGHBOURHOOD	SELECTION RESULT
I	1	20 families
II	1 and 2	20 families
III	5 and 6	24 families
IV	7 and 8	30 families
TOTAL		94 families

YPAL conducted a market survey on 12-28 December 2023, using Minimum Standard for Market Analysis (MISMA). The survey engaged 12 affected people (5 community members and 7 village government staff), and five local business operators (2 food and non-food vendors in Meko Village, and 3 at Central Market in Pamona Puselemba Sub-District). The survey questionnaire was prepared using Kobo Collect Platform.

For FSP, YPAL decided on PT Pos Indonesia. The decision was based on inputs and information from a number of NGOs that used PT Pos Indonesia in delivering aid.

YPAL simultaneously conducted analysis to determine minimum expenditure basket (MEB). The decision regarding MEB value

was based on calculation of minimum monthly expenditure per person.²⁶ YPAL then re-confirm the calculation with the District Bureau of Statistics (BPS) in Poso, and came out with agreed MEB of Rp. 1,571,212 per month per family. The agreement on MEB value, number of recipients (by name and address), and agreement with PT Poso Indonesia, Meko Village had system and infrastructure for BanTu that would be ready operationally when flood came.

All components for Disaster Anticipatory Action in Meko Village was available and ready to be implemented, after the system and infrastructure were in place. This was proven during flood in Meko Village at 11.00 (Central Indonesia Time) on 4 June 2024. Report

²⁶ The formula was: *District Minimum wage – Average cost of living = MEB value.*

by Village Secretary – Victor Bole – suggested that there was heavy rain since 27 May up to 3 June 2024 in Meko River. On the night of 3 June, rain was particularly heavy. At 3 a.m. on early morning of 4 June 2024, water level in the river rose and overflowed to people's houses. The most severe impact was observed in one hamlet because this hamlet was downstream that served as a crossroad where water flowed from Hamlets 3 and 4. Water overflow inundated houses until 11 a.m. Thank God the flood did not stay for long and only caused damaged to harvest, particularly dry cocoa, corn and rice, fertilizer, household equipment and a number of public facility buildings.

Meko and BMKG had not released a report on increasing threat. PT Poso Energy also



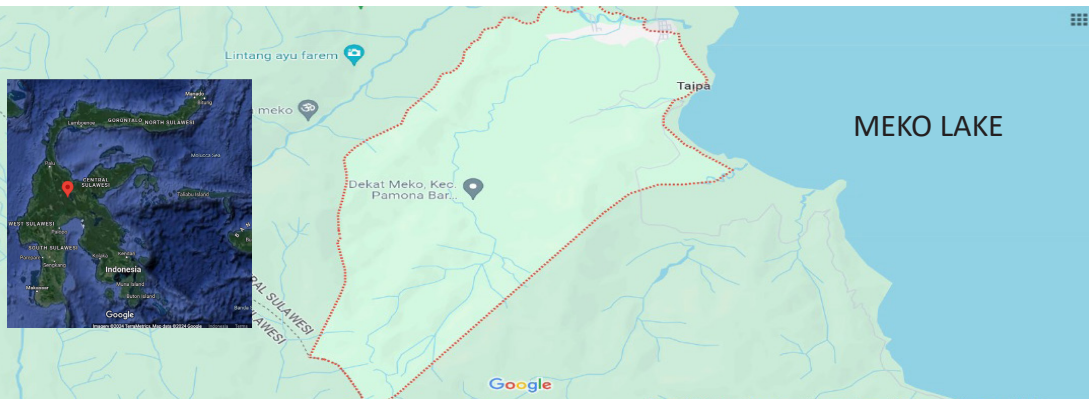
issued statement that there was no increase in lake water elevation. Rain and water level at Poso Lake was deemed normal, hence there was no anticipation action activation. On the other hand, flood happened because of damage in embankment and because of thick sedimentation in Mekong River that kept increasing, rendering the river unable to take in more water.

After the flood, the village government sent a report of the event to the Sub-district government and to District Disaster Management Authority, who arrived at location afterwards and conducted a coordination meeting with village government and KMPB Meko, in order to identify further steps. The action consisted of two parts: (1) meet people's needs and rapid assessment by KMPB, and (2) long-term action – rebuild the embankment and normalizing the river (to address sedimentation).

KMPB stated, based on information collected by BMKG and PT Poso Energy, that anticipatory action system and infrastructure in Meko Village functioned well. Each party did what they had to do based on their functions and roles.

4. Sustainability

The Anticipatory Action Program framework in Meko Village emphasized the importance of meaningful and real involvement and synergy of stakeholders who had the mandate, tasks and function in disaster management. YPAL summarized and formalized this synergy into contingency plan document agreed by respective parties. The flood contingency plan in Meko Village then became the common guideline for disaster management at village level, by appointing District Disaster Management Authority as the mandate holder for District Disaster Management. The Social Office in Poso also synchronized program directly and involved KNP in building food storage facility at Pamona Barat Sub-district. This storage was one of the BanTu components.



Other aspect of sustainability was knowledge and capacity gained by KMPB and resource supports through EWS. This constituted a long-term investment, as acknowledged by Meko Village chief: *“YPAL presence opened a paradigm in community about the importance of disaster preparedness. Before, people never knew how to address flood. Now they knew and was participating in preparedness program.”*

The use of cost of maintenance of EWS facility and operational cost of KMPB would be a joint financing by Meko and Bance Villages' Budget. This was articulated in joint Village Chief Regulation documents for Meko and Bancea Villages. The two legal documents allowed for budget allocation through village funds or other formal sources of funds for KMPB program and asset maintenance in a sustainable manner.





COMMUNICATION TRADITION, BASES FOR DEVELOPING ANTICIPATORY ACTION

**Villages of Seruni Mumbul and Labuhan Lombok,
Pringgabaya Sub-district, Lombok Timur District,
East Nusa Tenggara**

When the lead time between the arrival of a hazard and when disaster happened was short, then speed in information dissemination was crucial for saving people's lives and their assets.

1. Amateur Radio and Fishing Community

When global communication was busy fighting for a space in the internet for viral clips, people in Seruni Mumbul and Labuhan Lombok Villages, Pringgabaya Sub-district, Lombok Timur District,

East Nusa Tenggara, were busy fighting for information from amateur radio in narrow, busy and singular bandwidth. The content they were fighting for only focused on two things: (1) weather forecast for the day; and (2) coordination on the issue of fish congregation at sea. Daily lives in the two villages were tightly linked to the sea. The majority of people (90%) in the two villages were fishermen who depended on their fish catch for livelihood. This tradition was there for generations with no one remembered when it started.

No.	Hamlet	Damaged Houses (in Units)
1	Mandar	513
2	Brangtapen Asri	364
3	Sasak	439
4	Dames	253
Total		1,551

Table – Damaged houses in Seruni Mumbul Village

No.	Hamlet	Damaged Houses (in units)
1	Turigan	339
2	Jatiluhur	7
3	Banjar RT 01	3
4	Banjar RT 02	45
Total		394

Table - Damaged houses in Labuhan Lombok

Every day, from early morning to before mid-day, fishermen prepared their equipment. They prepared not only boats and nets, but also amateur radio that served as their main communication device that connected them to the land and to other boats when they were at sea.

ORARI (Indonesian Amateur Radio Organisation) became a second home for fishermen. In the middle of high and undulating waves, important messages passed through to fishermen bridging the gap between sea life and life on the land. The amateur radio brought information on weather forecast (updated regularly), so that fishermen were able to monitor weather changes in real time and strategy to face extreme condition. Communication tradition via amateur radio became more intense with climate change



and extreme weather that threatened lives. The threats was not just for those at sea but also for families in the villages.

On 14 December 2020, big flash flood came to Seruni Mumbul and Labuhan Lombok Villages. Not less than 1,551 houses in Seruni Mumbul suffered serious damages after being inundated. In Labuhan Lombok Village, it was 339 houses. The District Administrator of Lombok Timur, Sukisman Azmy stated that there were three factors causing flood in the two villages: (1) rid upstream, with hardly any trees on the hills, hence nothing absorbs water

when rain came; (2) high rainfall; and (3) thick sediment on downstream.²⁷ LPSDM assessment team found in more detail the widespread sand mining upstream. This activity worsened the natural condition significantly and increased disaster risk.

²⁷<https://portal.lomboktimurkab.go.id/baca-berita-631antisipasi-banjir-susunan-sungai-cermai-segera-dikeruk.html>, 28 December 2020 and a number of other local media in the same embankment



Floods in the last ten years in Seruni Mumbul and Labuhan Lombok Villages

Sand mining not only reduced soil's absorption capacity, but also changed the river routes to new routes without any control.²⁸

Flood indicated a change in hazard intensity in the two villages. Overflow flood from the river happened twice a year – in November and March. Then, tidal floods happened once a month during the full moon. But in the last five years, flash flood came without anyone knowing, while tidal flood happened twice monthly. Between 2012 and 2022, The Village Disaster Preparedness Team in the two villages noted that big floods happened every year with varying impacts. Within the same period, there were three flash floods with significant heavy impacts, two floods with medium impacts, and five floods with mild impacts.

28 LPSDM team and TSBD team finding showed that changes in river route *caused a number of problems: (1) potential of flash flood as river water flow became irregular; (2) river erosion, that threatened residential areas and infrastructure along the river; and (3) changed water flow, causing wider and deeper inundation. District Government of Lombok Timur regarded sand mining as an important income generation for tax purposes. See: Yunia Herawati: "Bapenda Lombok Timur Optimalkan Pajak Dari Tambang Galian C," RRI Mataram, 16 Apr 2024 <https://www.rri.co.id/daerah/637026/bapenda-lombok-timur-optimalkan-pajak-dari-tambang-galian-c> and other media.*

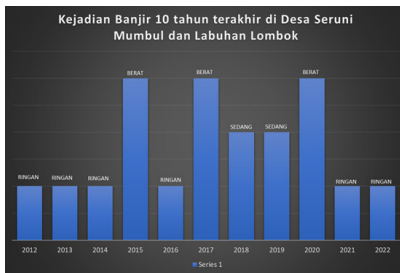


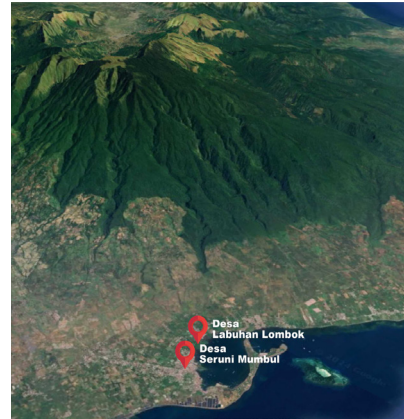
Table: Flood hazard history in Seruni Mumbul and Labuhan Lombok between 2012 and 2022 cited from the Proposal.

People and village governments in the two villages were worried about increasingly more frequent and more serious impacts of the disaster. LPSDM also felt the same concern. Everyone was asking, *“What can we do to avoid higher damages and more human lives lost?”*

2. Anticipatory Action

For LPSDM, the phenomenon confronting the two villages was not unusual. LPSDM understood the disaster anatomy and history in the area, because since 2017, LPSDM had implemented many activities to increase people’s capacity to deal with disasters, through its Climate Change Adaptation and Disaster Risk Reduction Program. It formed disaster management groups, conducted risk analysis, prepared disaster risk reduction action plans, and facilitated mitigation measures,

such as building embankment and flood-prevention gabions. However, flood in 2020 destroyed everything so quickly. People did not have access to information about the sudden hazard.



Mount Rinjani and the location of the two villages

Seruni Mumbul and Labuhan Lombok Villages were located side-by-side on the foot of Mount Rinjani and the coast of Labuhan Lombok, known for its ferry to Sumbawa. The two villages were separated by Gumbang River which was the confluence of four rivers originating on Mount Rinjani. The distance between the two villages and Puncak Jeringo Village upstream was no more than 6 km. However, the difference in elevation between Seruni Mumbul and Labuhan Lombok downstream and Puncak Jeringo upstream was 637 m. One could imagine

the rapid flow of water going down between these places when one thought about the big difference in elevation at a distance of mere 6 km.²⁹



The two villages also faced tidal flood – as their locations were bordering Alas Strait that separated Lombok Island from Sumbawa Island. This suggested that the two villages faced flood hazard from both upstream and downstream!

29 Research by BPPT (Technology Research and Application Authority) showed that the key factor triggering the flash flood was the extremely high rainfall that was more than the river capacity could handle. In addition, there as a close relationship between the flash flood and landslides that formed a embankment and blocked the river pathway. LPSPDM, TSBD Seruni Mumbul, and Labuhan Lombok assessment also found similar factor that triggered flash flood in the two villages. See: S.:” Karakterisasi bencana banjir bandang di Indonesia,” BPPT, Jakarta, 2013.

Type of Hazard	Characteristics
Origin: Factors leading to hazards or root causes of hazards.	1. High rainfall with high intensity upstream in Perigi Village and Puncak Jeringo. If there was extremely heavy rain for three days continuously and water in the embankment was full, this became the biggest trigger to the hazard 2. Water debit at embankment in Durian Utara and Kuang Banyak Hamlets in Perigi Village overflowed from water coming from Mount Rinjani
Early Warning Signs: scientific indicator(s) and local knowledge showing hazard is about to happen	Scientific indicators: Early warning of extreme weather from BMKG and SKPB Indigenous: 1. Monitoring result at Pantau Hulu post, rainfall upstream (forest of Mount Rinjani), water debit in the dam upstream, ORARI/TSBD 2. TSBD (Abah Amir) downstream looked into the mountain, if it was dark and rained heavily, he would inform the person upstream (Ustad Junaidi) on the condition of water debit upstream 3. Then monitoring post upstream gave information on water debit in Bumbang River
Triggering factors: factors triggering a hazard	See: Flash Flood Forecasting Index Table
Forewarning: Time lapse between warning signs and impact	1. In early rainy season, at the most three days after heavy rain continuously 2. In the middle of the rainy season, one day of rain upstream with high intensity was all it took
Speed of Onset: speed of hazard arriving and impacts Speed of onset and impacts since water overflowed until it reached people's houses downstream was one hour or more, via public service Announcement and handy talky in Paok Kambut and Limbungan Hamlets in Perigi Village	

Force: the force of hazards	Biggest threat was when flash flood and tidal flood happened simultaneously, particularly the biggest tidal flood happened during full moon in the rainy season (when wind blew from the west, this was the biggest tidal flood than any other time)
Frequency: How often did the hazard happened in the last ten years	Three very serious flash flood, three medium flood, and four minor flood
Seasonality: When did hazard happen in the last year	Usually at the beginning of the rainy season, midway through the rainy season, and the peak of the rainy season
Duration: How long did the hazard happen	Flash flood usually happened for 3-5 hours, but the impacts may last between 3-5 days
Scope of impacts: Areas impacted by hazard	Residential area, people's boats, Denda Seruni Eco-tourism, poultry, water sources becoming polluted, and local productivity affected
Existing mitigating measures Policies, programs	There was already TSBD, result of disaster risk analysis (including hazard, vulnerability, and capacity), fixed disaster-risk procedure, CB and regular disaster risk simulation, river embankment in Seruni Mumbul Village (75%), in Labuhan Lombok (60%)

LPSDM reflected on the hazard potential and community capacity in the two villages, and saw immense potential to avoid negative impacts of flood as the two villages had system, mechanism and tools to anticipate hazards.

LPSDM opened dialogue with key stakeholders in order to confirm whether its assumption(s) regarding the relevance of anticipatory action in dealing with disasters in Seruni Mumbul and Labuhan Lombok. This dialogue happened during a workshop on introductory concept of Anticipatory Humanitarian Action (AHA), that engaged 11 Lombok Timur District representative, Disaster Risk Reduction Forum (FPRB), the Indonesian Red Cross (PMI) in Lombok Timur, the Rinjani National Park Authority (Balai Taman Nasional Gunung Rinjani or TNGR), the village representatives and disaster preparedness team (TSBD) in the two villages, and six other villages with high vulnerability to hydro-meteorological hazards.

Participants, particularly representatives from Lombok Timur District, welcomed LPSDM initiative, because LPSDM idea matched that of the District Government policy to mainstream disaster mitigation in development planning. The District Disaster Management Authority, for its part, continued its search for a breakthrough and for tangible measures to that it could use to reduce disaster risk. That breakthrough had been practiced empirically by TSBD in the two villages when dealing with flash floods. PMI in Lombok Timur fully supported the measure, particularly in the process of evacuation and management of refuge centre when disaster happened. Indonesia Ham Radio (ORARI) provided maximum services in information dissemination to TSBDs and communities. BMKG had explicitly expressed its commitment to help the communities get information on climate and weather through SIDARMA application and info BMKG that they already developed. BMKG commitment was articulated in a Memorandum of Understanding between BMKG and LPSDM.

One aspect that BKMKG deemed important was the development of effective flash flood early warning system. BMKG advised LPSDM to prepare Automatic Rain Gauge (ARG) as early warning infrastructure upstream. ARG was very helpful in translating early action after early warning, thus allowing speedier and accurate response to hazard. ARG measured rainfall directly.



When rainfall reached an extreme category (150mm in category defined by BMKG) for example, then ARG automatically sounded the alarm as a sign for preparedness. For this reason, ARG was installed upstream where the source of hazard was. A person or people who monitored upstream situation could then provide earlier information on rainfall to TSBD team downstream. LPSDM considered ownership of radio communication and handy talky and people's ability to operate them as critical social capital to send and disseminate information on weather, but mostly for early warning.

For this reason, LPSDM urged communities, in particular fishermen and members of ORARI to be involved in TSBD team. Members of the team was tasked with broadening and intensifying communication between communities upstream and downstream. LPSDM build repeater(s) and provided extra handy talky to TSBD members, in order to broaden radio signal. The new equipment allowed radio to reach a 30km radius, allowing for good reception in Selong City (capital of Lombok Timur District), even during a bad weather. The use of handy talky eased operation

of communication system because people were able to use them in any location.

People in Seruni Mumbul and Labuhan Lombok found this communication very helpful to access early warning.

The stakeholders' response and commitment reflected good collaboration and partnership in addressing hazard and disaster. LPSDM used this momentum to speed up the process to build infrastructure for anticipatory action in the two villages as flood hazard was just days away. LPSDM, BPBD, PMI and communities then conducted a series of document review, including (a) disaster risk analysis document, (b) disaster risk action plan, (c) a review of fixed procedure for disaster management, and (d) disaster risk map.

Review of disaster risk analysis document consisted of collecting historical data, risk mapping, and analyzing factors that caused flash flood, by consistently updating data and latest development regarding human and natural resources, identifying vulnerable spots, water flow pattern, area elevation, and other factors that triggered flash flood. This review was then turned into visual presentation in the form

of risk map that provided clear picture of geographical condition and risk potential in Seruni Mumbul and Labuhan Lombok. By updating data and analyzing latest development, risk assessment became a key instrument to preventative steps and accurate response.

After key document review, LPSDM facilitated preparation of flood contingency plan using anticipatory action approach. The contingency plan explained comprehensively the actual steps as well as structure(s), roles and functions of stakeholders during activation.

All stakeholders' steps, roles and functions would automatically proceed with the activation of anticipatory action. One factor to determine activation was the attainment of agreed threshold and hazard triggers. In the two villages, agreed forecasting index was determined and prepared based on scientific standard using a variety of reference, particularly BMKG and community experience.

Table: Flash Flood Forecasting index in Seruni Mumbul and Labuhan Lombok

TRIGGERS	THRESHOLD	DESCRIPTION
A. Science: info BMKG, Signature, Nowcasting, Satellite, Radar		
Rain forecast probability >100mm/10 days	Probability >70%	Accumulated rainfall for next 10 days. Level of warning ALERT
Extreme weather early warning	3 days upstream and downstream	Extreme weather for next 3 days. Category ON-GUARD
Daily weather forecast/ impact based forecast	Minimum alert category/yellow	Weather becoming more specific every 3 hours, issued one day before heavy rain with potential for flood. Category: VIGILANT
Rain intensity upstream and downstream	>100mm	Upstream rain monitoring. Category VIGILANT
Early warning for high rainfall	100mm < 1 hour	Weather alert every 1 hour before extreme weather. Category VIGILANT
B. Local Knowledge: Direct Observation		
Heavy rain upstream	100mm> 2 hours	Heavy rain upstream
Color of Gumbang, Cermai River water	Muddy, Black-brown, dark brown	Inundation in residential area and roads up to 40-120cm

Water depth Gumbang and Cermai Rivers	Rainfall 100mm daily for 1 hour with water depth 3 m in Cermai River	Water debit in River Cermai, Tibu Batu, Puncak Jeringo very high and muddy brown
Water level and water color in river	Water depth 3m, dark brown water	Overflowing on Gumang bridge, water dark brown
Flood above river foundation	Water depth 4m	Water depth at embankment (4m from river bottom)
Water level in Cermai River, upstream Perigi Village, Tibu Batu and Bukit Jerigo	Water depth 2m	Water depth in Cermai River 3m, water black-brown
Water level in Turingan	1m	Water level above average, or water overflowed on Darek bridge
Water level in Kampung Banjar Barat	120cm	Seruni bridge, water level above bridge
Water level RT 01 and RT 02, Kampung Turingan	50cm	Ceremai bridge, or flash flood water above the bridge
Kampung Mandar RT 05	120cm	
RT 06 water level	100cm	

When the triggers and threshold were attained, then automatically the whole instruments played their roles and functions. Activator AA team assigned to check all trigger indicators decide on the activation after threshold was attained from upstream to downstream.

The activator team's task was to prepare early action protocol. This protocol included actual steps to deal with flash flood, from early warning to risk management, including evacuation, availability and procurement pattern, and

logistical distribution. One form of logistical aid in anticipatory action was cash or non-cash aid, or abbreviated as BanTu or Cash Voucher Assistance (CVA). This type of assistance was given prior to the disaster. The choice of cash or non-cash was determined by availability of financial service provider at affected location. In Seruni Mumbul and Labuhan Lombok, communities agreed that beneficiaries got vouchers that they could exchange for goods in nearest stores.



Minimum expenditure basket (MEB) was determined based on agreement with affected community.³⁰ The main objective of BanTu was to make available descent accommodation for affected communities while in evacuation centre.

This assistance was distributed in Seruni Mumbul and Labuhan Lombok when “hazard” came at 08.00 Central Indonesia Time on 9 September 2024, when fishermen were preparing their necessities for the sea, and women just finished preparing meal for the family, and children were on their way to school. Suddenly, the mosque loudspeaker asked people to head to the evacuation centre, to bring all their belonging and whatever they needed, because there would be flash flood soon.

The people on duty, wearing blue jacket, walked through the village to give people the same message, while the siren blared continuously. A number of people in orange uniform came quickly on a truck and ambulance full of stretchers and other health necessities. They told people with babies, the elderly that needed care to inform the people on duties.

Soon, all villagers observed the instruction and walked to the evacuation centre. The orange-dressed people on duty then took a number of elderly people, people with disability, and children into the truck. Others went along by motorcycles. All went quickly.

³⁰ MEB It was not easy to determine MEB and beneficiary criteria. There were a number of interests and differences in understanding of BanTu functions within the context of Anticipatory Action. These differences could only be resolved through participatory dialogue by all stakeholders in the villages.



A number of families divided tasks. Some prepared goods, and then quickly moved to the evacuation centre, others put their boats in safe places; and took their livestock in a safe place, and then they joined the rest in evacuation centre.

A number of people in military and police personnel, people in orange uniforms, and community health centre staff set up tents, spread mats, and safeguarded medical equipment. Newly arriving people helped. Others sat and asked “What just happened?”

While waiting for an answer, some elderly people had a health examination, while children were playing with people on duties, in order to prevent them from crying or being bored. There were more people on duties busy monitoring river water, from the bridge near the village to a certain elevated spot. Some were busy taking managing the traffic and helped carried staff. They were busy chatting with people or talking on the radio. By mid-day (12.00), after most people were in evacuation centre, some people on duty asked people to stay in line for their voucher, which they could exchange with needed goods in the stores. While some people seemed out of breath, they nonetheless stayed in line to get their voucher, while others waited for their family members to bring ID cards.

A number of women from Family Welfare Group and volunteers came to give drinking water and a little bit of snack just before every

one received their voucher. Yet before everyone had a chance to drink, and while some still had a bite of snack on their mouth, some people on duties in blue jacket issued an announcement through the loudspeaker, “Thank you, the simulation is over.” It was 13.00 Central Indonesia Time.³¹

3. Building from What Was Available

This pilot project was presented at the World Social Forum (WSF) in Nepal in February 2024. The Forum saw –explicitly recognized by the Foundation De France (FDF) – that the pilot project brought into visibility the social capital that grew in the community as important component, even as basis for anticipatory action development, although the anticipatory action approach was yet not known widely. It could see that the communities were able to understand this new approach. *“Presentation about anticipatory action by an Indonesian organization was perhaps the clearest and most concrete presentation in WSF workshop; this pointed to the importance of needs analysis and local community solutions,”* said Karine Meaux – Foundation De France (FDF). This was clearly visible in community participation starting from project planning. The approach used in the pilot project not only strengthened community preparedness as a whole, but also created solid relationship between government organisations, project implementer, and affected communities.³²

“I want to say that AHA project was truly interesting. It was well managed, when flood happened, it alleviated and reduce people’s burden. Target was clearly defined, so that we could learn and analyse holistically together,” said Sahri Ramli – TSBD Seruni Mumbul.

³¹ Video on the simulation can be accessed here <https://youtu.be/-LascjfbpBg?si=AUjxvZNN8XrHjY82>

³² Once pilot project was completed, Disaster Management Authority in West Nusa Tenggara issued a Disaster Management Authority Head decision No. 100.3.3 on the Establishment of Disaster Anticipatory Action Working Group on 19 June 2024. LSPDM was a member of this working group.





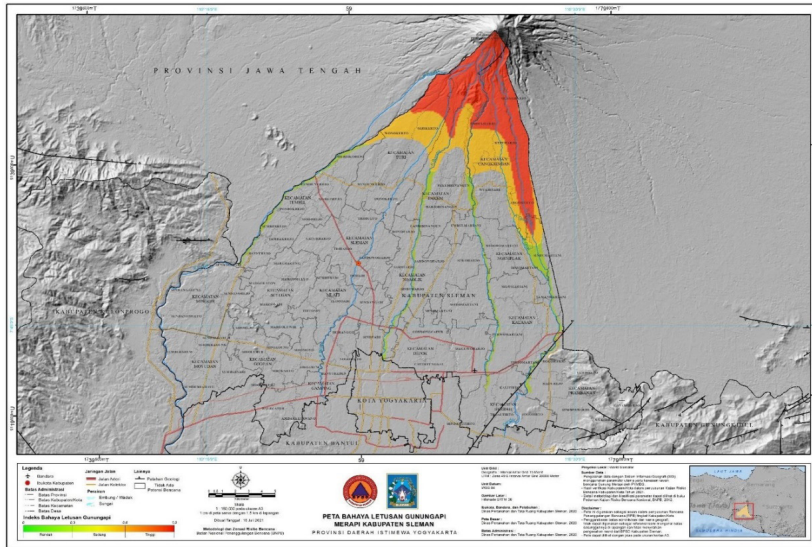
Merapi Alert Community Collaborate to Anticipate Disaster

For people living with Merapi Hazard, anticipatory action simulation was exercised regularly by all elements so that coordination and collaboration continued and completed each other

1. Merapi: Between Hazard and Bliss

Mount Merapi – or Merapi in this writing –located 56.1km north of Yogyakarta City, is one of the most active strato-volcano in Indonesia. Merapi has high and repeated potential hazard. History showed that Merapi erupted every two to five years. During a major eruption on 26 October that peaked on 5 November 2010, Merapi claimed at least 389 lives, 2,682 seriously damaged houses in Yogyakarta, and 174 in Central Java. The overall damage was estimated to be Rp. 3.62 billion, including productive economic sector (Rp. 1.69 billion), infrastructure (Rp. 707.42 million), housing

(Rp. 626.65 million), inter-sector damages (Rp. 408.75 million), and social sector (Rp. 122.47 million).³³



Yet, people in Yogyakarta had positive impression of Merapi: “Merapi never break its vows,”³⁴ even in making people prosperous. The volcanic materials (sand, rocks, and volcanic ashes) from Mount Merapi eruption were 50 million meter cubic, and they contained organic materials, principally phosphorus and calcium. People grew a variety of commodities in the fertile soil on Mount Merapi, including horticulture, fruits, coffee and tobacco, and used volcanic materials including top-quality sand. Even after the eruption in 2010, tourism industry was clearly visible and, on the increase, with new destination development, such as Teras Merapi and Klangon Hill, and new tourism activities, including Lava Tour. People’s close bond with and their love for Merapi led to a new approach and new ways to “live with disaster” - Living in harmony with Merapi!⁵

33 This was a movie title in the 80s. The film was an adaptation of a novel with the same title by Mira W. See: Caritra Indonesia: “Arti Merapi Tak Pernah Ingkar Janji yang Kembali Viral Usai Gunung Merapi Erupsi,” <https://www.caritra.org/2023/07/28/>

34 This detailed description of the approach, see Hatta Effendi: “Strategi Bermukim Living in Harmony with Disaster: Studi Kasus Masyarakat Lereng Gunung Merapi,” Reka Ruang, Vol. 4, No. 1, 2021

It became a dilemma, as population increased, and the need for land for livelihood also increased, people moved closer and closer to the centre of the eruption hazard, as people in Glagahharjo experienced. Glagahharjo was once of the villages affected by Mount Merapi eruption, particularly three hamlets – Kalitengah Lor, Kalitengah Kidul, and Srunen.³⁵ This village had an area of 795 hectares and was 4km from the top of Merapi. After the eruption in 2010, the government designated this area as a hazard zone, and people should have been relocated to a safer location. Since 5 November 2020 until this article was written, the hazard status remained as ALERT (level III). Yet, the people in Glagahharjo (4,059 people in total) refused to relocate, on many different grounds – the major ground being socio-economic. Of that number of people, 487 households or 1,398 people (including people in three hamlets) had to relocate. Yet, the National Government decided that the community could stay after strong community refusal, backed by the district and provincial government.³⁶

Not only was the location vulnerable, there was a high level of population and people with disability at high risk as illustrated in the following table.

Hamlet	Total			Disability				Vulnerable Group		
	Pop-ulation	Men	Wo men	Hear ing	Spe ech	Mental	Sen-sory	El-der-ly	Preg-nant Wom-en	Under 5 y.o.
Kalitengah Lor	544	280	264	2	0	2	0	90	9	36
Kalitengah Kidul	371	185	186	6	26	51	4	3	4	0
Srunen	483	251	232	3	40	46	2	3	0	0

Source: Assembled by YSI. Merapi Eruption Anticipatory Action Protocol, Glagahharjo Village, 2023

This part was essentially intended to highlight that people in Glagahharjo faced high risk of hazard, and that geographically, demographically, and in terms of infrastructure and transport,

35 Glagah was the name of a plant Glagah and Harjo (Raharjo) means prosperous safe.

36 This decision was articulated in a Presidential Regulation No. 70 Year 2014 on Mount Merapi National Park Spatial Plan.

they were vulnerable. Another form of vulnerability and at the same time a challenge was that Merapi was a popular tourism destination, but not many people understood the hazard posed by Merapi.

It had to be highlighted here that people in Gagaharjo had a high capacity, as shown in their experience dealing with Merapi hazards, and enjoyed supports from Sleman District and Yogyakarta Provincial Governments. Structurally, people and village government in Gagaharjo had prepared disaster mitigation and preparedness system, even at hamlet-level under the umbrella of FPRB (Disaster Risk Reduction Forum) in conjunction with a number of local community groups such as Family Welfare, Pokdarwis (Disaster-Alert Group), Karang Taruna (Youth Group), and Children Forum. Policy-wise, the Village Government of Gagaharjo had Contingency Plan document to deal with Merapi eruption, and inserted a disaster budget drawn from its village income.

The remaining challenge was how to reduce significantly the impacts of Merapi eruption. Available

technology and know-how helped in predicting Merapi eruption. Thus in many ways, the impacts could also be averted. This highlighted the importance of anticipatory action to address Merapi eruption in Gagaharjo and in other neighbouring villages.

2. Collaboration to Build Anticipatory Action Infrastructure

In the introduction to this book, YSI has found collaboration amongst six stakeholder to be vital in building anticipatory action system and instrument. This revelation came about during intensive discussion and communication via a number of platforms. The stakeholders included:

- Government: District, village, Disaster Management Authority, Social Office, Health Office, Agriculture and Livestock Office, Education Office, BPPTKG, BMKG, Village officials, Babinsa (territorial army non-commissioned officers) and Babinkamtibmas (community police officers), and the military and the police
- Academics: PSBA UGM (Disaster Study Centre Gadjah Mada University)

and PSMB UPN (Disaster Management Study Centre) UPN University

- Civil Society Organisations: YEU, Lingkar, RedR, FPRB DIY, FPRB Sleman, Tagana, Difagana, PMI, Pujiono Centre, Komunitas Siaga Merapi, and Komunitas Relawan



Involvement of all stakeholders started with a workshop to work out common understanding and view about anticipatory action and how to build an anticipatory action system and infrastructure that fit the hazard, the context, and the needs of affected communities.

As a testimony to their understanding of anticipatory action approach in disaster management, people in Glagahajo then gave a new definition of anticipatory action as: *"Tandang JogoJogo Marang Bab Kang Bakal Tumeko"* or preparedness action to deal with hazards. The workshop not only came up with common understanding and conceptual framework, it also established a consultation and coordination forum in the form of a working group known as "Sahabat Merapi" or friends of Merapi.

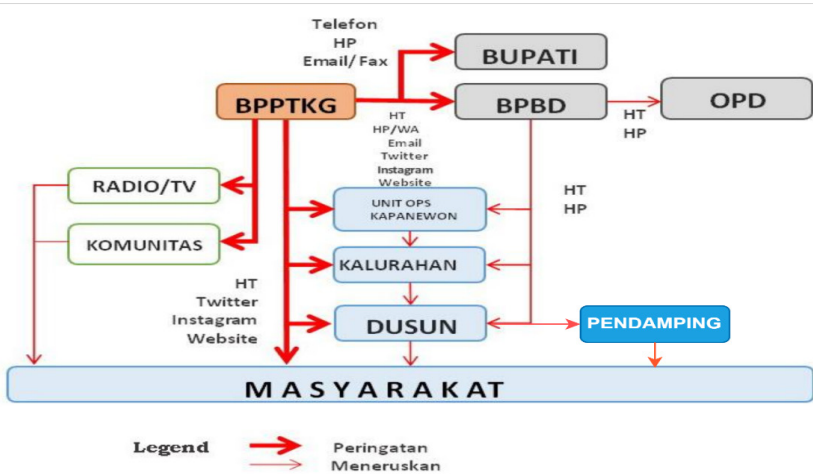
Each stakeholders expressed their commitment to participate in the implementation of the pilot project through "Sahabat Merapi" forum.

This commitment was evident in their enthusiasm for preparing subsequent action plans: (1) develop an early warning information

system, (2) anticipatory action protocol and contingency plan review, and (3) simulation.

3. Developing Early Warning Information System

The second workshop discussed early warning information system as one out of three key pillars of anticipatory action concept, with BPPTKG, Sleman Disaster Management Authority, PSMB UPN, and Glagaharjo village government and community as resource people. In early warning context, it was vital to agree on the formulation of triggers and threshold as bases for anticipatory action activation, both in terms of science and community experience. In this context, the workshop explored triggers as bases for defining status/level of Merapi activity scientifically by BPPTKG, and early warning information dissemination by Sleman District Disaster Management Authority, as well as triggers and Merapi eruption early warning based on local knowledge.



Scientific identification of early warning by BPPTKG was based on monitoring, data accuracy, and timeliness. These parameters became the bases for decision. BPPTKG presentation showed that there were a number of triggers that served as parameters in decision making regarding Merapi eruption early warning, which included lava volume on the eastern and western sides; pyroclastic density flow that came down with rain; magma push; gravity factor, and seismic-earthquake volcanic activities.

There was no exact number of triggers and threshold that could be used as justification for early warning. It was therefore essential to have the right recommendation from BPPTKG for decision making. In terms of local knowledge, village secretary (Glagaharjo) Joko Purnomo and a local community leader Riyanto presented local experience regarding signs of Merapi eruption, including visual observation of lava flow, loud noise from Merapi, increase temperature, and behavior of wild animals on Merapi, which were confirmed to formal authority – BPPTKG and District Disaster Management Authority. The following are trigger parameters based on local knowledge as agreed during the FGD.

NO.	SIGNS	FORM	FREQUENCY	TIME	POSITION
1	Loud noise	Downward flow	10x per day	30 seconds	Top/10 hamlets
2	Lava/smoke	Downward flow/ fire	8/day	5-10 seconds	1.2 km/1.5 km
3	Java eagles	Flying down and peal call	1-2 times per month	At 15.00 – 16.00	Residential area
4	Leopard, Deer, Monkey	Around residential area	Periodic	When Merapi activities intensified	Hamlet residential areas
5	Increased temperature	With sulfur smell	Periodic	As above	As above
6	Active Seismic activity via Handy Talky frequency	Wavy resonance vibration	5-10 times per day	As above	As above
7	Visual observation	CCTV at KSM Post (Teras Merapi)	Real time	24 hours	Teras Merapi
8	Volcanic ash	Thin in residential area	periodic	Wind direction	Residential & agriculture areas

Source: Focused Group Discussion (FGD) and analysis result (2023)

Based on BPPTKG parameters, local knowledge and wisdom, the triggers and threshold were formulated as follows:

- Increase in level of Merapi activity as defined by BPPTKG
- Recommendation re. safe distance of 4km towards Glagaharjo

- as issued by BPPTKG, and
- Situation deemed unpleasant by community in three hamlets, with potential high exposure and nearest location to the source of eruption (Kalitengah Lor, Kalitengah Kidul, and Srunen), that necessitated evacuation

The Merapi Eruption Anticipatory Action Protocol Preparation Team was set up after trigger parameters and threshold were agreed. The protocol helped defined:

- Who did what
- When and where, and
- How anticipatory action could be implemented.³⁷

The preparation team then prepared protocol draft to be reviewed jointly in a third workshop that also involved participating stakeholders. There were three issues in the protocol to help community evacuate: evacuation route, basic information on evacuation site, and potential necessary equipment for evacuation.

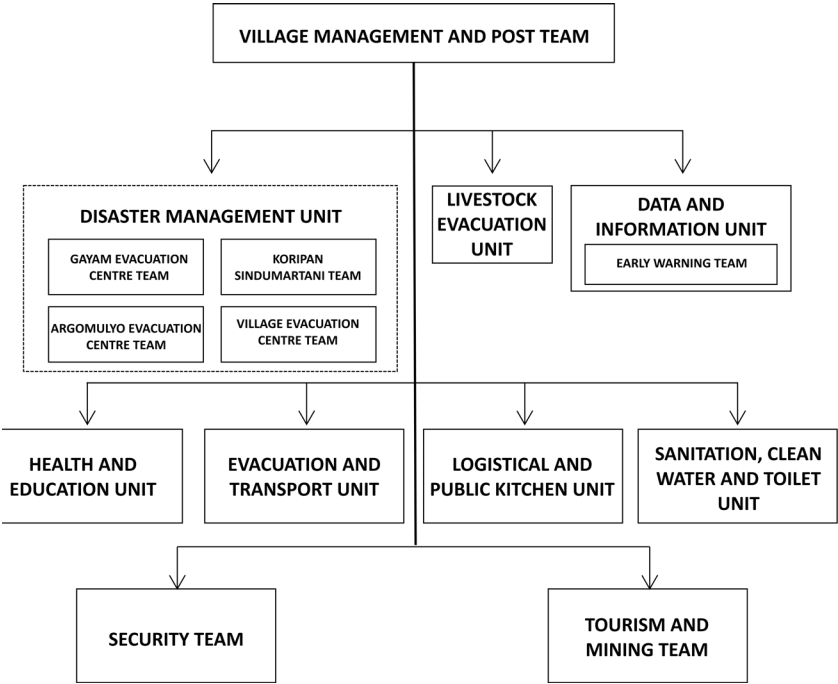
Evacuation as a form of anticipatory action in

Glagaharjo were not meant only for people but also for livestock. For this reason, the team prepared a plan for livestock evacuation and inserted it in the contingency plan. People and livestock evacuation plan was essential for ensuring safety and welfare of all individuals including those at risk, with measurable and detailed cost. Evacuation cost estimate became basis for efficient, effective and sustainable resource allocation. This was also vital basis for risk mitigation and for community preparedness.

In addition, the protocol also contained and explained: a) reposition of food logistics; b) cash and non-cash aid; and c) resource mobilization. Reposition of food logistic ensured sufficient food availability during emergency. BanTu cash and non-cash aid, for its part, helped to ensure that affected people were able to meet descent living needs. BanTu mechanism referred to the Contingency Plan document in Glagaharjo Village and Sleman District. The document explicitly stated that mobilization and use of resources during emergency were the responsibility of the logistical section within the Emergency Management Command System (SKPDB).

³⁷ See, Suparlan and Tri Sulistyowati (Eds.): *"Protokol Aksi Antisipatif Erupsi Gunung Api Merapi Kalurahan Glagaharjo Tahun 2023: Tandang Jogojogo Marang Bab Kang Bakal Tumeko,"* Sleman, December 2023.

This priority in BanTu mechanism included: equipment, communication, transport, and food. The document was then upgraded to reaffirm the roles and functions of SKPDB – who did what – including other resources outside of the SKPDB structure.



Anticipatory Action Activation and division of roles for each respective stakeholders proceeded in three stages.

A. Stage I

Key actors: PPGA, BPPTKG, and community

- PPGA informed fluctuation and increase activities of Merapi
- BPPTKG informed on the increasing level of Merapi activities
- Community informed about natural signs and shared these with BPPTKG and District Disaster Management Authority

B. Stage II

Key actors: Sleman District Management Authority, Sub-district government, and village government

- Sleman District Disaster Management Authority gave

direction to the sub-district, village and hamlet operational units while consulting with the District Administrator on early warning mechanism

- b. Chief of Cangkringan Sub-district as operational coordinator started evacuation activation and told the village chief of Glagaharjo, the hamlet chiefs, neighbourhood chiefs, and FPRB to share the information to all people in Glagaharjo
- c. Sleman District Disaster Management Authority coordinated roles of each stakeholder to help evacuation process, with respective key tasks and functions by prioritising most vulnerable groups

C. Stage III

Actors: Sleman District Disaster Management Authority, Social Office, Other District Offices, NGOs and other relevant organisations, including volunteers (KSB, Tagana, FPRB, and others).

1. Sleman District Disaster Management Authority activated the District Disaster Management Command System for coordination with all district stakeholders and supported evacuation centre(s) preparation for the community.
2. Sleman District Disaster Management Authority coordinated with relevant organisations/offices to generate all available resources as per roles and functions.
3. Sleman District Disaster Management Authority and relevant offices/organisations coordinated to generate all resources and aid during evacuation process of refugees
4. The Village Disaster-Alert Team (KSB), Taruna Siaga Bencana (Disaster-Alert Youth), FPRB (Disaster Risk Reduction Forum), and other volunteers under District Social Office guidance prepared:
 - Evacuation shelters: beds, public toilet, specific toilet (for vulnerable groups), kitchen, spaces for prayer, children playground, service area (washing, clothes lines, and others), sanitation area, love tents, and others.
 - Public Kitchen Facility included: Food warehouse, cooking area, dishwashing area, food packaging area, and so on
 - Sanitation System
 - Shelter Management Post

- Aid Management Post
 - Security Post
 - Health Post
 - Volunteer Rest Area
5. Sleman Social Office coordinated Disaster-Alert Village in buffer zone to be ready to help in Glagaharjo Village
 6. Sleman Social Office identify shelter needs in Glagaharjo and identify its logistical supply for shelter
 7. Sleman Social Office prepared mobilization plan for Disaster Alert Youth and supported shelter operation in social protection, particularly with regards to evacuation and protection clusters.
 8. Sleman Social Office coordinated with district offices, NGOs, and other relevant organisations in planning for the fulfilment of the needs of vulnerable groups.

The protocol integrated funding mechanism in order to support agreed early action plan, after review on a number of anticipatory action plan operation policies by the National AA Working Team regarding a number of disaster policy documents in Indonesia (at least there were 36 policies as references for the implementation of anticipatory action concept in policy terminology as quick response actions for early warning. The team shared the protocol and consent was obtained for the protocol to be a supporting document for the contingency plan, after a series of discussion and consultation.

Then the team conducted a review of documents to define the status of volcanic activity. In the 2020 contingency plan document, recommendation for action was based on early warning by BPPTKG when Mount Merapi status was at Level III (Alert), and people in Emergency Zone III were not allowed to do any activity, instead they were asked to prepare themselves for evacuation. At this juncture, despite Merapi level III status or Alert, people were still doing their normal activities. For this reason, the new contingency plan recommended that actions at Level II or Alert be divided into two: (1) Alert, and (2) Alert with recommendation for partial evacuation. This adjustment was also inherent in the chapter on the development of incident scenario based on monitoring data and history of incidents, assumption based on disaggregated population data updates existing infrastructure, evacuation centres,

and SKPDB structure.³⁸

The Contingency Plan review with accompanying anticipatory action led to the preparation of a scenario for anticipatory action simulation for Mount Merapi eruption.

4. Anticipatory Action Activation Simulation

In the simulation, the Merapi-Alert Community (KSM) involved village officials, representatives of community groups – i.e. family welfare group, Youth Group, Tourism Awareness Group, Disability Group and Children Forum.

³⁸ See: "Pemutakhiran Data Rencana Kontingensi Erupsi Gunung Api Merapi Kalurahan Glagaharjo, Tahun 2023."

Prior to simulation, Merapi-Alert Community conducted a number of training sessions and infrastructure inspection. Training included:

- (1) Emergency first aid
- (2) Evacuation Guideline for risk groups, and
- (3) Psychosocial supports for children

Inspection and renewal of information and communication infrastructure was done by procuring more handy talky as early warning communication and information dissemination as most effective mode in community for contingency plan. Merapi-Alert Community with its monitoring posts



in Klagon Hill and Teras Merapi, was always ready by scheduling personnel to watch Merapi directly and to report any updates on Merapi situation. Direct monitoring supported early warning information system at BPPTKG and Disaster Management Authority installed in two tourism areas – CCTV, siren and other supporting equipment. The team also installed signage for evacuation routes and meeting points in the hamlets and in two tourism areas in Glagaharjo – Bukit Klagon and Teras Merapi. They also set up information boards and voice messages in the two tourism areas.

“Remember! This tourism object is in Disaster Zone III or zone with a distance of 4-6km from the top of Mount Merapi that faced hazards such as pyroclastic cloud and lava flow. In the event of Mount Merapi-related emergency, visitors must immediately leave the tourism area, follow the instruction given by the management, and/or follow the evacuation signs directing you to move away from the top of Mount Merapi and from Gendol River.”

The team expected that information boards and repeated voice messages helped visitors, mostly from outside Yogyakarta Province and not familiar with risk information, Merapi status or situation, to become more alert and ready should emergency occurred. All stakeholders in Glagaharjo, mostly integrated into Merapi-Alert Community (KSM) took part in SKPDB during simulation process. Under the command of Joko Purnomo (village secretary – Glagaharjo) and Heri Prasetya, the simulation process proceeded based on prepared scenario. The simulation started with coordination of all key stakeholders so that they remembered their specific roles. Rambat Wahyudi (head of Merapi-Alert Community and Evacuation Team Coordinator) explained the simulation proceeding and division of tasks at each points. Meanwhile, other stakeholders, such as Sleman District Disaster Management Authority, BPPTKG, Social Office, Health Office, Tagana (Disaster-Alert Youth), Volunteer Forum, and representatives of a number of

civil society organisations were involved in data collection, and site preparation and logistical distribution at evacuation centre behind Glagaharjo Village office.

BPPTG information: “There was pyroclastic cloud # Merapi at 02.46 West Indonesia Time on 19 December 2023. Northerly wind direction. Maximum flow distance 4,500m to the southeast (Gendol River). People are advised to stay away from hazard zone.”

The village chief and KSM members received this information through short message and radio communication. They followed this up by sharing information on Merapi situation. They informed via main KSM information centre that there were at least eight times the pyroclastic cloud flowed down to the northerly direction in Glagaharjo.

The village chief conducted an emergency meeting with the disaster management unit in Glagaharjo at 07.15, and decided to activate the disaster emergency command. The team immediately started initial steps in emergency

procedure as articulated in the contingency plan. The village chief had shared the update with the head of Sleman Disaster Management Authority, and the decision of the emergency meeting and the activation of command post in Glagaharjo. The village chief also contacted the sub-district chief of Cangkringan and the head of Cangkringan Security regarding the same issue. The village secretary of Glagaharjo as the day-to-day manager of the command post asked the Logistical Unit and KSB to share the update of the situation with the Social Office through KSB in order to prepare logistics for affected people. The alert team was on stand-by at respective posts as stipulated in the procedure.

By 13.00, the village chief arrived at Teras Merapi Monitoring Post, while the village secretary and the village security officer were at the village office and the hamlet chiefs were at their respective hamlet office. By 14.00, the Teras Merapi post observed pyroclastic cloud moving towards Kendil Hill. The village chief coordinated and activated the limited



evacuation procedure through radio, and ordered the village secretary to follow that up.

The village secretary: *"Chief of security, are you monitoring..."*

The chief security: *"Yes, sir. Do you have an order for me?"*

The village secretary: *"An order from the village chief, prepare limited evacuation immediately. Pyroclastic cloud just came down to the southeast, fairly big, and potentially reaching the northern part of Glagaharjo."*

Village security chief: *"Yes sir. Updates shared immediately. Kalitengah Lor, Kalitengah Kidul, and Srunen Hamlet chiefs...are listening..."*

Kalitengah Lor Hamlet chief: *"I am listening sir. What is my order?"*

Kalitengah Kidul chief: *"I am listening sir. What is my order?"*

Srunen Hamlet chief: *"I am listening sir. What is my order?"*

Security chief: *"The village chief order...Prepare limited evacuation steps, coordinate with evacuation team. Announce to the people in your respective hamlets, do not panic, do what the procedure says and keep people safe."*

Hamlet chiefs: “Yes sir.”

What followed as a coordination of evacuation team with hamlet chiefs and personnel in charge of evacuation point. Radio coordination continued to ensure evacuation process run smoothly.

The evacuation simulation involved more than 500 people from three hamlets. There was also simulation of aid distribution at the same time through non-cash (BanTu) or cash-voucher assistance (CVA) for 250 household beneficiaries prioritized as risk groups. The post office, as designated financial service partner, facilitated the distribution process after feasibility assessment.



In the feasibility assessment, YSI found that BanTu or Cash Voucher Assistance (CVA) became effective and efficient aid distribution modality time-wise. This was related to limited lead-time from activation of anticipatory action to just before disaster strike. BanTu was deemed more dignified because it gave beneficiaries the authority to use the aid as they needed.

Agreed BanTu implementation guideline at BanTu cluster or Taskforce, the size of aid during humanitarian response was adjusted to match the minimum expenditure basket (MEB). Yet, in the context of simulation, each beneficiary received Rp. 150,000 as agreed during information dissemination.

The distribution process took place in three sites – the meeting points in each hamlet. The post office staff did the distribution and data verification fairly quickly with the help of neighbourhood officials. Every beneficiary had to show copies of their ID card and Family card. Then, they received vouchers as an invitation and verification instrument for aid disbursement.

Selection of beneficiaries happened from the beginning of pilot project implementation

through in-depth assessment. The objective was to get disaggregated data as basis for decision on beneficiaries, with criteria agreed upon by YSI and village government. Beneficiary selection proceeded in a participatory manner involving stakeholders in each hamlet, based on criteria such as: (1) poor household, (2) with household members deemed high risk, such as people with disability, under-five year old children, elderly people, and pregnant women, and (3) female-headed household.

After aid distribution, there was another verification and monitoring to ensure that aid was on-target and used as intended. On-site distribution monitoring (ODM) showed that all respondents said that the amount of aid matched the information given them.

Answering the monitoring question: *“If they were asked to choose aid given to them, what would that be – money or good?”* They preferred money.

Other process in BanTu implementation included market assessment and financial service provider that continue to operate under emergency situation. YSI did this before deciding to engage in a partnership with the post office.

5. Knowledge that needed Testing

At the end of project period, YSI and Merapi-Alert Community and Village Government of Glagaharjo conducted a project evaluation and post-simulation. The evaluation was critical to get feedback from all stakeholders, despite feedback being shared in every activity. The team responded well to every feedback and input.

There were at least 51 feedback during the implementation of this pilot project, including inputs, criticism or advice, questions, plea for information, and appreciation. Kalitengah Kidul hamlet chief, Jamin gave one feedback during initial project workshop: “With regards to wctivity time, it is better to be after 15.00 because people have regular activities to milk the cows and feed the livestock.” YSI acted on that feedback by making sure the activity agenda involving the community should always proceed through consultation on scheduling so that the activities did not disturb people’s regular activities.

With regards to the simulation process, the Evacuation Team coordinator, Rambat Wahyudi offered his criticism because the Bantu distribution process, particularly in Kalitengah Lor Hamlet, was late: *“In general, the simulation process proceeded well. But the BanTu distribution delayed the process, because people who were supposed to go to the evacuation had to wait.”* This was a critical point, because the speed of evacuation process was key to saving lives and community assets, so that mechanism and distribution time had to be prepared well and be coordinated.

There were a number of inputs for improvement in evacuation simulation, including: time and preparedness of officials in BanTu distribution had to be spot-on (on-time); transport mode(s) and evacuation centre(s) had to be prepared to meet basic needs and security of people, particularly high risk groups.

At the end of the evaluation, village chief of Glagaharjo declared: “Glagaharjo community had often had disaster training. The simulation yesterday was to test our preparedness. As community living with Merapi eruption hazard, we need not only theory but to set aside an agenda for simulation on a regular basis involving all parties so that we could coordinate well.

TERMS

AA	Anticipatory Action
AHA	Anticipatory Humanitarian Action
APG	Pyroclastic Cloud
API-PRB	Climate Change Adaptation-Disaster Risk Reduction
ARG	Automatic Rain Gauge
ASF	African Swine Fever
AWLR	Automatic Water Level Recorder
Babinkamtibmas	Community Police
BanTu	Cash and Non-Cash Aid
BMKG	Meteorology, Climatology, and Geophysics Office
BNPB	National Disaster Management Authority
BPBD	Provincial/District Disaster Management Authority
BPPTKG	Geological Disaster Technology Research and Development Office
CCTV	Closed-Circuit television
CSR	Corporate Social Responsibility
CVA	Cash Voucher Assistance
DBD	Dengue Fever
DD	Village Funds
DESTANA	Disaster-Resilient Village
DIFAGANA	Disaster-Alert People with Disability
DIY	Yogyakarta Special Province
ER	Emergency Response
EWS	Early Warning System
FGD	Focused Group Discussion
FPRB	Disaster Risk Management Forum
FSP	Financial Service Provider

FSPA	Child Protection Stakeholder Forum
GAW	Global Atmosphere Watch
GEDSI	Gender Equality, Disability and Social Inclusion
HH	Household
HOIFA	Humanitarian Operation and Innovation Facility
HT	Handy Talky
KK	Household
KM	Kilo Meter
KMPB	Disaster Management Community Group
Konsorsium SMART	Sumatra Assessment and Response Network Consortium
KRB	Disaster Risk Analysis
KSB	Disaster-Alert Village
KSM	Merapi-Alert Community
KTP	Identity Card
LPSDM	Partner Development Organisations
LSM	Non-Government Organisation
MEB	Minimum Expenditure Basket
MISMA	Minimum Standard for Market Analysis
mm	millimeter
MoU	Memorandum of Understanding
NGO	Non-Governmental Organisation
NTB	West Nusa Tenggara
ODM	On-site Distribution Monitoring
OPD	District/Provincial Office
ORARI	Indonesian Inter-Radio Organisation
PAD	Village Revenue
PB	Disaster Management
PDB	Disaster Emergency Management

PDM	Distribution Monitoring Post
PERMAKADES	Joint Village Chief Regulation
PKK	Family Welfare Group
PKPA	Child Study and Protection Centre
PLTA	Water-Generated Electricity Facility
PMI	Indonesian Red Cross
PRB	Disaster Risk Reduction
POKDARWIS	Tourism-Aware Group
POLRI	Indonesian Police
PPGA	Volcano Observation Post
PPGD	Emergency First Aid
PSBA UGM	Disaster Study Centre Gadjah Mada University
PSMB UPN	Disaster Management Study Centre University of National Development
PT	Limited Liability Company
RAPI	Indonesian People's Amateur Radio
RENKON	Contingency Plan
RT	Neighbourhood Block
RW	Residential Block
SIDARMA	Independent Weather Radar Data Integration System
SKPDB	District/Provincial Working Unit
SOP	Standard Operational Procedure
TAGANA	Disaster-Alert Youth
TNGR	Mount Rinjani National Park Office
TNI	Indonesian National Army
UMR	Provincial Minimum Wage
UN-OCHA	United Nation – Office for the Coordination of Humanitarian Affairs
WIB	West Indonesia Time
WSF	World Social Forum

YEU	Yakkum Emergency Unit
YPM	Yayasan Pelangi Maluku
YSI	Sheep Indonesia Foundation

ABBREVIATION

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AHA	Anticipatory Humanitarian Action
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API - PRB	Climate Change Adaptation – Disaster Risk Reduction
ARG	Automatic Rain Gauge – equipment to measure and record rainfall automatically
ASF	African Swine Fever
AWLR	Automatic Water Level Recorder
Babinkamtib-mas	Community Police
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