

CASE STUDY

INDONESIA 2018–2020 / EARTHQUAKE

KEYWORDS: Coordination and partnerships, Disaster Risk Reduction, Transitional shelter

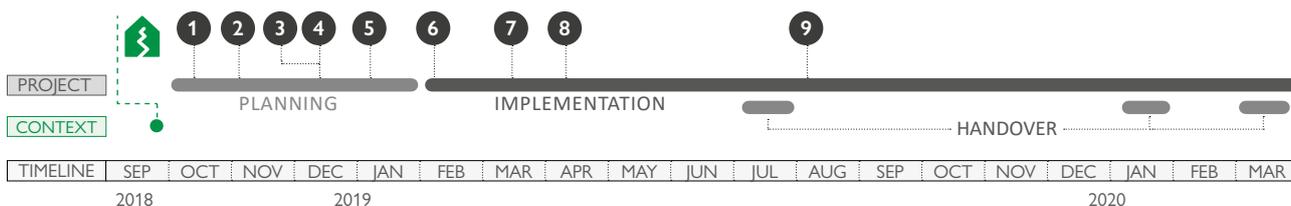
CRISIS	Earthquake, Tsunami, Liquefaction, and Landslides, 28th September 2018
PEOPLE AFFECTED	181,413 people*
HOMES DAMAGED/ DESTROYED	68,451 homes*
PEOPLE WITH SHELTER NEEDS	100,118 HHs*
PROJECT LOCATION	Lombonga Village, Balaesang Sub District, Donggala District, Central Sulawesi
PEOPLE SUPPORTED BY THE PROJECT	1,959 people
PROJECT OUTPUTS	527 transitional shelters built 383 individual toilets built Water supply access for 500 families 80 rubble removal kits 262 participants engaged in DRR workshops
SHELTER SIZE	18m²
SHELTER DENSITY	4.5m² per person
DIRECT COST	USD 935 – USD 972 per shelter
PROJECT COST	USD 1,300 per HH



PROJECT SUMMARY

In partnership with a local community organization, this project supported the recovery of community members in Lombonga village, Central Sulawesi through the construction of transitional shelters, toilets, and community buildings. The project also had a strong DRR component, building community members' awareness and capacity on disaster mitigation through the Participatory Approach for Safe Shelter Awareness (PASSA) and Community Based Disaster Risk Management (CBDRM) trainings.

* Source: National Disaster Management Agency (2019)



28 Sep 2018: Major earthquakes, the largest with a magnitude of 7.4, struck Central Sulawesi, triggering a near-field tsunami, major liquefaction, and landslides.

- 1 **7 Oct 2018:** Rapid Response Team assignment.
- 2 **21 Nov - 19 Dec 2018:** Project location assessment.
- 3 **Dec 2018:** Construction worker training and material procurement began.
- 4 **Dec 2018 - Mar 2019:** Family selection.
- 5 **Jan 2019:** Partnership and agreement with Community Post for Disaster Response, *Pos Masyarakat Penanggulangan Bencana*.
- 6 **Feb 2019:** Distribution of Community Rubble Removal kits.
- 7 **Mar 2019:** Transitional shelter design and construction of model shelters in 6 hamlets.
- 8 **Apr 2019:** Construction of transitional shelters began.
- 9 **Aug 2019:** Trainings and Workshops on Disaster Risk Reduction.



The project supported household and community level recovery following the earthquake.

CONTEXT

A magnitude 7.4 earthquake struck Central Sulawesi Province on September 28, 2018 around 6pm local time, affecting four Districts (Palu City, Donggala, Sigi and Parigi Moutong). A 6-meter tsunami followed the earthquake and flattened homes and buildings in the coastal areas of Palu City and Donggala. The earthquake triggered soil liquefaction in the sub-district of Balaroa and Petobo in Palu City and also caused landslides and mudslides in other districts.

The project targeted Lombonga Village, which is located on the southern coast of Balaesang Subdistrict. Lombonga Village is divided into six hamlets. The main livelihoods in Lombonga are fishing and farming. There has been a trend of migration out of the area, causing a reduction in the population. Most homes prior to the disaster were built from concrete blocks but did not meet construction standards – for example did not include reinforcement bars – which led to high levels of destruction.

SITUATION AFTER THE EARTHQUAKE

After the earthquake, 90-95% of homes in Lombonga were either severely damaged or completely destroyed. The 6pm earthquake occurred after a smaller one at about 3pm which served as a warning, giving people time to flee to the surrounding hills before the larger earthquake hit. Lombonga Village experienced a major earthquake in 1968 and villagers heeded the advice of village elders to immediately run to higher ground in the case of an earthquake. Therefore, despite the severe damage, the casualties were relatively few. The community took refuge in the hills surrounding the village for between 2 weeks to 3 months in makeshift shelters. On returning to the village people set up makeshift shelters on their plots or in open spaces.

NATIONAL SHELTER RESPONSE

Following the disaster, the Indonesian Government's National Disaster Management Authority (BNPB) issued guidance on the involvement of foreign aid workers and international organizations, stating that all activities needed to be conducted through local partners, and that organizations needed to be registered with government agencies.



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Support from INGOs that were already registered as national entities was allowed. Support from NGOs and INGOs was coordinated through BNPB. The Ministry of Social Affairs (MoSA) facilitated the Shelter Sub-Cluster, coordinating more than 100 organizations that built temporary shelters in Central Sulawesi. The project involved local government from the beginning of the process, and the organization received a letter of recommendation from Donggala district giving the go-ahead for the implementation of this project.

PROJECT APPROACH

The organization's Rapid Response Team conducted assessments that identified Lombonga Village as being a very remote area that was not already receiving aid from other shelter organizations. The project took a participatory approach and aimed to address the immediate needs for secure and safer shelter, and access to clean water and sanitation.

The project involved multiple components:

- Rubble removal support – through providing community rubble removal toolkits;
- Transitional shelter construction;
- Construction of toilets;
- Construction of community infrastructure – such as the clean water provision through 4,500 meters and village meeting hall building; and
- Disaster Risk Reduction - The project organized community empowerment training on disaster preparedness through Participatory Approach for Safe Shelter Awareness (PASSA) and Community Based Disaster Risk Management (CBDRM) trainings.

For transitional shelter construction, the organization procured the materials for construction directly and mobilized and trained local construction workers. Direct procurement was done as local suppliers did not have the capacity to provide enough materials, so bulk purchasing was needed.



The project involved multiple components, including rubble removal support to help with the clearing of family plots.

COMMUNITY ENGAGEMENT AND COLLABORATION WITH PMPB

In a disaster response, usually the organization would form a community reconstruction committee. In Lombonga however there was an existing community group – the Community Post for Disaster Response or *Pos Masyarakat Penanggulangan Bencana* (PMPB) – formed by a group of local volunteers who were specialized in community organizing. Therefore, it was decided to maximize the role of PMPB in the project rather than forming a new reconstruction committee.

PMPB's role included leading the household selection process; involvement in the distribution of construction materials; facilitating communication between the organization, the community, and mason groups during construction; and taking care of the administration of households. Standard criteria, regulations and guidelines were developed for the selection process.

The initial approach had envisioned that PMPB could also support with quality control of construction work in collaboration with the implementing organization. However, there was a limited number of technical staff in PMPB as many community members with construction skills preferred to engage in the project as contractors or material suppliers, and so could not then also be involved in PMPB with quality control as this would be a conflict of interest. Therefore, the organization staff took on this role.

The project provided an initial orientation to staff which included orientation on child protection, conflict of interest, safety & security, and internal organization policy on Protection against Sexual Exploitation and Abuse (PSEA).

Initial meetings were held with different groups in the community, including the village and hamlet governments, other village institutions such as the Village Consultative Body (BPD) and Community Empowerment Office (LPM), and community-based organizations. Throughout the project the organization and PMPB engaged with community members to gather their input and feedback.



Community meetings were held throughout the project to discuss project scope, progress, challenges and solutions.

TARGETING

To set the selection criteria, the project involved the community members and community leaders through several meetings. The agreed selection criteria were:

1. Owners of houses that were completely destroyed or severely damaged.
2. Vulnerable groups were prioritized, namely the elderly, widows/widowers, female headed households, larger families, and Persons with Disabilities.

PMPB provided information regarding the affected families and conducted joint verification together with the project team, and gave feedback to families on whether they were eligible or not. Public verification of household selection was carried out, with lists of households posted publicly. Community members could file their complaints directly to the project office, individually or collectively.

SHELTER DESIGN

The initial transitional shelter design was adapted from another project in Sigi District. The shelter was 18m² and consisted of a light steel frame with 1m of hollow block and silica board above for the walls. The overall height of the shelters were 3m, and including the zinc roof, the shelters were approximately 4.5m tall, complete with wooden doors and windows.

Although light steel was an unfamiliar construction material in the community, it was considered to be the most appropriate option as it is durable, a widely used construction material in Palu city (three hours drive from the project location), and the use of timber in Central Sulawesi was not allowed due to environmental reasons. It was also considered that training construction workers on using light steel could provide new skills and livelihood opportunities beyond this project.

The project conducted community meetings to get community member's input into the design. For some families, the designs were also adapted to support the specific needs of Persons with Disabilities. The project also accommodated the community's wishes to expand and improve the quality of buildings at their own expense without changing the existing design. The project disseminated information about the designs by posting them in places that were easily seen by community.

SHELTER CONSTRUCTION

The safety of family plots was considered in relation to risk mapping. Shelters were mostly built on the original plots on or next to the location where the family's home had been. In general, there were no land ownership issues encountered during this project as the previous land boundaries were still clear following the disaster. The project provided 80 community rubble removal kits to ensure that plots could be cleared ahead of construction beginning.

The project engaged with local suppliers as much as possible, particularly for cement bricks, sand, cement,

doors and windows. However, many other materials such as calcium silicate board, light steel and metal sheeting for the roofs needed to be bought in bulk from large suppliers in Java.

As steel frame construction was not very familiar to the community, trainings were carried out with construction workers to build up their skills and experience. Six model shelters were constructed – one in each of the six hamlets – to demonstrate the construction process and to enable community feedback on the design. The model shelter construction helped the community to assess challenges in every construction stage, and worked as an on-site training to introduce steel framing technology. Each experienced construction worker was assisted by three or four workers, while a technical team or project construction supervisor provided the much-needed technical guidance, supervision, and quality control.

Each family received building materials and the organization directly engaged local construction workers on the households' behalf to build the shelters. In some cases, where household members themselves had the skills and experience to construct their own shelters, the organization paid the household the equivalent amount to the amount that would have been paid to construction workers. In all cases, construction works were supervised by organization staff.

DISASTER RISK REDUCTION

PASSA workshops were held with participants from the six hamlets. Participants included local government representatives, community leaders, women, Persons with Disabilities and youth.

The PASSA group identified that their community had 12 hazards which they are susceptible to: earthquakes, landslides, coastal abrasions, epidemic, theft, fire, drought, poor or failed harvest, floods, windstorms, tsunamis, and social conflict. They identified 32 projects or activities to improve their resiliency to these hazards. Among the 32 projects/activities identified, the group selected two priority projects as they addressed multiple hazards: 1) increasing community awareness and capacity on disaster mitigation, and 2) identifying safe evacuation routes and assembly points. These two actions were considered as urgent and followed by four activities; CBDRM training, assembly point identification in six hamlets, evacuation sign installation in 30 locations, and emergency/evacuation training by local fire fighters and the disaster management agency.

A Community Action Plan was developed by participants of the PASSA sessions. The PASSA group also recommended that training be conducted on safer construction so that the community has the knowledge and capacities to build houses that meet the building codes and quality standard. In addition, they also included actions to build retaining walls to anticipate cliff landslides and sea walls for abrasion prevention.



The project engaged local suppliers as much as possible for the production of materials that could be made locally, such as concrete blocks, doors and windows.



PASSA workshops involved identifying hazards that the community was vulnerable to and developing practical plans and actions for increasing resilience.

EXIT/HANDOVER

The four months of PASSA and CBDRM workshops prior to project completion were a crucial part of the exit strategy. Through a series of activities, the community identified the hazards that exist in their environment, mapped hazard prone areas, prioritized threats based on the magnitude of the impact and frequency and hazards, identified possible solutions to be done, developed plans of changes, developed monitoring and evaluation plans, and planning for how to maintain their shelters and other community facilities. These activities involved a lot of stakeholders such as local government representatives and village organizations, such as women's and youth groups.

Households signed handover letters and a symbolic handover ceremony was held to mark the closure of the program in Lombonga Village. The ceremony turned into a village festival and was predominantly organized by community members themselves.

MAIN CHALLENGES

Limited local capacity for material production. The procurement approach for the project was adapted due to some materials being unavailable locally due to high demand, and vendors for other materials (such as blocks, doors and windows) having limited capacity to scale up production. The project ended up procuring some materials locally and bulk buying others from Java.

Multiple delays to originally planned procurement and construction processes. A large delay was created by the project planning not considering harvest time, as the clove harvest took 14 weeks, during which time the majority of the community needed to focus on clove harvesting and drying rather than on the project. Additionally, damaged infrastructure, such as the reduced number of operational cranes to unload materials at the port created procurement delays. Also, the organization's centralized payment system that required all construction workers to open a bank account, created further delays.

Lack of familiarity with light steel construction. This was identified at the start of the project and trainings with construction workers on construction of the transitional shelters was undertaken. However, the lack of familiarity resulted in shelters taking a longer time to complete, and more supervision time being required to supervise and teach the construction workers how to fix the works that did not meet the quality standard. To address this challenge, the project conducted trainings for the construction workers specifically on light steel construction skills.

OUTCOMES AND WIDER IMPACTS

Personalization and adaptation of transitional shelters. The project gave opportunity for households to choose the shelter layout. Some were elongated, while others were widened, depending on the shape of the plot. Each shelter's position was designed with the future plan of each family in mind, since they may want to expand the shelter or later build a permanent house. The shelters were also painted in different colors, chosen by each inhabitant. The variations in design, layout, and color, added dynamics to the village of Lombonga. The shelter quality increased the sense of security and permanency among households who considered the transitional shelter just as good as a permanent house, and some had already added room extensions and terraces. Approximately 20% of households modified their shelters to support home based enterprises such as grocery stalls, sewing, and electronics repairs businesses.

The project also **improved the local economy due to cash circulation** inside the village as well as **the creation of new livelihood opportunities directly related to the shelter program** such the production of hollow blocks, doors and windows.

The project activities made **social cohesiveness stronger**. The PASSA workshops resulted in greater awareness of hazards and a **Community Action Plan** being developed by the group, outlining steps to how the village can become more resilient. The community used the same PMPB structure to manage other projects from other NGOs that focus on livelihoods, child protection, education and later the government permanent housing program. After the project completion, **PMPB managed to grow its capacity** and mobilize resources to respond to flood disasters in other sub-districts.



One of the wider impacts of the project was related to livelihoods and economic recovery. Approximately 20% of households modified their shelters to support home based enterprises such as grocery stalls, sewing, and electronic repair businesses.

STRENGTHS, WEAKNESSES AND LESSONS LEARNED

STRENGTHS

- √ **Local partnerships and sustainability.** The collaboration between the project team and PMPB was key to the success of the project. Good relations were built through intensive communication to create an atmosphere of trust. Through the project, PMPB was able to strengthen its capacity as an organization.
- √ **Participatory approach to community engagement.** The project applied the principle of “community empowerment through community-based intervention”. The organization collaborated with local village institutions, and took a transparent and accountable approach, involving the community in every stage of the process.
- √ **Personalization and adaptation of transitional shelters.** The project built in flexibility for the adaptation of the shelter design to meet the specific needs to household members, for example through enabling adaptations for home-based enterprises and considering the needs of Persons with Disabilities. The approach also enabled households to adapt the shelter so that it could best fit in with their intentions for recovery, for example in adapting the shape and where on their plot the shelter was sited.
- √ **Livelihoods support.** The project recruited local staff from the community and created livelihood opportunities in material production and shelter construction. The shelter handover was also an important moment for some families who could then re-start their home-based enterprises.
- √ **Strong focus on DRR.** Through the PASSA and CBDRR workshops, DRR was a strong focus of the project, supporting community members to identify hazards and to plan for how they can become more resilient to the hazards faced.

WEAKNESSES

- × **More could have been done to involve women.** Although the project took a community-focused approach, more could have been done to design project activities in a way that better supported women’s involvement. For example, the project encouraged more women to get involved in the PASSA workshops, but because the workshops were held in the evenings, not many women could join the workshops as they needed to take care of their children.
- × **Project planning didn’t consider harvest time.** The clove harvest took 14 weeks, during which time most of the community weren’t available to be involved in the project as they needed to prioritize clove harvesting and drying. The project failed to identify this in its assessments and so had not accounted for it in project planning.
- × **Delays caused by centralized payment system.** There was a construction delay of one month because the organization put in place a central payment system which required all construction workers to open bank accounts if they did not already have one. This took time due to the rural location.
- × **Lack of budgeting for construction tools.** Many masons who were engaged in the project owned a limited number of tools which created delays. The project had not included money in the budget to support with procuring additional tools for workers to support the scaling up of works.

LESSONS LEARNED

- **The need to develop capacity building of existing local community organization like PMPB.** A strength of this project was the partnership with PMPB. Partnerships should look to maximize capacity building of existing local community organizations, as existing local organizations deserve the opportunity to grow and develop.
- **Anticipating delays and contingency planning.** This is partly about ensuring that factors such as seasonal calendars for harvests etc. are fully taken into consideration in project planning. Additionally, there is a need to ensure for contingency planning to reduce the impacts of delays or unforeseen circumstances.
- **Integration of proactive livelihood and market support.** Local market capacity to produce certain materials at scale can be supported through proactive support to small-scale material manufacturers. For example this could be through grants to increase capacity of production, and training and support on how to scale up a business to support sustainable livelihoods.