SHELTER PROJECTS

ASEAN SHELTER EXAMPLES: 31 Case Studies

CASE STUDIES OF HUMANITARIAN SHELTER AND SETTLEMENT RESPONSES IN ASEAN MEMBER STATES

Global Shelter Cluster
ShelterCluster.org
Coordinating Humanitarian Shelter

Shelter Projects - ASEAN Shelter Examples: 31 Case Studies

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All case studies are available online from www.shelterprojects.org

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Approximate prices are given in US Dollars (USD), based on exchange rates around the time of the project.

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INTRODUCTION

This booklet is a compilation of case studies of humanitarian shelter responses in the Association of Southeast Asian Nations (ASEAN) member states, compiled from the six past editions of the interagency publication *Shelter Projects*. The series of publications, initially led by IFRC, UNHCR and UN-Habitat, is now a Global Shelter Cluster product and includes contributions from over 300 shelter practitioners from across the world, from over 50 organizations and over 70 countries, including host governments' shelter responses.

The projects described in the case studies and overviews contained in this booklet represent responses to conflict, natural disasters and complex crises, demonstrating some of the implementation and response options available within the ASEAN context. These include collective centre upgrade, tents and emergency shelter support, cash-based interventions, housing repairs and coordination, often coupled with technical assistance.

The publication is intended to support learning by highlighting the strengths, weaknesses and some of the lessons that can be learned from different projects, which try to maximize emergency funds to safeguard the health, security and dignity of affected people, whilst – wherever possible – supporting longer-term shelter needs and sustainable recovery.

The target audience is humanitarian managers and shelter programme staff from local, national and international organizations at all levels of experience. *Shelter Projects* is also a useful resource for advocacy purposes, showcasing the work done by the sector, as well as for research and capacity-building activities.

All case studies and overviews contained in this booklet, as well as from all editions of *Shelter Projects*, can be found online at:

www.shelterprojects.org

B.4 Indonesia - Aceh - 2004 - Tsunami and earthquake

Case study: Shelter or housing?

Project type:
Emergency non-food item distribution
Land rights advocacy
Housing

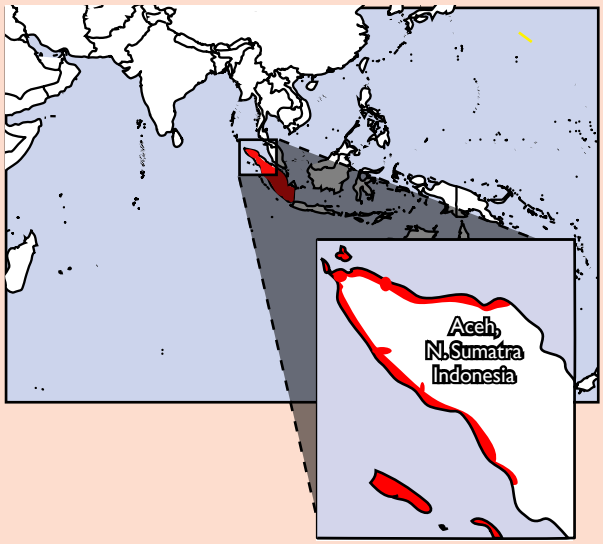
Disaster:
Earthquake followed by tsunami

No. of houses damaged:
252,000 destroyed or partially destroyed, all within 5km of the coast

Project target population:
1,564 houses created in 28 villages in seven regions

Occupancy rate on handover:
95%, compared to 79% for all of Aceh

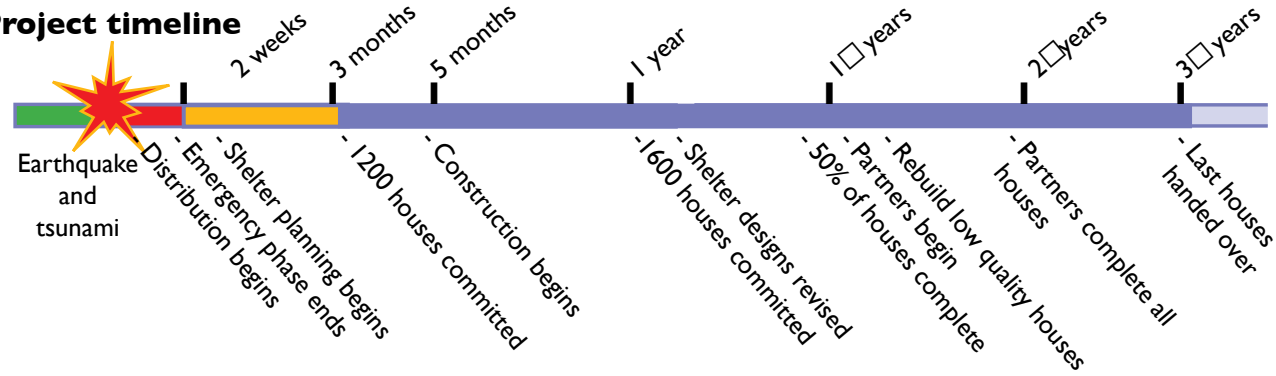
Shelter size
36m^2 per family, all with additional water/sanitation facilities



Summary

This programme began with the concept of community-built, 'transitional' timber-framed shelters, managed and implemented by the community over a period of months. Due to the challenges in procuring legal or sustainable timber, local politics, the availability of significant funds and the number of other NGOs working in the area, the project evolved into a programme to build houses made from reinforced concrete and brick. The programme lasted over three years. Towards the end of the programme, many of the shelters were built by partner organisations.

Project timeline



Strengths and weaknesses

X The project was able to adapt from community-built transitional shelters to durable houses constructed by implementing partners and contractors.

X There was success in negotiating land for families displaced by the conflict and affected by the tsunami.

X Lessons were learned from mistakes made by other organisations. The large budget allowed mistakes to be rectified.

W Major structural changes were made to the house designs without full consideration of the logistical, technical and managerial implications.

W It was not possible to get the right quantity and quality of materials as a result of a huge demand.

W Unrealistic expectations were raised among beneficiaries. This led to challenges with community relations during the programme. Because of the budgets available to NGOs there was competition for beneficiaries and communities. Beneficiaries had a choice of organisations and designs.

W Lack of management staff available with experience of construction projects led to an unexpectedly large amount of management time being required.

W The phrase 'building back better' was interpreted in many ways. The emphasis should be to 'build back safer' and reduce future risk.

In the first weeks after the tsunami, people found shelter in large collective tents (left), squatted buildings (right), tents, rented housing or with friends and family. The government built transitional living centres (centre).

Before the tsunami

The Indonesian state of Aceh is a densely forested state in the north of the island of Sumatra. The majority of the population live along the coast and the main access is by sea or along the coastal roads.

Aceh has had intermittent periods of conflict since 1976. In May 2003, the government of Indonesia declared martial law in the province. As a result of the conflict there was limited involvement of non-governmental organisations in the province.

After the tsunami

The earthquake that struck on 26 December 2004 was one of the largest ever recorded and damaged many of the larger concrete-framed buildings in Aceh. The ensuing tsunami caused extensive damage in many of the countries in the Indian Ocean. The province of Aceh was the worst hit, due to its proximity to the earthquake and because the majority of the population live in low-lying coastal areas.

Following the tsunami, the majority of emergency shelter needs were met in the first weeks by the Indonesian military, Indonesian organisations and beneficiaries themselves. This was due to logistical challenges and the fact that foreign access was limited by infrastructure damage and travel restrictions resulting from the ongoing conflict. Shelter was provided in collective tents, existing buildings, individual family tents, by use of plastic sheeting and by families moving inland to where the damage was not as bad.

Throughout the response and reconstruction, government housing policy had a strong impact on the response. Policy required that the shelters that were built create a minimum covered area of 36m^2. The only official transitional response was the building of transitional living centres, also known as 'barracks'. These were long, timber-framed and panelled buildings on stilts with plywood separation between families.

Technical solutions

Traditional coastal Achinese shelters are entirely made of local timber and have thatched roofs. They are often on stilts to keep them off the ground. More recent construction has a concrete plinth and low brick walls, with a timbered superstructure built on top. The roof is covered in corrugated iron.

This project began building semi-permanent shelters based on local designs. These had concrete and brick foundations and low brick walls, and were topped with timber frames, a corrugated iron roof and timber panels.

About ten months after the tsunami, the house model changed to a reinforced concrete-framed structure with brick walls and a wood-framed roof. It included over 50 separate components, as well as toolkits. This was seen as 'building back better', although there were some safety concerns where builders had taken shortcuts.

This project was based in five distinct districts, with different designs and implementation methods developed in each district.

As part of the agreements reached with the communities, the first semi-timbered shelters, which had provided transitional shelter for as long as two years, were upgraded at the NGO's expense once all shelters had been completed.

Road shown two years after the tsunami. Access was initially difficult along much of the west coast of Aceh.

Who builds?

Planning of the programme started approximately six weeks after the tsunami, as a community-led construction programme to build shelters similar to those that many families had before the disaster. The programme sensibly aimed to build skills and capacities within the villages, create livelihood opportunities and cultivate a higher level of ownership by encouraging self-build approaches.

The scale of the construction in Aceh was significantly greater than had ever before been experienced in the region, requiring over 109,000 houses from a building industry that had only built a fraction of that number. As time passed and villagers started to regain their livelihoods, NGOs found it harder to find a workforce from the villages.

In 2006, as local community contractors and other NGOs became

Many people built their own shelters using reclaimed materials.


Photo: Joseph Ashmore

One of the completed shelters in Sigli, Aceh

available in Aceh, the NGO started to work with implementing partners in the local community and contractors to construct the remaining houses. They were finally able to complete construction by the spring of 2008, just over three years after the tsunami.

Despite the challenges, community-built houses were perceived by the community as being better at resisting minor earthquakes because 'we were able to monitor the construction quality'. Any construction project in post-tsunami Aceh had to have a very high level of monitoring by INGO staff and the community or there would be poor construction undertaken by the contractor or the beneficiaries. For example, the construction of 86 houses in three communities in Aceh Besar employed nine staff members who were in the field every day.

'The house is a base for people to operate their daily lives [from]. The construction of a house is an essential shell to secure early livelihood recovery, as it gives privacy, stability and a physical asset. The shell needs to be filled with life to make it a home'. – Internal project report

Logistics and materials

Following the tsunami, roads were severely damaged in three of the five project areas, although access improved during the programme. In some villages, bridges, roads and drainage had to be built before work could start on the houses. The community-built housing programme was quicker and more successful in the two areas where access to materials from the non-affected city of Medan was easier.

Logistics delays, combined with raised expectations, led to villagers becoming frustrated by waiting.

Why did the programme change?

The programme changed from self-build, semi-timbered shelters to contractor-led reinforced shelters for several reasons, many of which were specific to the post-tsunami environment of Aceh.

The availability of funds and the number of different organisations operating in Aceh led to competition between organisations, which served to raise expectations of what could be built. The government in Aceh strongly encouraged the construction of durable shelter, and agencies, eager to fulfil their early promises, started to implement significantly more complex construction programmes than originally intended.

The availability of materials strongly impacted the shelter designs used. There were significant challenges in obtaining legal timber locally, while importing timber was slow and problematic. Strangely, the amount of wood burned to make bricks may have had a larger environmental impact on the local forest resources than using timber would have done.


Photo: Joseph Ashmore

Obtaining good quality building materials remained problematic. These bricks decayed rapidly in the rain.

Sample bill of quantities for one of the finished houses:

material	quantity
Mountain stone – foundations	12m^3
Sand	20 m^3
Gravel	14 m^3
Filling Soil	28 m^3
Rebar 12mm x 10m	61 pieces
Rebar 8mm x 10m	50 pieces
Tie wire	4 rolls
Nail 1"	1 kg
Nail 2"	15 kg
Nail 3"	15 kg
Nail 4"	12 kg
Bolt diameter □"x6"	45 pieces
PVC gutter no hole	2 pieces
PVC gutter 1 hole	2 pieces
Gutter hanger plate	32 pieces
Gutter side bracket	4 pieces
Gutter connection	2 pieces
PVC glue	1 tube
Plywood/ 8'vx 4'vx 4 mm	30 pieces
Timber - concrete formwork 2 x 20cm x 5m	28 pieces
Timber-concrete formwork 2 x 5cm x 5m	15 pieces
Timber - gable 2 x 20cm x 5m	20 pieces
Timber - facia board 2 x 20cm x 5 m	8 pieces
Timber 5 x 10cm x 5m	20 pieces
Timber 5 x 7cm x 5m	20 pieces
Timber 4 x 12cm x 4m	6 pieces
Timber 5 x 5cm x 5m	25 pieces
Cement (40 kg)	135 pieces
Masonry brick	6200 pieces
Zinc roofing sheet	46 pieces
Zinc plate for ridge	4 pieces
Zinc roofing nails	4 boxes
Door hinge 6"/4"	28 pieces
Window hinge 3"	14 pieces
Window wing	14 sets
Window lock 2.5"	2 set.s
Door lock 4"	10 sets
Door/window handle	7 pieces
Door handle with key	4 pieces
Door screw no. 7	2 boxes
Door screw no. 6	1 box
Window screw no. 5	2 boxes
Paint for walls / waterbase (25 kg/can)	4 cans
Paint for timber frame/oil base (5 kg/can)	8 cans
Door frames	4 pieces
Window frames (single)	1 piece
Window frames (double)	3 pieces
Door panels type A	2 pieces
Door panels type B	2 pieces
Window panels type 1	1 pieces
Window panels type 2	3 pieces

B.5 Indonesia, Jogyakarta - 2006 - Earthquake

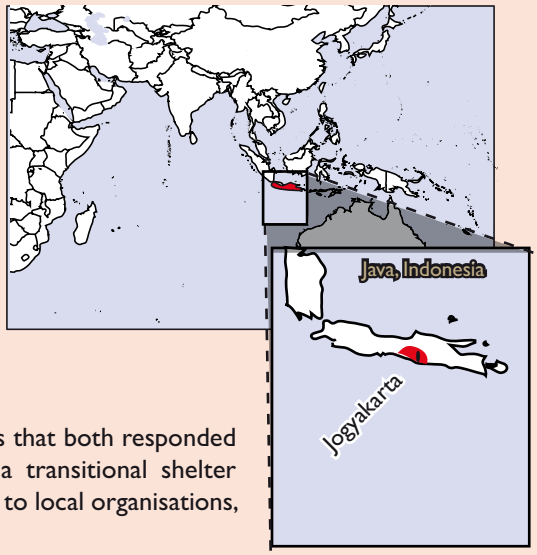
Overview of the response

Summary

At 6:30 a.m. on a Saturday morning an earthquake measuring 6.0 on the Richter scale struck the south-eastern corner of the province of Jogyakarta in Central Java. The 53 seconds of violent activity killed 5,000 people and decimated over 8,000 rural and peri-urban sub-villages, leaving over 2 million people homeless.

The largest response was a national response from a diversity of private actors and organisations. This was backed up by an international response, which was accelerated by the preparedness activities that were already ongoing in anticipation of the eruption of nearby Mount Merapi. The international response was coordinated through the Emergency Shelter Cluster that was activated locally.

The case studies included in this section involve two organisations that both responded in phases: an initial distribution of emergency items, followed by a transitional shelter response. Both organisations used cash grants, either to individuals or to local organisations, to implement the transitional shelter programmes.



Before the earthquake

As there had been no major earthquake in the area in living memory, the quality of general construction in the province of Jogyakarta had slipped. When the 2006 earthquake struck, the level of housing damage was disproportionately high.

Immediately prior to the earthquake, the imminent threat of eruption from nearby Mount Merapi meant that several agencies in Jogyakarta were pre-positioned to respond to a disaster. For example, one international NGO's disaster response unit had over 10,000 tarpaulins warehoused in Jogyakarta and a fully functioning office. This organisation was in an ideal position to respond very rapidly in the emergency phase of the shelter response.

The earthquake

The proportionally low levels of death and injury, when compared to the damage to physical infrastructure, resulted in comparatively low levels of damage to the social infrastructure. This, combined with the disaster's proximity to the relatively unscathed major city of Jogyakarta (a major hub of university learning and NGO activity), provided a massive national capacity for the INGO movement to draw upon and work with.

In the early stages of the disaster response, international funds and resources appeared extremely limited for such a vast affected area.

Few other sectors were as badly affected as the shelter sector. Most families used private wells and septic tanks, which remained largely functional. This, along with high general hygiene levels, greatly reduced the need for water, sanitation or hygiene assistance.

The Jogyakarta earthquake response became primarily a shelter disaster, and over 50% of the over 200 agencies on the scene became involved in the Shelter Cluster that was set up to coordinate the response.

The semi-rural nature of most of the affected areas meant that there was space for temporary shelters in the rubble. The combination of people's desire to stay close to their remaining possessions and (mainly) agricultural workplaces, meant that the need for IDP camps was largely avoided.

Transitional shelter

Soon after the earthquake, the government of Indonesia committed to providing permanent housing to every affected family, announcing the 'one step' policy to move people directly from emergency to permanent housing.

With over 300,000 houses destroyed, initial government reluctance to support transitional shelter gave way to a cluster-wide strategic approach to address the upcoming rainy season and the gap between emergency and transitional shelter.

With limited apparent funding, and therefore little conflict over operating areas (compared to the tsunami response in Aceh), the member organisations in the Shelter Cluster worked closely together to develop guidelines for locally appropriate transitional bamboo shelter. These were then taken on board across the cluster.

Resource management

A total of about 25 million sticks of bamboo were used in the response. Some 5 million sticks were used by the Shelter Cluster, about 3 million by the Indonesian government and 10-15 million by other communities.

However, management of the growing clumps of bamboo was not integrated into the transitional shelter programmes. In response to demand, much bamboo was clearcut or harvested using unsustainable techniques. Depending on the type of bamboo and how it was harvested, some areas will take three to five years to return to their original stock. Other areas may take ten years and some will not grow back.

The resultant environmental impact was significant. Although formal studies have not been carried out, it is likely that vast areas of bamboo forests were decimated, including entire valleys.

There is a strong tradition of bamboo-based construction in Jogyakarta.

A transitional shelter strategy was adopted by the Shelter Cluster members.

Bamboo jointing details

Bamboo being bound with string

Electric power drills used to drill holes in the bamboo so that it can be pegged

Prefabrication of a wall panel

Connecting a vertical post to the foundation

Foundation pads cast with bamboo to connect them to the frame

Photos: IFRC

Public information messages distributed as part of the response

B6 Jogyakarta - 2006 - Earthquake

Case study: Cash and transitional shelter

Project type:
Community-built transitional shelter
Self-build, cash grants for materials
Skills transfer through volunteers living in communities

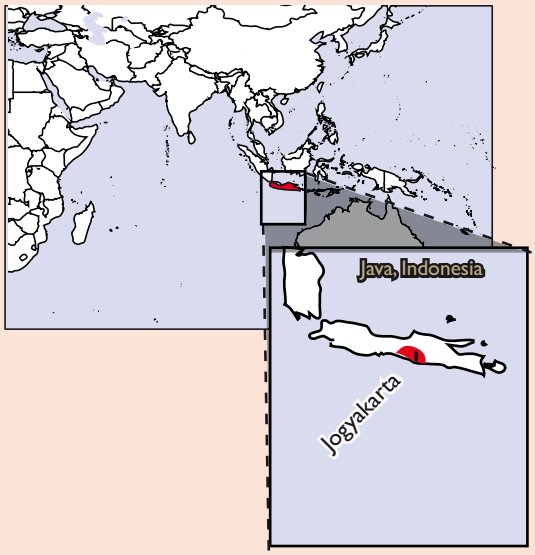
Disaster:
Jogyakarta/Central Java earthquake, 24 May 2006

No. of houses damaged:
303,000 destroyed or seriously affected

Project target population:
12,250. 22.5% of UN/OCHA-recorded shelters

Occupancy rate on handover:
100% (according to an independent student survey)

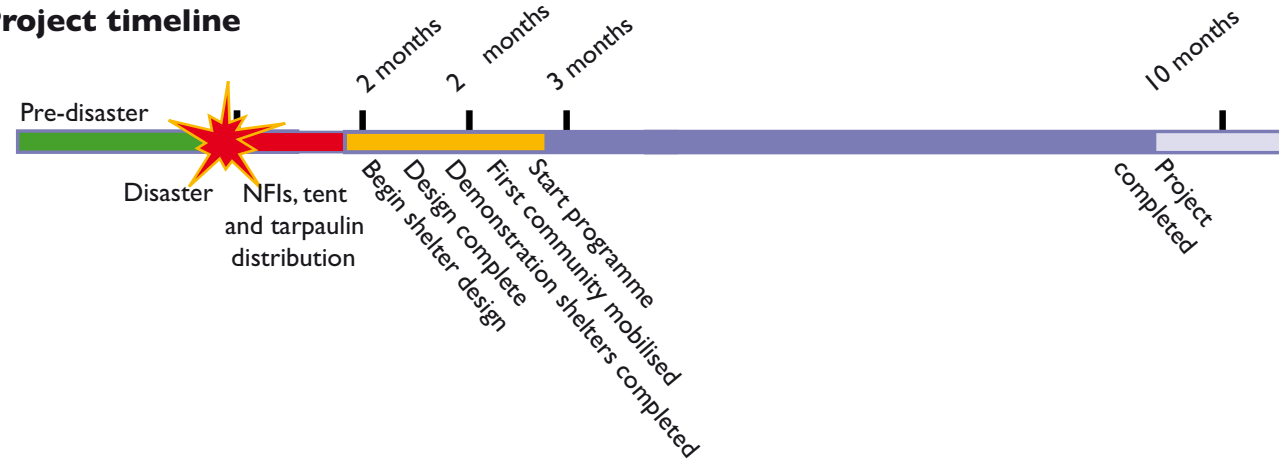
Shelter size
4 x 6m^2 (minimum 2m height)



Summary

This organisation developed a locally appropriate shelter design based on traditional building materials and construction techniques. It delivered cash with support to affected families to build their shelters. It set up a community-built transitional shelter programme supported by hundreds of volunteers and extensive instructional and promotional materials, including short training manuals, video compact discs, posters and radio advertisements.

Project timeline



Strengths and weaknesses

X Emphasis on community participation empowered communities in their reconstruction process and resulted in community engagement and ownership of the programme.

X The project was able to build on the Javanese self-help culture of 'gotong royong' ('working bee').

X The project sucessfully used materials that kept funds in the local economy.

X Maintaining volunteers to live within the communities was essential for effective knowledge transferral.

X Cash grants gave communities responsibility and engagement with the programme.

X Once new permanent houses were inhabitable, transitional shelters were used as kitchens, sheds, small shops, workshops, storehouses, etc.

W Environmental groups expressed concerns about the widespread impact on Java's bamboo forests. This could perhaps have been alleviated or averted by altered procurement mechanisms.

W A supply of treated bamboo would have greatly extended the usable lifespan of these structures (from two years to 25 years) and enhanced community recovery.

W Faster implementation, scale-up and scale-down of the shelter programme would have reduced the problems of overlapping with permanent reconstruction.

W Without the incentive of further funding, minor issues of accountability and transparency occurred with the final installment of funding. Clearer contracts, penalty clauses, training or incentives may have alleviated this.

A completed transitional shelter built through cash grants

A transitional shelter built on the site of a destroyed house

Beneficiary selection

Small cash grants were given out via traditional mutual support mechanisms to neighbourhood groups to buy tools and basic materials to build temporary shelters.

Meetings were held with each group to discuss the project and to sign a contract with the community. In order to participate, each neighbourhood (20-50 houses) had to form a shelter committee that had to include a head of the group, a treasurer (who had to be a woman) and a secretary. The positions could not be held by local officials or their family members.

The committee was responsible for the selection of beneficiaries, who could be anyone currently living in a tent or under a tarpaulin, with a house unsuitable for habitation. Priority was given to vulnerable people such as widows, orphans, disabled people, pregnant women, the sick and the elderly. Funds were delivered through group bank accounts in three to four instalments. The community contributed labour and materials recovered from the rubble.

Design process

This project aimed to empower community members to rebuild their lives, starting with the construction of a transitional shelter. The transitional shelter design was developed through an understanding of locally available materials, community needs and the capacity and objectives of the organisation.

It took one month for the design process, one month for community preparation and demonstration shelters, and one week to build 740 'model' houses through a public competition.

The competition involved three categories and offered prize money that went to the neighbourhood for:

- the most number of houses;
- the most beautiful houses; and
- the involvement of women.

The programme was rolled out over seven months, with 12,250 shelters built in 761 communities. Shelters cost under US$ 200 per unit.

Community-built shelter

Beneficiaries were strongly encouraged to follow the design, but not compelled to. In some cases people ignored or modified the design, such as in Delingo, a remote community with widespread construction skills and local construction resources.

The volunteers/supervisors were essential to guide and support good construction. The more the volunteers were confident and engaged in the process, the more the construction followed the design and was of sufficient quality. Variations were not problematic as long as the general principles were followed and the essential points (such as building size, safe connections, etc.) were satisfied.

Delay in project startup

The organisation was initially hesitant to give cash directly to beneficiaries. If there had been quicker institutional support for the project, it could have been scaled up faster and reached more people.

Community knowledge

Community levels of knowledge about the use of bamboo varied. The more urbanised the environment, the lower the level of traditional knowledge in the community, which led to a lower quality of bamboo construction.

The rural mountainous communities recovered relatively quickly, despite higher levels of damage from the earthquake and higher levels of general poverty. One of the reasons for this was that many locals had worked in the construction industry prior to the earthquake.

The interior of a transitional shelter

Transporting bamboo mats to a construction site

Implementation partners

Throughout this project, the organisation worked with national volunteers, two local universities, undergraduate architecture students, a training team, NGO facilitators/trainers, an implementation team, and a bamboo expert with experience in Venezuela and Flores, and communities in Jogyakarta and Central Java.

The local universities were involved and helped to:

- develop technical inputs for shelter design and messages;
- develop posters, pamphlets, t-shirts, etc.;
- train students to deliver 'build back better' messages under staff supervision; and
- set up mobile construction clinics.

The local media also got involved, reinforcing best practice shelter and construction messages on the radio, television and in print.

'Achieving good recovery and risk reduction outcomes in shelter is not about building structures. It is about building trust with communities'.
- Recovery coordinator for the programme

Working with volunteers

The shelter programme mobilised volunteers as community trainers, with two volunteers per neighbourhood. The volunteers first went through three days and nights of hands-on training making straw models and a mock-up frame, as well as finance training and team-building exercises. They then worked with communities on selecting and buying materials, the technical aspects of working with bamboo and building the shelters.

Community training lasted up to one week. During this time the volunteers and the community built the first shelter together, with supporting media (a step-by-step guide, an informative video about using bamboo in construction, safe construction advertisements and a booklet). Volunteers lived in the communities in a tent or transitional shelter and worked with the communities every day.

Working with volunteers allowed a large-scale programme to be set up. The volunteers were often enthusiastic and very willing to help, but some had a low level of confidence or experience. This led to some challenges in ensuring adequate quality control.

Volunteers were paid a small stipend and supported with cooking equipment, sleeping gear and field support. A weekly reflective learning/training session was held.

The Shelter Cluster design guidelines included seismic resistance, lasting up to two years, using materials that could be recycled and that cost under US$ 200.

Ongoing use of shelters

In the densely populated area of Klaten, the transitional shelters were eventually demolished to make room for permanent housing.

In the rural areas, the majority of the transitional shelters were still being used after permanent shelters were built, but for purposes such as storage sheds, shelter for cattle and livestock, or for small restaurants.

As per the requirements of the cluster-wide transitional shelter design, untreated bamboo was used (which deteriorates after two years). If treated bamboo had been integrated into the programme, the shelter structures could have been safely used in communities for up to 25 years.

Resource management

The shelter programme built 12,250 transitional shelters that used more than 100 culms of bamboo per shelter, using a total of more than 1.2 million culms of bamboo.

To avoid deforestation of the bamboo stock, this project could have set up purchasing control mechanisms to manage the bulk procurement of bamboo that controlled quality, environmental impact, procurement methods and treatment of the bamboo. It would have also been possible to allocate money to reforestation programmes.

Materials	Quantity
Bamboo mats 6 walls, 3 ceiling, 1 door	10 mats
Round poles (for columns) 3' diameter, 3m long	12 poles
Round poles (for beams and roof joists) 7.5cm diameter, 3m long	11 poles
Timber for fixing the mats	7 beams
Reinforced plastic sheet	3m x 15m
Nails 5cm, 7.5cm and 10cm	2.2 kg
Wire	1 kg
Hinges	3 units
Lock	1 units

Public information was a critical component of the project.

B7 Jogyakarta - 2006 - Earthquake

Case study: Emergency and transitional shelter

Project type:

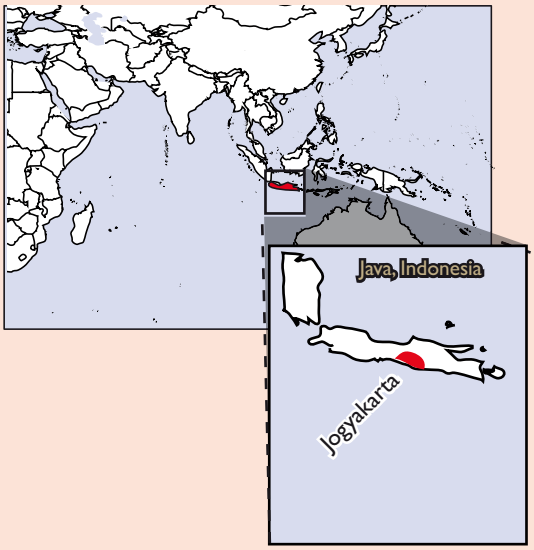
Non-food item distribution (plastic sheeting)
Emergency shelter enhancement programme
Public outreach and information programme

Disaster:

Jogyakarta/Central Java earthquake, 24 May 2006

No. of houses damaged:

303,000 destroyed
240,000 seriously damaged
(mostly rural or peri-urban communities)



Project target population:

Distribution of plastic sheeting: 75,000 families
Emergency shelter enhancement: 26,500 families
Transitional shelter programme: 2,000 families

Occupancy rate on handover:

External evaluation shows close to 100% usage and correct targeting

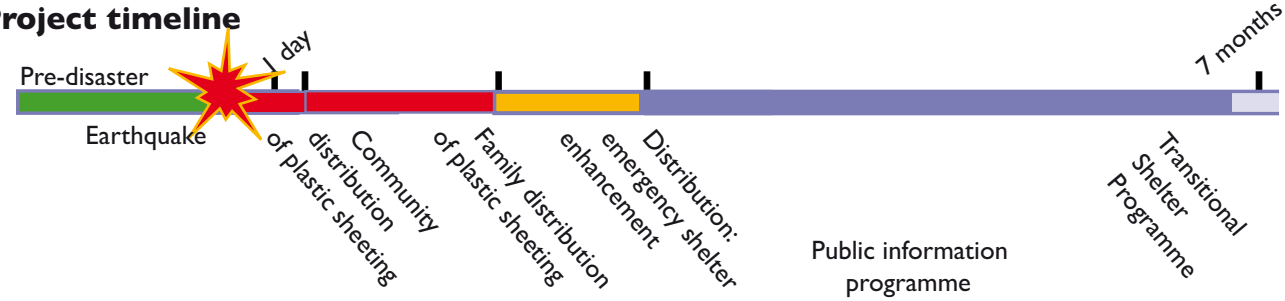
Shelter size

Plastic sheeting: Phase 1, 20-30 sheets per village. Phase 2, one 4m x 6m sheet per family
Emergency shelter enhancement programme: walling and floor mats for 4 x 6m plastic sheeting
Transitional shelter programme: 24m^2 bamboo transitional shelters

Summary

This organisation implemented a four-part emergency shelter response that included: 1) distribution of tarpaulins for emergency shelter based on a broad vulnerability assessment; 2) a 100% infill project; 3) an emergency shelter enhancement programme of tools, walling and bedding for 26,500 families, a broad public outreach and safety information programme; and 4) a small grants programme for the design and construction of transitional shelters. All programmes were designed in coordination with the Shelter Cluster, where the organisation played a lead technical advisory role.

Project timeline



Strengths and weaknesses

X As early capacity was limited, a partial distribution programme across a large affected region followed by a 100% distribution infill program worked very well.
X The delivery speed of broad-based tarpaulin distribution effectively avoided the creation of IDP camps.
X By communities' request, distributions were delivered to the community level as opposed to individuals, with communities taking responsibility for internal distribution.
X Cash grants gave communities responsibility and engagement with the programme.
X Procurement of locally manufactured woven bamboo wall sheet was far more successful than conventional tender-based procurement methods.
X Running the entire programme through local partners worked extremely well.
W The shelter enhancement programme could possibly have been improved by providing flooring and wall framing material (not just wall cladding and sleeping mats).
W Ongoing support and expansion of successful transitional shelter projects would have been desirable and useful.
W Faster bulk procurement and distribution of tarpaulins would have been desirable.

Photos: Dave Hodgkin

Plastic sheets distributed as part the first phase of the response were often used to make shared temporary shelters.

Distribution - plastic sheeting

The organisation implementing this project was one of the few agencies with full-functioning capacity at the time of the earthquake. It started its first distributions ten hours after the earthquake.

As rain was falling each night there was an urgent need for shelter, but supplies were too limited to supply one tarpaulin per family.

A broader distribution through local partners was conducted. Each village was provided with sufficient tarpaulins to ensure that the sick, the weak, the young and the elderly were adequately under cover. In the first days, villages joined tarpaulins together to form large communal shelters that housed the whole village at night (up to ten times the expected number of beneficiaries).

As funds and capacity from other organisations arrived, the project was reduced to an infill programme, returning to previously assisted villages and supplying 48m^2 of plastic sheeting per family (two 6m x 4m sheets).

At the request of local communities and in support of the local self-help tradition of 'gotong royong', all distributions occurred at the community level instead of the individual level. All needs assessments and distributions were conducted by local implementing partners. Communities were responsible for beneficiary selection.

Because local NGOs conducted all distributions and evaluations, the amount of human resources that the international NGO itself had to deploy was extremely limited. At its peak it employed only six shelter-specific staff, and focused its resources more on logistics and partnership support.

Expansion of the emergency shelter programme

Early analysis of the progress of community recovery showed:

- the use of tarpaulin for both roofing and walling, resulting in limited undercover space;
- sufficient reclaimable timber for temporary shelter framing, but insufficient material for wall cladding;
- a pressing need for tools and equipment for cleanup and reconstruction; and
- a shortage of clean sleeping mats.

The rush by affected families to reconstruct permanent houses raised a number of advocacy concerns. These included issues about the quality of construction, health and safety, treatment of the asbestos within the rubble and the construction of shelters in precarious positions.

The emergency programme was followed by an Enhanced Emergency Shelter programme, which provided:

- woven bamboo wall sheeting (gedek) to affected communities to ensure that each family had sufficient material to build walls for their emergency shelter;
- combined community toolkits for clean-up and reconstruction; and
- sleeping mats.

It also launched an advocacy and public outreach programmes to address safety and health issues.

Photos: Dave Hodgkin

A collective shelter built by beneficiaries using distributed plastic tarpaulins

The extension of the emergency programme provided additional plastic sheets so that each needy family received one sheet.

Transitional shelter grants

As a final part of the organisation's emergency shelter programme, a programme was started to support the transition into temporary housing. The transitional shelter programme was conducted in accordance with the Emergency Shelter Cluster guidelines that had been developed locally following the earthquake.

'The best we can do as shelter managers, is to be responsive and adaptive to the changing needs of the affectedcommunity;providing minimalist but strategic and incremental inputs into the communities' natural path frominadequatetoadequate permanent shelter'.

Cultural, environmental and cost concerns led to the creation of a set of common guidelines based on traditional bamboo frame construction with clay roof tiles and woven bamboo wall cladding. Flexibility in design to allow for innovations was encouraged.

This programme provided eight cash grants to local community organisations/businesses and groups, to work with communities already serviced by the emergency shelter distributions. These were based on a tender process that resulted in a cost of US$ 100-300 per shelter.

As well as housing 2,000 families and improving the capacity of a number of local partners, this programme produced a range of well-documented transitional shelter solutions as potential examples for further expansion or adoption by other agencies.

Public outreach and advocacy

The final aspect of this post-earthquake shelter response was a public outreach and advocacy programme, where the organisation provided technical advice to the Shelter Cluster. This led to the formation of technical working groups. One group working on public outreach produced posters on a range of issues including:

- safe clean-up;
- safe siting of temporary shelters;
- safe reconstruction;
- safe handling of asbestos and dust;
- building next to hazardous buildings; and
- an introduction to simple bamboo and concrete construction techniques.

The organisation led a cluster working group to design and print posters. These were then distributed by the local government and by Shelter Cluster members as a part of shelter material distributions. In total, four batches of 20,000 posters each were distributed to the disaster-affected population.

The public outreach working group went on to develop a range of public outreach and advertising materials to promote safe reconstruction.

Materials	Quantity
Emergency shelter programme	
Plastic tarpaulin 6m x 4m	20-30 per sub-village (200-300 families)
100% infill programme	
Plastic tarpaulin 6m x 4m	1 per family
Enhanced emergency shelter programme	
Woven bamboo sheeting 2m x 3m	6 sheets per family
Tikka matts	2 per family
Toolkits	
1) Clean-up	Distributed per village
2) Reconstruction	
3) Village level	
Innovative T-shelter grants	
Cash grant based on tender process	US$ 100-300 per shelter
Public outreach programme	
Public outreach posters	4 batches of 20,000 posters

Grants were provided to build transitional shelters. Many different and innovative designs were built.

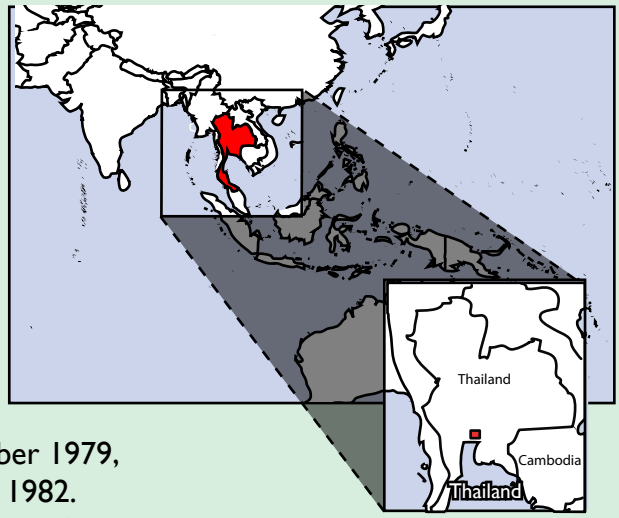
D.7 Thailand - 1979 -1980 - Political conflict

Case study: Refugee camp

Project type:
Construction of two refugee camps
Development of a manual of standards

Disaster:
Invasion of Cambodia by Vietnam, December 1978

No. of people displaced:
About 1 million people crossed the border into Thailand at the height of the displacement.



Project target population:
Khao-I-Dang refugee camp went from 29,000 people shortly after its opening in December 1979, to 130,000 -160,000 in March 1980, to 42,000 by 1982.
Sakeo camp had 28,000 people shortly after opening, dropping to 17,000 when it closed in July 1980 (the remaining 17,000 were transferred to other camps).

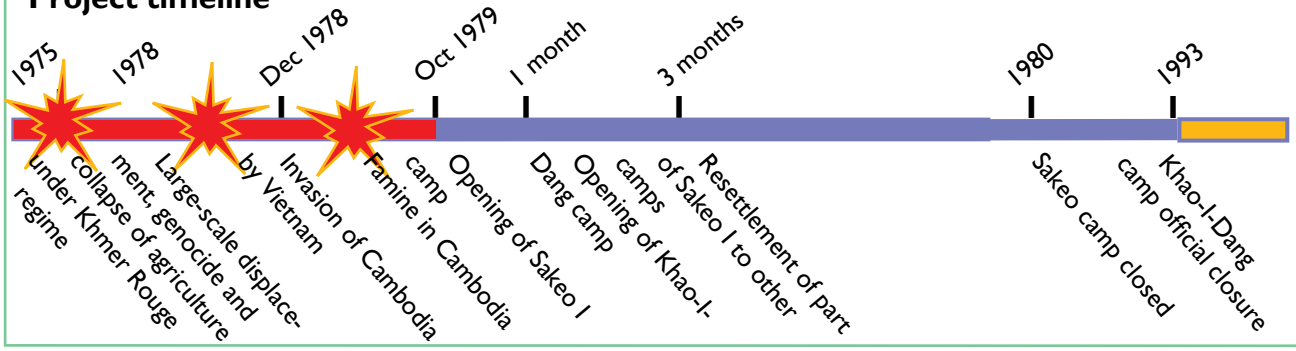
Occupancy rate on handover:
100%

Shelter size
16m^2 (in multi-family units)

Summary

For the first time, clear numeric standards were introduced via the distribution of an operations policy and standards manual to each camp to ensure equitable minimum services, based primarily on public health and water/sanitation concerns. Two camps were planned according to these standards, using a decentralisation of services, and in later cases a 'checkerboard' design that provided internal space for some expansion.

Project timeline



Strengths and weaknesses

X Creating a written manual provided a clear checklist for the many organisations with limited prior experience.
X Spaces for expansion within the camp permitted some release of pressure from increasing population levels.
X Advocacy of an incremental approach to shelter provision allowed for a response to continued influxes and increasing camp populations.
X Innovations in water/sanitary latrine technology ('aquaprivies') permitted more flexibility in shelter layout design.
W Although multi-unit longhouses freed up more external space in extremely cramped sites, their use postponed rather than solved the problem of overcrowding, and at the expense of privacy and security.
W An overall lack of space and poor drainage contributed to health problems.

Case study credits: Cuny Center

Before the opening of the camp

The invasion of Cambodia by Vietnamese forces in December 1978, the escalation of fighting between Vietnamese and Khmer Rouge forces after June 1979 and famine in October 1979, caused a mass influx of refugees across the border into Thailand, peaking at approximately 1 million people in late 1979 and early 1980.

The Thai government was initially reluctant to host the refugees. After early incidents where 40,000 refugees were returned to Cambodia, the Thai authorities agreed to permit camps in nine locations in the border area. However, they insisted on close control of access and the delivery of services to the camps, and on the basic and supposedly temporary nature of those camps.

The refugee population had been severely traumatised by four years of forced displacement, genocide, famine and armed invasion.

Of the nine camps, eight were internally controlled directly by the Khmer Rouge army or its affiliates. The camp at Khao-I-Dang, however, was the only one under clear Thai government authority, administered by the UN. Leaders of the refugee groups presented themselves to the camp administration at the opening of the camp.

Due to the size, speed and high-profile nature of the emergency, the UN had to cope with a rapid expansion of its own staff and the arrival of large numbers of NGOs, many without prior experience in the field. Because of the variability of the experience of the UN and NGO staff, a consultancy firm was hired to develop a manual of standards. Many of those policies and standards were implemented at the Khao-I-Dang and Sakeo camps.

After the opening of the camp

Both camps opened in October-November 1979 and quickly filled to capacity. Khao-I-Dang camp was initially intended to be temporary, housing people who would be then transferred to other camps, repatriated, or resettled in other countries. The camp also became a collection point for those who had been injured during the conflict.

Despite the later population reduction of the Khao-I-Dang camp, the initial increases in population had posed severe challenges for control of the camps. Overcrowding and the high-turnover nature of camp residents caused the camp to descend into violence and to become extremely difficult to govern at times.

Selection of beneficiaries

The mass numbers of the influx and the political pressures exerted by the Thai authorities and the Khmer Rouge did not permit beneficiary selection upon arrival. Resettlement programmes and transfers influenced the selection of who later left the camp.

Land rights / ownership

Thai authorities designated the camp site and the camp administration assigned individual plots to refugees. All rights of occupancy were understood to be non-permanent. When all the camps closed 1993, repatriation was supported through UN-backed programmes aiming for land grants and providing legal advice.

Standards manual

A policy and standards implementation manual was drafted for the UN by consultants during the last months of 1979 and published in draft binder form by January 1980. The camp sites and services part of the manual had eight initial parts focused on water and sanitation issues, and one part on housing and construction. It emphasised minimum numeric standards, along with clearly defined job roles and responsibilities within the camp.

Implementing agencies in the camp were to be held accountable to these standards through routine assessments undertaken by the UN. The stated goals for the manual were:

- To ensure that all services meet a basic minimal level of quality;
- To ensure that all services are provided in a uniform manner;
- To provide the basic information necessary to successfully implement UNHCR standards;
- To standardise routines and to facilitate reporting and monitoring;
- To provide a guide for those who have had no prior experience in the field; and
- To ensure that the mistakes of previous relief operations were not repeated.

Through regional workshops with the consultant and others in 1980, this manual formed the starting point for the first draft of the UNHCR *Handbook for Emergencies*.

Because of the lack of space, the shelters were constructed as multi-family longhouses, using mainly traditional materials (bamboo and thatch). Fire-retardant wallboard was used for the sides of the longhouses and for the internal divisions between individual families. However, this did not remove problems caused by lack of privacy or communicable disease.

For the most part, the larger longhouses in Khao-I-Dang were laid out in parallel. Some reduction of space was achieved through a 'checkerboard' layout, with blocks of open space throughout the camp. This also allowed for additional shelters, if required. In the Sakeo extensions, the longhouses were grouped into four to eight houses around small internal squares. These were intended as private outdoor space or vegetable gardens for each grouping of refugees. Later shelters were also improved by building them on stilts, to avoid flooding during the rainy season.

Implementation

The organisation assigned a number of NGOs to undertake the different phases of camp construction, upgrading and maintenance, using the manual as a general guide. The refugees themselves were responsible for the construction of their own shelters.

Logistics and materials

The basic materials were provided to the refugees by the humanitarian organisations.

Materials list

The following is a partial list of the materials used for the multi-unit shelters.

Materials
Bamboo poles
Plastic sheeting
Rope or wire
Thatch (palm)
Fire-resistant wallboards
Timber flooring

B.15 Myanmar - 2008 - Cyclone

Case study: Shelter construction

Full case study

Country:
Myanmar

Disaster:
Cyclone Nargis

Disaster date:
May 2008

No. of houses damaged:
Over 450,000 households affected in 36 townships. Over 350,000 households seriously affected.

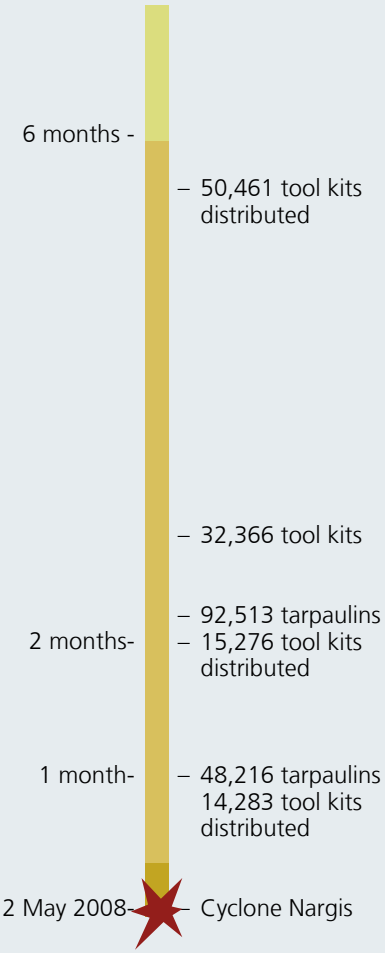
Project target population:
115,792 households received two tarpaulins each
Up to 250,000 households benefitted from 50, 461 shelter tool kits (one kit for five households).

Shelter size:
Two 4m x 6m tarpaulins per family

Occupancy rate:
High

Materials Cost per shelter:
30 USD per tool kit.
30 USD for two plastic tarpaulins.
Excluding transport and operational costs.

Project timeline



Summary
The relief phase of this programme was a large-scale distribution programme of plastic sheeting and tool kits. Two plastic sheets were given to each family, and each tool kit was shared by five families. It was followed by programmes to support smaller numbers of families to build their shelters and build cyclone-resistant community buildings.

Strengths and weaknesses

✓ Distribution allowed a large number of beneficiaries to be supported rapidly. By focussing on distribution, the shelter programmes were easier to manage.
✓ By distributing the tool kits to share between five households, the project reached five times as many people.
✓ Shelter kits and tarpaulins were particularly adapted to the warm wet environment. They were used not only for roofs but also for walls. They also made good tanks for water collection. Tents were generally disliked and not used.
✓ By establishing frame agreements with suppliers in advance of the disaster, the shelter kits contained good quality materials.
× The project was run as a distribution with limited shelter-specific inputs.
× There were some duplications with other organisations distributing to the same locations.
× Some of the emergency kits were delivered five or six months after the event. Many people had built shelters before the shelter kits arrived.
× Pressures to deliver large volumes of materials quickly may have reduced the support received by the most vulnerable individuals.
× Management structures suffered under the pressures of the emergency, and insufficient human resources were allocated to programme planning.
- It is very expensive to airfreight kits. Shipping also has associated costs. It may have been more effective to order fewer kits and use the rest of the money for early recovery activities.
- Beyond this individual programme, the needs of a significant number of families were not been met by the response to the cyclone

Plastic sheeting fixed to shelters by owners
Photo: Steve Barton

Before the disaster

There were very few organisations working in the area prior to the cyclone, and very little available knowledge of the specific disaster resistance or vulnerability of shelters.

After the disaster

Cyclone Nargis struck Myanmar on 2 and 3 May 2008. Collective assessment data from the authorities and international communities indicated that 115 townships were significantly affected by the cyclone. According to official figures, 84,500 people were killed and 53,800 missing. In larger villages and urban areas where there were more permanent structures, the mortality rate was lower. The United Nations estimated that 2.4 million people were affected.

The cyclone created wind, water and storm surge damage. The storm surge was reportedly 3.5 metres high in many areas and up to 7 metres at its worst.

The hardest hit areas included smaller rural farming and fishing villages of less than 100 households. In some cases these were completely destroyed, resulting in many lives lost. Housing in these areas is largely of simple timber, bamboo and thatch construction. Along the Irrawady river delta in the southern part of the country more than 95 percent of the houses where destroyed.

In the following three months, the majority of families recovered on their own although to a lesser standard than before the cyclone, leaving them more vulnerable to future cyclones. Damage in urban areas was less severe and rough building repairs were largely completed in the first three months after the cyclone.

Selection of beneficiaries

Distributions were targeted at all families who had lost their house

The most vulnerable groups of people were migrants, casual workers and 'landless' people who were disadvantaged before Nargis. The issues these groups faced after the cyclone increased due to the limited livelihood opportunities after the cyclone. In some cases, these people are not able to receive support because they are 'landless'.

Implementation

Distributions focused on the townships that were most seriously affected. As community participation was essential to the recovery process, 147 village tract recovery committees were established in all 11 townships where full recovery programming were planned.

Technical solutions

It was decided to distribute shelter tool kits and plastic sheeting for the emergency response. The reasons for this are listed below:

The shelter kits provide tools and materials to help people rebuild. Disaster-affected households could combine the kit with existing materials either salvaged, locally harvested or purchased with available resources. The materials provided can be reused if the households need to relocate or construct more permanent homes, and the tools will remain of use as the households upgrade or maintain the houses.

The shelter kits allowed for large numbers of people to be supported with limited funds. The price of a shelter kit is approximately 60 US dollars, whilst a standard one-family tent to internationally agreed standards can cost up to four times as much. The use of Shelter Kits provides the opportunity for maximising the shelter assistance that can be provided with available financial resources.

Existing stockpiles allowed for rapid distribution.

The shelter kits did not require specialist handling. In the field, individual Shelter Kits can be transported by recipients by hand if required.

To help meet the large-scale shelter needs, it was decided to split shelter kits to provide two tarpaulins to each target household & 1 tool kit to five households

88.7% of the total amount of tarpaulin was used for shelter and 11.3% of the tarpaulins were used for rain water harvesting, covering the harvested paddy and other purposes.

Half of the households who received tarpaulins received the tarpaulins two months after Nargis. Only 3.4% of the households received them within a month and 21% received them one month after Nargis.

Although 23% of the households received the tarpaulin 3

A basic delta shelter and a shelter repaired with plastic sheet
Photo: Steve Barton

months after Nargis, 77 percent of the households received the tarpaulin in just the right season (basically before the rains came in hard)

18 percent of the total households had already rebuilt the new shelter by using tarpaulin, community tool kits and locally available raw materials. The household tarpaulin kit and community tool kit were not only useful for building an emergency shelter but also for rebuilding the new shelters.

Emergency shelter was made of recovered wood (45.3%) and locally available traditional sources of building materials such as bamboo (32%) and areca palm (22.7%). They also used the recovered bamboo (46.8%) and areca palm (53.2%) for the floor. Tarpaulin was mostly used for the roof (83.9%). In some cases, it was also used for the walls (25.8%).

The majority of houses were built by disaster affected families. A small number received support from volunteers and community members. 88.3% of households surveyed could not improve their shelter due to lack of money.

The distribution of the toolkits supported people to recover when the people receiving them had good access to materials, had disposable incomes or were living within or in close proximity to urban areas. Otherwise the amount of support that they provided was limited.

"The extent and speed of relief activities from the international sector was limited and slow (at least at the beginning of the operation). This was primarily due to the restrictions on access for the international relief workers to the most affected areas in the Delta."
Programme review

Plastic sheet and tools distributions
Photo: Steve Barton

Logistics and materials

The shelter kits and plastic sheeting were internationally procured. The first relief flight to Yangon was within days of the cyclone, and lasted for four hours. It contained 300 kits and plastic sheeting. After the initial emergency phase, kits and tarpaulins were shipped to Yangon port.

For a tool kit with two tarpaulins, the airfreight cost was 120 USD per kit. For the same kit by sea, the shipping cost 2.25 USD.

Nine logistics hubs were established so that materials could be warehoused locally.

Information on shelter kit distribution was provided to the village leaders so that they could share this information with the community before distribution. In a few cases local staff informed the community members about the shelter kit distribution directly.

30% of the families received instruction on the use of the kit. Instructions were provided to village leaders as well as at some distribution points.

In the case of the community tool kit, there were two types of distribution methods: splitting the kit into separate elements which then were distributed to individual households, and distributing the whole kit to a group of five households to share the kit.

The vast majority of families surveyed afterwards said that the tools were useful and of good quality

40% of families said that the roofing nails were not useful as they were of a different type to those used locally.

Materials lists

Materials distributed per family

Item	Quantity
Tarpaulins	2
Rope	30m
10-litre jerry can	1
Blankets	2
Kitchen set	1
Double impregnated mosquito net	2
Family hygeine kit	1

Toolkit, shared between five families

Item	Quantity
Hoe	1
Machete	1
Tin snips	1
Hand saw	1
Roofing nails	500g
Shovel	1
Nails	500g
Tie wire	500g
Claw hammer	1
Woven sack	1

Classroom built with plastic sheeting
Photo: Steve Barton

Plastic sheet used to collect rainwater
Photo: Steve Barton

A.12 Indonesia - Sumatra - 2009 - Overview

Case study:

Summary

On 30th September 2009 a series of earthquakes struck West Sumatra, not far from the provincial capital of Padang. 13 out of the 19 districts in West Sumatra province were affected. Between earthquakes and landslides nearly 250,000 houses were destroyed or heavily damaged.

The Government of Indonesia responded rapidly, with the assistance of the national and international humanitarian community. Whilst non-government agencies focused on emergency shelter, distributing an average of 2 tarpaulins per family, the government focused on rebuilding provincial government capacity, search and rescue and emergency relief. The emergency phase was declared over within 8 weeks.

The Government of Indonesia committed to providing affected families with a community based economic stimulus package for permanent housing reconstruction, leaving the provision of emergency and transitional shelter to the humanitarian community, many of whom also focused on Disaster Risk Reduction based construction skills training.

Earthquake damage to a former 3 story government building in Padang. Photo: Dave Hodgkin

Emergency distributions of two tarpaulines per household were made by reponding organisations. Photo: Dave Hodgkin

Before the earthquake

West Sumatra is located at the convergence point of four tectonic plates and is highly prone to earthquakes. A recent earthquake in 2007 had damaged or destroyed over 43,000 houses.

As a result of numerous disasters, both the provincial and national government had significant experience. The recently formed National Disaster Management Agency deployed a Technical Advisory Team to assist in the immediate response and assist in the formation of it's provincial equivalent.

Although established national building codes, including seismic resistant construction guidelines for "Permanent" (masonry) houses, for "Semi Permanent" (part masonry), and for "Non-permanent" (timber or bamboo) houses, however, limited certification (15%) along with poor compliance and enforcement had resulted in a low quality of general construction.

In West Sumatra, most homes were privately owned particularly in rural areas, with most inherited through matrilineal ownership systems. They were constructed incrementally often with the support of remittances from male family members working in the "Padang" restaurants across Indonesia and Malaysia that the area is famous for.

Whilst rural housing was commonly self-built, urban housing was more commonly commercially constructed with a mixture of rental and non-rental housing.

After the earthquake

The disaster caused an estimated 2.3 billion USD damage to infrastructure and housing. Over 30% of housing stock in the affected areas was destroyed, making shelter a priority.

Initially rural and semi-urban areas were prioritised. In these areas, many families were living in inadequate, unsafe makeshift shelters, under tarpaulins within their plots of land, or staying in other people's homes or gardens.

200 USD "transitional shelter" of dissapointing quality built by an international organisation. Photo: Dave Hodgkin

Rural self help shelter built by earthquake affected family. Photo: Dave Hodgkin

Concerns over the approaching rainy season added to the sense of urgency.

Previous experiences within Indonesia indicated that public outreach programmes on earthquake resistant construction were important to ensure safe reconstruction.

Response capacity

The first few weeks saw intense international media attention and an ensuing influx of international and national funds. Over 200 agencies both national and international responded rapidly. Many had prior experience in Yogyakarta earthquake and/or remnant capacity in nearby Aceh and Nias Island from post tsunami and earthquake projects.

However many organisations, including the newly formed provincial disaster management agencies quickly found themselves overstretched. Many were still responding to an equivalent scale earthquake in West Java less than one month before. Many of the international agencies soon had to relocate capacity to the Haiti earthquake.

Emergency response

Extensive collapse of commercial and government building in Padang resulted in an initial focus on search and rescue with 21 teams of various sizes being deployed.

The Indonesian Government announced an end to the search and rescue phase within weeks, and allocated an initial 10 million USD to emergency relief.

An international coordination team arrived within four days of the earthquake to assist the Indonesian government in coordinating over 200 national and international responding agencies.

The initial shelter strategy was agreed eight days after the earthquake. The strategy focused on the distribution of tarpaulins and tents for the emergency phase, whilst identifying the need for transitional shelter and disaster risk reduction activities in the recovery phase.

Despite an overwhelming initial response to the disaster there remained a shortfall in funding, particularly in shelter and livelihoods. A total of 170,000 families were supplied with emergency shelter within the first two and a half months.

Recovery shelter

The Early recovery phase saw the government focusing on the development of permanent shelter assistance programs, whilst non government agencies focused on transitional shelter needs through a range of shelter packages. Most assistance was in the form of cash grants or material supply, to small community groups in line with government proposed methodology for community built reconstruction.

Transitional shelters commonly had timber frames. They were mainly clad with corrugated iron or tarpaulins for roofs and tarpaulins, plywood or timber for walls. Shelter packages commonly included a technical advice component. Many included advice on permanent reconstruction. 63,000 transitional shelter packages were provided with a cost varying from 200 USD to 500 USD per household.

Later assessment highlighted a lack of assistance to urban areas, with a range of agencies then running clean operations in these areas. Delays in material supplies and limited capacity saw transitional shelter projects continuing for over 9 months after the earthquake, overlapping significantly with the arrival of permanent reconstruction funds.

Government response

The government of Indonesia provided grants of approximately 1,500 USD for heavily damaged houses, 1,000 USD for medium damage (from the State Budget) and 100 USD for lightly damaged houses.

Two years after the earthquake, not all funds had been released, though much of the community had self funded reconstruction. The 2010 earthquake in the West Sumatra district of Mentawai Islands, further stretched and expanded provincial response capacity.

The initial government decision to focus only on permanent shelter was later reviewed in light of outstanding transitional shelter needs, with funds then allocated to transitional shelter in West Sumatra, and again in Mentawai Island and other later responses.

A.13 Indonesia - Sumatra - 2009 - Earthquake

Case study:

See "A.12 - Indonesia - Sumatra - 2009 - Overview" p.38, for background

Country:
Indonesia, Sumatra, Padang
Disaster:
Earthquake
Disaster date:
September 30th 2009
No. of houses damaged:
115,000 destroyed houses
135,000 damaged houses

This was a market assessment into brick production and so did not directly lead to the construction of shelters

Project timeline

Project description
This project surveyed brick production and anticipated supply and demand. It was conducted one month after the earthquake. The survey was conducted as a trial of the EMMA (Emergency Market Mapping and Analysis) methodology. The survey findings were used to inform the adopted strategy of using cash to support the construction of shelters that used both timber and bricks.

Strengths and weaknesses

✓ The assessment was conducted with team members from nine different organisations. This process increased buy-in to the findings of the assessment report, and helped to form consensus on the issues surrounding markets in the response.

✓ The bricks survey findings were used to advocate for a cash based response, and for a move away from solid masonry buildings which potentially carried a greater risk of causing injury in an earthquake.

✓ The survey came at an opportune moment after the earthquake. The timing of the survey needed to be long enough after the earthquake that team members could be identified, access was possible and those working at brick kilns could easily be found. Had it been any later it would not have been able to inform the strategy.

× Surveys looked at the use of bricks but not the use of timber to make the bricks.

× The survey did not address issues of the living and working conditions for those in the brick kilns.

× The survey used human resources, meeting time and vehicles that could otherwise have been used in implementing the response.

- It is difficult to accurately measure the impacts of this survey. Whilst it used human resources and absorbed time during an emergency response, there is some evidence that it helped to inform the strategies and programmes adopted.

- There are many markets that could have been surveyed. Bricks were chosen following experiences in Aceh (2004) and Yogyakarta (2005).

Poorly built brick-masonry buildings were a significant cause of the damage to housing.
Photo: Unknown

Background

See "A.12 - Indonesia - Sumatra - 2009 - Overview" p.38.

After the earthquake

The earthquake in September 2009 destroyed or damaged over 200,000 houses in West Sumatra. Poorly built brick based masonry caused many of these buildings to collapse.

The Indonesian Building Code specifies that a "Permanent House" means masonry, "Semi Permanent" means masonry sub walls and timber above, whilst "non-permanent" means timber or bamboo.

Experience from previous disasters in Aceh (2005) and Yogyakarta (2006) showed that the demand for bricks for housing reconstruction quickly outstrips the available supply. This often led to an increase in the price of bricks, and / or periodic supply shortages that delay reconstruction progress.

What is EMMA?

This research was conducted to trial EMMA (Emergency Market Mapping and Analysis). EMMA is a tool designed to analyse markets following a disaster. EMMA uses background research, interviews, and graphic representations of market systems to help inform humanitarian response options. EMMA defines a market system as "a web of people, businesses, structures and rules that take part in producing, trading and consuming a product or service."

For more information on the EMMA methodology, download the EMMA Toolkit from: http://emma-toolkit.org

Brick making in Sumatra

Brick making involves five steps and is labour intensive.

1. **Mixing:** Clay, sand and water are mixed together in open pits by foot, shovels or water buffalos. Larger manufacturers use mechanical mixers.
2. **Shaping:** The mix is compressed in wooden frames. On average, a skilled labourer can produce 1,000–1,500 bricks per day.
3. **Air drying:** The bricks are laid to dry in the sun for 5 days. Bricks are then stacked and air dried for 30-60 days, depending upon the weather.
4. **Kiln drying:** The dry bricks are loosely stacked in open air kilns without chimneys. These kilns are rectangular or circular shapes. Mud is plastered around the outside of the brick kilns to trap the heat from the fire, with space for smoke to escape and oxygen to enter. The average height of a brick kiln is 2m tall. Bricks are typically kiln dried for 10 – 14 days.
5. **Distribution:** Manufacturers sell their bricks directly to masons, home owners, brick distributors, and / or building supply stores. Transportation charges are typically 30 - 60% of the total brick price.

Damage to supply

The survey suggested that over 50 million bricks were damaged in the earthquake.

The majority of the supply was through small scale suppliers. There

Many of the bricks were made by hand.
Photo: Unknown

Much of the capital for small scale manufacturers was the bricks in their kilns.
Photo: Unknown

were 1,800 small scale brick manufacturers, who produce an average of 15,000 bricks per month. These were the most severely affected of all brick manufacturers. The financial capital of these producers was often tied up in the number of bricks they had in their kiln, making it difficult to restart manufacture.

Medium scale manufacturers (45,000 bricks per month) also suffered production losses due to the earthquake, but their stronger financial position meant that they were better able to resume production. It was estimated that it would take 6–8 weeks for these manufacturers to bring new bricks to the market.

Most of the larger scale brick manufacturers were located up to 90km North East of Padang. Some large brick manufacturers reported losing 35% of their brick production in the earthquake, while others did not report significant losses.

Brick prices and financing

Pre-earthquake brick prices ranged considerably according to quality, seasonality and transport costs.

Following the earthquake brick prices from suppliers for mid range quality bricks increased by between 25% and 50%. The assessment found that these prices were likely to continue to rise to 150% of their pre-earthquake cost.

Two years after the survey, brick prices in Pedang were between 60% and 100% higher.

Both small and medium scale brick manufacturers used informal credit and selling arrangements with their customers and distributors. Local supply stores typically paid small-scale manufacturers for bricks once they had sold them.

All brick manufacturers, but especially small and medium scale producers, had limited storage and warehousing space. These space limitations forced manufacturers to move their bricks to market quickly. It encouraged large suppliers and distributors to increase their prices to meet speculative market demand.

The survey used teams from nine different organisations working together. Photo: Unknown

Brick demand

60% of all households interviewed indicated that they would re-use as many bricks as possible. A rough estimate suggested that many households would be able to salvage 800-1200 bricks from the rubble. As an average size brick masonry house of 10m X 12m used approximately 10,000 bricks, approximately 10% of this demand would come from recycled materials.

Although 67% of all households interviewed said they lived in a brick masonry house before the earthquake, 54% of the brick masonry households indicated they would prefer to rebuild timber and brick houses. Safety concerns were most often cited as the reason for this preference, followed by cost considerations.

There was some concern raised that recycled bricks would not perform so well as new bricks because as cement mortar cannot bind to them so well.

Gender issues

Women made up 40 - 60% of the labour force of small and medium scale brick manufacturers. They were typically paid on a piecework basis for each brick they made. Male brick labourers are likely to receive a daily wage for their work.

As current brick production for many small-scale producers is affected, the ability of brick making women to earn wages was temporarily disrupted.

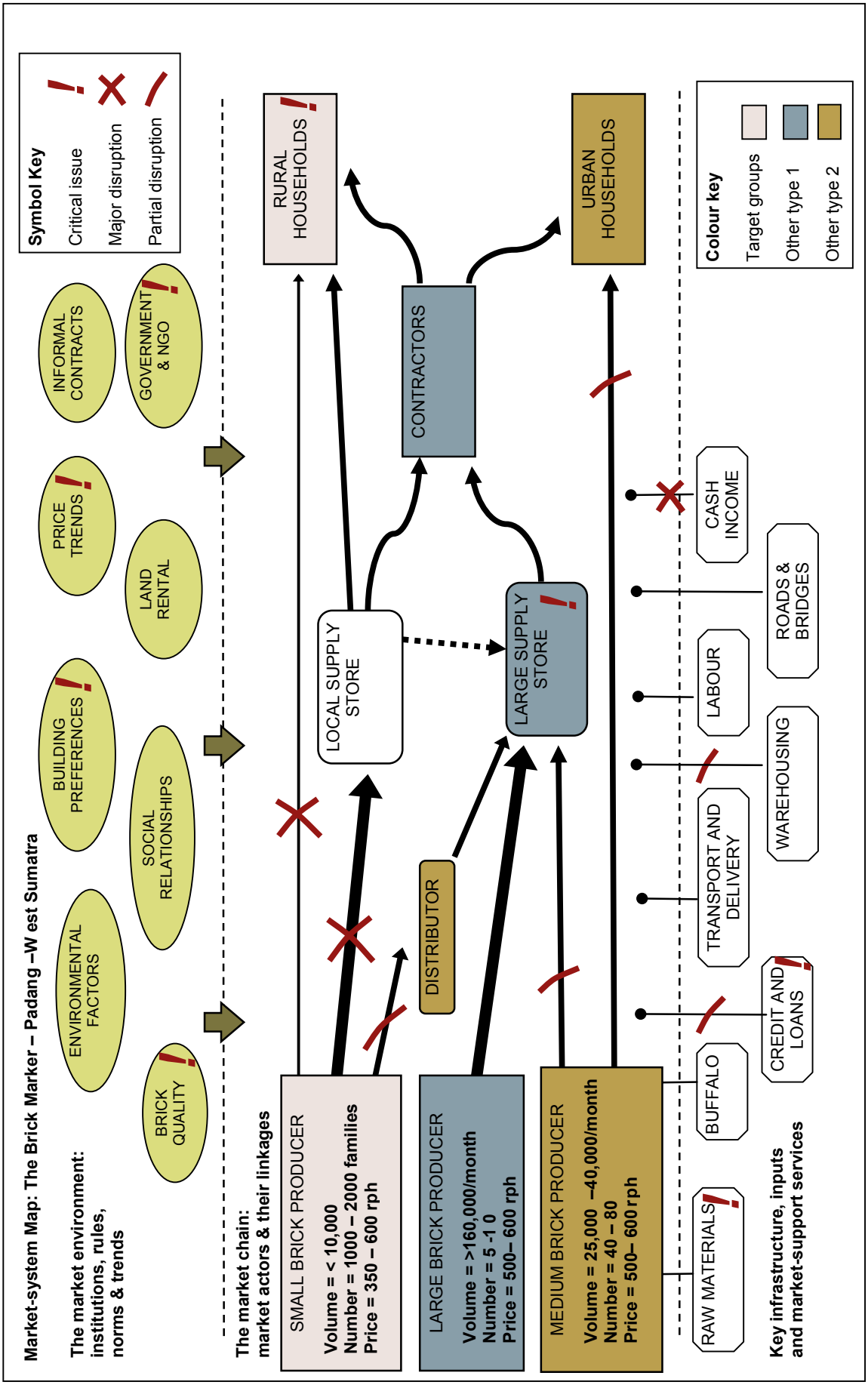
Possible scenarios

The analysis suggested that:

- Earthquake damage to regional brick production capacity would likely lead to higher brick prices and delays in rural housing reconstruction. Large brick manufacturers were likely to reach previous production capacity within two months. Resulting transportation cost increases could lead to a price increase of between 100% and 150% per brick.
- Small - scale brick manufacturers would be slow to resume pre-earthquake production levels without financial assistance or favourable credit terms. Their ability to resume production was restricted due to capital shortages, or favourable credit arrangements.
- The demand for timber and bricks was high, and was likely to increase. Over 60% of earthquake affected households interviewed in this survey indicated that they planned to rebuild (or would prefer) timber frame houses with brick masonry infill walls over full masonry construction. Concerns over seismic safety, speed of construction, and lower costs were the main reasons for this change in preference.

Impacts of the survey

Because the survey was conducted by teams from many organisations, it helped to get support for the findings. Although not all of the recommendations were implemented, it did help organisations and coordination teams to form an advocacy position away from building full masonry structures, instead promoting semi-timbered structures with support provided in cash.



A main tool in EMMA is the Market-System Map. This helps to visualise the difference between the markets before and after the earthquake.
This map is for the brick market in Pedang following the earthquake. The black arrows show how bricks reached homeowners from the different scale suppliers, and the red lines show which supply routes were interrupted.

A.14 Indonesia - Sumatra - 2009 - Earthquake

Case study:

See A.12, "Indonesia - Sumatra - 2009 - overview", p.45 for background.

Country:
Indonesia, Sumatra, Padang

Disaster:
Earthquake

Disaster date:
September 30th 2009

No. of houses damaged:
115,000 destroyed houses
135,000 damaged houses

No. of people affected:
Approximately 1,250,000 people affected through total or partial loss of shelter and livelihoods

Project target population:
Shelters for 750 families
Household items to 30,000 families

Occupancy rate on handover:
Unknown

Shelter size:
Variable

Materials cost per household:
275 USD

Project timeline

- 7 months – Project completion and evaluation
- 6 months – Cash distributions
- 5.5 months – Market surveys
- 5 months – Registration
- 4 months – Project assessment
- 4 months – Project start
- 3 months – Shelter kits, tool kits, household and hygiene items distribution complete
- 4 days – Non-food items were distributed from pre-positioned stock
- September 30th 2009 – Earthquake

Project description
Cash was distributed to allow 750 families to build transitional shelters. It built on the initial emergency shelter response in West Sumatra in which a package of shelter materials, toolkits, common household supplies and basic hygiene items had been supplied to 30,000 families. Each beneficiary household received approximately 275 USD and technical training on safe construction and minimum standards for shelter. A partner organisation provided technical advice on construction.

Strengths and weaknesses

✓ Cash grants helped people buy what they needed for construction. People had flexibility to build what they wanted.

✓ The injection of cash into the markets boosted the local economy and has assisted the self-recovery of other community members, who are also starting to rebuild their homes.

✓ Despite the amount of money being insufficient to complete all work required, it gave people a strong starting point to begin recovery. Many people became motivated to begin construction.

✓ Existing relationships between project staff and communities helped trainings and cash distributions run smoothly, even though there was some unrest from those who had not received support.

× The sum of money was too small for all construction.

× Project timeframes may have rushed construction and not have encouraged families to build safely.

× There was some resentment from those who did not receive cash grants. There were sometimes very slight difference between recipients and non-recipients circumstances, which made it hard for some to understand why they had not received support.

× Transitional shelter support should have arrived earlier. After three months of living in inadequate shelter, many households were ready to build semi-permanent structures.

× The half day of training provided to beneficiaries was insufficient. House improvements were not covered in trainings.

- There are strict rules that limit logging locally. Many beneficiaries only used trees from their own land.

- The local cost of materials did not increase. However, there was a reported increase in the cost of skilled labour, which was in low supply and high demand.

Background

See "A.12 - Indonesia - Sumatra - 2009 - Overview" p.38.

Distributions

The organisation initially responded with non-food items. This started 4 days after the initial disaster. Rapid response was made possible by pre-positioned stocks in Indonesia, held in the cities of Medan, Jogjakarta and Ambon.

From October to December 2009, shelter kits, tool kits, household and hygiene items were distributed to 30,000 families.

Transitional shelter

In January 2010 the organisation shifted its focus to transitional shelter through cash programming. This was aimed to complement the organisation's previous work and give earthquake affected people the flexibility to purchase materials and construct homes that met their needs.

The approach of providing cash to enable self build was encouraged by the government, as it complemented its own program to distribute larger cash grants to facilitate permanent construction.

Selection of beneficiaries

The selection of the community was based on the organisation's existing knowledge from its initial response and consideration for the need to have a close liaison with local authorities and key stakeholders.

In each community, the organisation presented the information in meetings. The communities then elected local committees. The organisation requested that these were gender balanced and representative of different age and social groups.

The committee's role was entirely voluntary and a Memorandum of Understanding was signed with each committee to lay out clearly their roles and responsibilities.

Each local committee was asked to produce an initial list of beneficiary households, whom they believed matched the targeting criteria. These lists were then posted publicly.

Project staff verified each household recommended by the committee and selected 620 names for the final beneficiary lists giving priority to the most vulnerable and needy, taking into account the targeting criteria.

Implementation

The organisation distributed cash grants in two instalments.

An initial cash grant of 80% was followed by house by house monitoring to assess whether cash was being used for shelter and the compliance with minimum standards.

A second grant of 20% was distributed. For both payments, vouchers were given that were later exchanged for cash by the mobile post office.

Delivery mechanism:

The organisation initially considered using a bank to distribute funds, but not all beneficiaries had a bank account or could go to the nearest town to collect the funds.

After consulting the communities and other organisations working in the sector, the Indonesian postal service (Pos Indonesia) was selected as the best way to distribute the cash grant.

A mobile post office distributed the cash grants directly to each beneficiary in their village. Other organisations had already used this system and its feedback was very positive. Since cash grants would be distributed directly to each beneficiary, there was no need to establish beneficiary groups and train their members to manage the funds.

Market analysis

In order to monitor the impact of the cash injection into the local economy; market surveys were carried out at 3 project intervals. A baseline market survey was conducted prior to cash distribution, in order to establish the local availability and cost of materials. This was followed by two further market surveys after the disbursement of the first and second instalments of the cash grant.

Technical solutions

Technical support was provided through two different kinds of trainings:

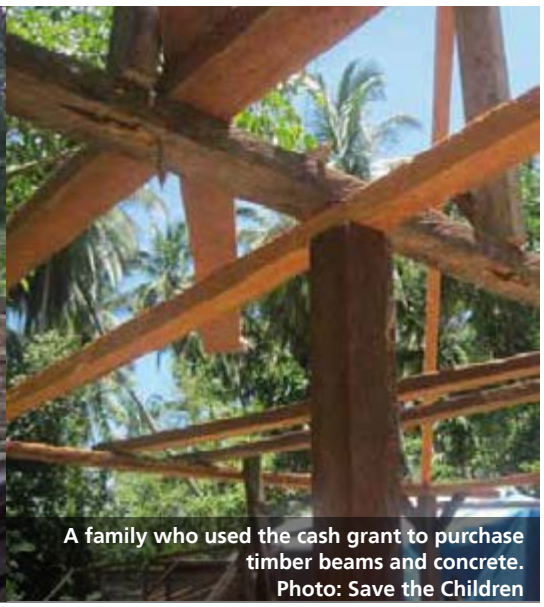
1) Training facilitators

Project staff received training from an international organisation. While the training provided on T-Shelter gave staff sufficient grounding in good T-shelter construction both for community training and monitoring, they were not sufficiently equipped to assess

Many materials could be salvaged. Cash grants allowed people to pay for materials and labour according to their needs.

Temporary shelter built whilst owner was awaiting labour to complete his house. Photo: Save the Children

House for 9 people under construction in the foreground.
Photo: Save the Children



A family who used the cash grant to purchase timber beams and concrete.
Photo: Save the Children

semi-permanent structures or renovations to damaged homes which the majority of beneficiaries had opted for.

2) Training beneficiaries

Project staff held 11 two hour workshops in the villages, to disseminate technical information about construction standards and methods among selected beneficiaries. At the end of their training, beneficiaries received vouchers to be exchanged by cash.

Complaints response mechanism (CRM)

1) At the targeting level

The committees posted the final list of names on community notice boards. At the same time, boxes were installed to collect complaints from those who had not been selected, so they had an opportunity to make their case. Three days later, boxes were collected. After analysing the messages and complaints, meetings were to be held with committees. If those who had complained qualified, they would be added to the final beneficiary list.

2) At the implementation level

The community would be able to file complaints and give feedback throughout the entire duration of the project, not only during the selection phase. The communities would have the opportunity to meet directly with staff during their visits, approach shelter committees or drop a note in a confidential complaints box. During February the monitoring and evaluation team also enabled a "complaints hotline" for all sectors, so people could call or send their comments using text messages.

Monitoring

During the monitoring phase, the team used guidance and an agreed format to check the compliance with the following cluster-agreed minimum standards:

- Materials and construction should allow for 24 months of use.
- A minimum of 3.5m^2 covered living area per person.
- A minimum of 2m from the ground to the eaves.
- The roof should provide adequate strength and have a pitch of at least 25^0.
- There should be adequate ventilation.
- The shelter should provide protection from rain.
- There should be at least one internal division for privacy.
- Building should use safe construction techniques to minimize the impact of further natural hazards.

A "renovation": the roof and foundations were solid - the owner used materials bought with the grant to repair the shelter.
Photo: Save the Children

A.15 Indonesia - Sumatra - 2009 - Earthquake

Case study:

See "A.12 - Indonesia - Sumatra - 2009 - Overview" p.38 for background.

Country:
Indonesia, Sumatra, Padang

Disaster:
Earthquake

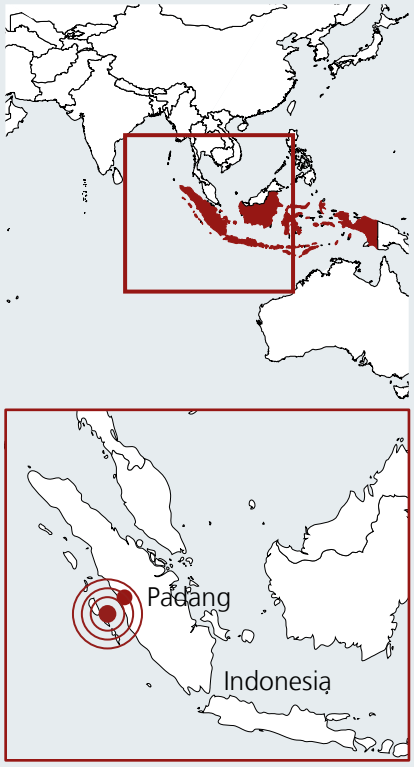
Disaster date:
September 30th 2009

No. of houses damaged:
115,000 destroyed houses
135,000 damaged houses
(approx. 70,000 in Padang city)

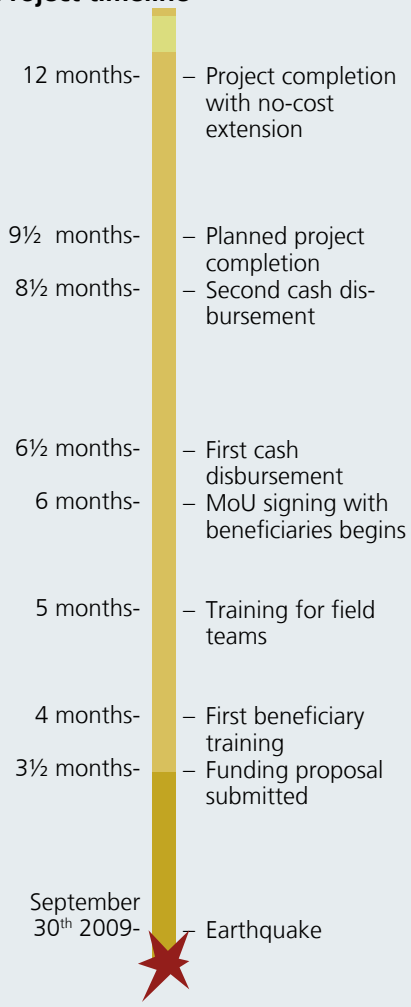
Project target population:
3,400 households (3% of overall houses destroyed)
Occupancy rate on handover:
66% of all shelters occupied 12 months after the earthquake.

Shelter size:
Variable

Materials Cost per household:
Cash grants for T-shelter:
330 USD per unit
Government estimates for reconstruction of a destroyed houses: 1,600 USD



Project timeline



Project description
An international non-government organisation working through a local partner provided cash grants for shelter. Conditional cash grants were given to 3,400 families in two instalments. The local partner used six mobilisers to give technical support. Beneficiaries paid for materials and labour to build timber homes. Most shelters took 10 weeks to build. 77% of the shelters were completed within 12 months of the earthquake.

Strengths and weaknesses

✓ Each family was able to build according to their needs and wishes. This improved ownership.

✓ Families built shelters that they felt were permanent. Families invested and built quickly.

✓ A transparent complaints mechanism helped with the perception that beneficiary selection was fair.

✓ The project worked in remote rural remote areas because people had space, owned that space and owned non-productive coconut trees.

× A disaster risk reduction opportunity was missed for people with damaged housing.

× The 120 field monitors and community volunteers had only a few days technical training. It was not realistic to expect them to check the construction quality of 3,400 unique houses.

× People without land or with damaged housing did not get cash or any technical assistance and often rebuilt dangerous brick structures.

- Standard designs would have made quality control much easier. However this would have curtailed the freedom of the beneficiaries to build according to their needs.

- Donors had some concerns that permanent housing had been built with emergency funding.

- The houses built might have been "safer", but It is a mistake to refer to them as earthquake or hazard resistant.

Background

See "A.12 - Indonesia - Sumatra - 2009 - Overview" p.38.

Before the earthquake

In West Sumatra, most families owned their houses before the earthquake. The region has a matrilineal system with women owning and inheriting land and housing. On marriage, the new husband will move on to the land of his wife's family. Housing has symbolic and social importance.

Family houses are built bit-by-bit. In rural areas people usually paid local builders to build or sometimes built houses for their own families.

Houses are not purely a financial investment. Remittances are a major source of housing finance and cash incomes are irregular and seasonal.

Organisational capacity

Before the 2009 earthquake, the organisation had significant practical emergency experience. Both the international organisation and its partner understood the need for experienced staff and sufficient time for community engagement.

The organisation also had experienced senior managers and partners who knew the community and spoke the local languages. The local partner organisation additionally had good and long term relationships with the affected communities. This reduced the need for lengthy formal assessments.

After the disaster

The earthquake of September 2009 destroyed 115,000 houses, and damaged 135,000 houses. In Padang the government responded with assessments and the promise of compensation. Many households affected by the 2007 earthquake were only just receiving compensation at the time of the 2009 earthquake so families did not expect compensation to arrive quickly.

Beneficiary selection

The communities were selected because the partner organisation knew them well.

To be included in the project, beneficiaries had to have land for a shelter and a destroyed house. Selected families were in a good position to complete their shelters as:

- They were in less urbanised areas and had previously lived in single storey buildings.
- They had access to timber and experience of using it.
- They saw the transitional shelter as a permanent home, worth finishing and worth investing in.

More than 9000 households were surveyed and given a vulnerability and eligibility score. Selection criteria included female and senior headed households, low-income families, pregnant women and children under 5.

Feedback and complaints

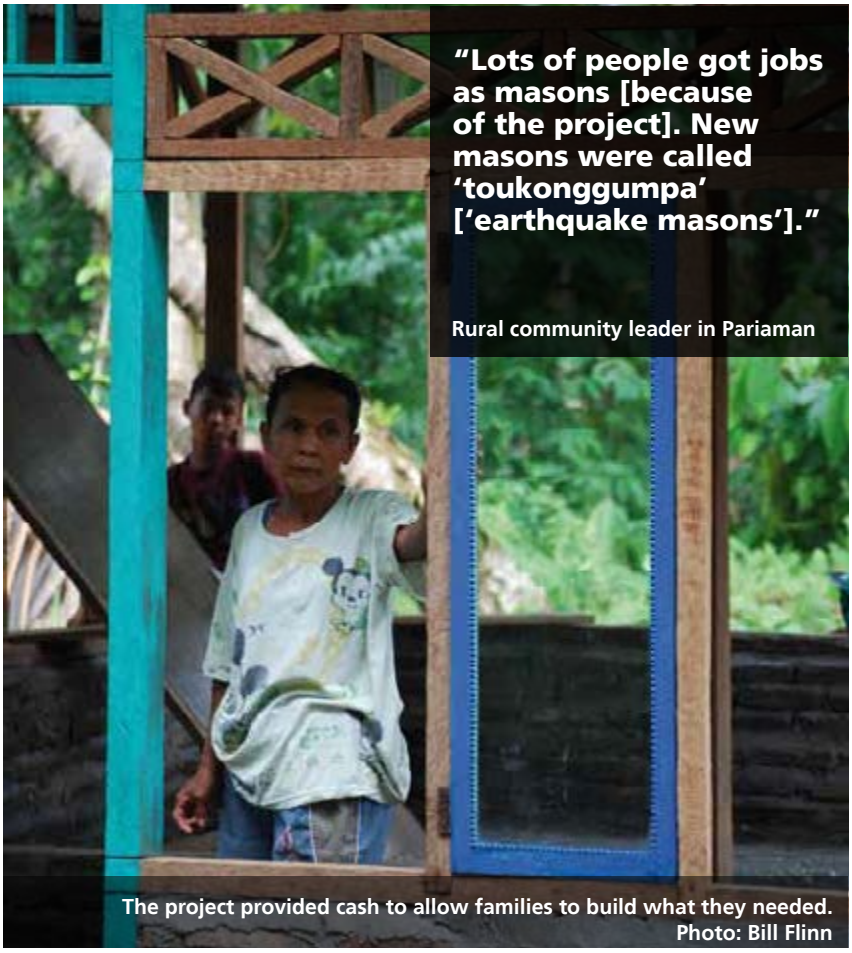
The community feedback and complaints mechanisms were essential to the running of the project. This system built on lessons learned from the 2005 tsunami response and Jogyakarta / Central Java earthquake response programmes.

The draft lists were posted in the communities along with posters explaining the selection criteria, detailed definitions of the project, an outline of a step-by-step implementation plan, and a hotline telephone number to call or SMS feedback, complaints or requests for information.

Senior project managers operated the phone and were available for office visits and had after hour telephone numbers posted on the office door. Each and every case was followed up on an individual basis with village government and community committees.

Implementation

Assessments and existing experiences showed that communities had the capacity, access to materials, labour and community cohesion to manage cash to build transitional shelters. A cash approach was also promoted by the Shelter Cluster. Beneficiaries built according to their needs, wishes and resources. This encouraged fast construction and a sense of ownership leading to high



The project provided cash to allow families to build what they needed. Photo: Bill Flinn

Monitoring safety of the structures was very challenging given that each family had the freedom to build according to their needs. Photos: Bill Flinn

completion rates and additional investment by beneficiaries. This was despite their low and irregular incomes.

The amount of cash was agreed with other agencies. It was enough to build a shelter if supplemented by salvage and available resources. The cash was given in two instalments (3 million rupiah or 330 USD). People could only get the second amount if they built a safer house.

Grants were delivered via the Indonesian post office in two stages. First the participants received 75% of the funds to complete 85% of the construction. In the second phase, the remaining 25% of the grant was disbursed.

At the outset of the project, families had to sign a Memorandum of Understanding that committed them to spend the money on timber framed transitional shelter and not on a permanent house or repairing an original house.

Technical

Four models of shelter were designed, but beneficiaries were free to build according to minimum standards.

A 60-strong team of mobilisers was established to motivate beneficiaries to build to an agreed quality and on time, over 10 weeks.

Participants received technical trainings on construction and how to use salvage materials. Better construction was promoted through minimum construction standards; training for field staff, beneficiaries and masons; production of posters and pictures; and weekly technical monitoring visits for all recipients of the cash.

Logistics and materials

Outsourcing material procurement and cash distributions was decided to be more effective than using the organisation's internal and limited capacity.

Good roads for material supplies and spare local capacity for labourers and suppliers to start up helped the project.

It was possible that more remote communities might have to pay higher prices for transport and labour. However, it turned out that people further from roads paid only slightly higher prices. The fixed cash grant for all families was seen as fair.

Impact

Twelve months after the earthquake: 77% (2,603) of the transitional shelters were complete, 11% (369) of the shelters were incomplete but in progress, 8% (265) of the shelters were incomplete and without sufficient progress to receive the second cash instalment, and less than 5% (163) had not been built.

Participants interviewed during the final evaluation stated that they had spent between 500 USD and 1,000 USD of their private funds in completing the shelters, and that the grant served as an "injection of motivation to a traumatised population".This resulted in variations in final shelters with many exceeding the minimum quality standards.

It is difficult to evaluate impacts on a local economy (especially without baseline data) but new jobs as "earthquake masons" and as "chainsaw masons" were created by the project. The injection of cash and short time frame for building briefly inflated the prices of some labour and some materials. Cash also appeared to have pushed some new businesses to open (e.g. a hardware store).

Completed homes were likely to be "safer" than the construction practices that have become prevalent over the past 30 years but cannot be described as earthquake or hazard resistant. The freedom which was a strength also lead to a wide variation in quality and divergence from design principles.

Guidance used for a feedback and complaints handling mechanism

- Ensure that simple complaints and feedback mechanisms are written into project strategy and budget.
- Ensure that 'complaints handling' is written into job descriptions of staff at all levels of the organization, and that staff are adequately prepared and trained in handling complaints.
- Consult communities and select context appropriate means of communication and technology to receive feedback and complaints and provide a response (e.g. phone or email systems, visiting hours, feedback boxes).
- Define the process for complaints handling including timeframes, appeal process and explain the complaints you can and cannot handle.
- Ensure the mechanisms are safe, non-threatening and accessible to all.
- Inform communities about the complaints process, explain it is a right and encourage communities to use it.
- As much as possible, involve local community members, leaders and authorities in the handling of registered complaints.
- Provide communities with relevant and timely information about project criteria and parameters to use the feedback and complaints mechanisms, and of improvements and changes made to the project (or why changes are not possible).
- Ensure sufficient time and flexibility of implementation to respond to complaints.
- Keep records of incoming feedback and complaints, and evidence of follow-up to allow senior management supervision and external evaluation.
- Ensure mechanisms are in place for serious complaints, like allegations of sexual abuse, fraud or other sensitive issues.

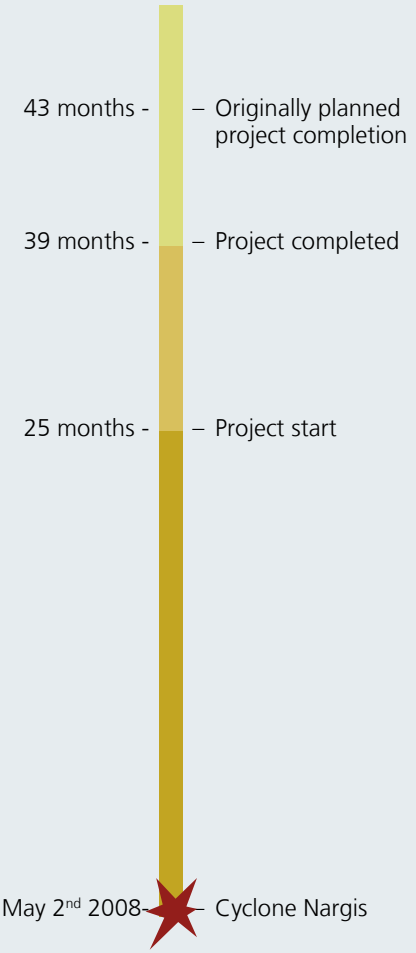
Various types of structure were built during the project. Photos: Bill Flinn

A.19 Myanmar - 2008 - Cyclone Nargis

Case study:

Country:
Myanmar
Disaster:
Cyclone Nargis
Disaster date:
May 2nd 2008
No. of houses damaged / destroyed:
42,194 in Dedaye Township (172,000 in all Nargis affected areas)
No. of people affected:
160,000 in Dedaye Township (2,433,300 in all Nargis affected areas)
Project target population:
1,658 households (8,250 people)
96 carpenters employed
Shelter size:
15.6m² covered space per family
Project cost per shelter:
650 USD

Project timeline



Project description
850 shelters were built and 800 shelters were retrofitted. All 1,650 shelters were provided with a latrine and a ceramic jar for water collection. The project aimed to address multiple issues of security, shelter recovery, livelihoods and future disaster resilience to provide a sustainable and holistic solution for the affected population. The project was implemented through the "People's Process" where people organise themselves to identify and prioritise their needs and together take decisions on their recovery.

Strengths and weaknesses

✓ Local communities were at the centre of the process of decision-making and all activities performed at the local level were recognised and owned by them. This led to the project concluding four months before the originally planned completion date.

✓ Communities benefitted from complementary water and sanitation activities such as reservoir ponds, tube wells, water tanks and school latrines.

× The project did not start until 25 months after the cyclone.

× Buildings made from toddy palm timber can withstand strong winds, but are not as strong as buildings made from hardwood timber. Hardwood timber was too expensive for the available budgets.

× The shelters will not be sufficient to withstand another event of the magnitude of Cyclone Nargis.

× The project met the needs of less than 4% of the affected population.

× In one village, beneficiary selection became highly contentious because nearly everyone in the village had suffered great losses as a result of the cyclone.

× Some timber on shelters scheduled for retrofitting, turned out to be rotten on the inside requiring additional work and materials.

× While some of the target villages were located in remote areas of the township, the project was less successful at reaching individual households or clusters of households that were far from village centres.

- It is hoped that villagers who are not direct beneficiaries of this program will take note of the Disaster risk reduction components of the project.

Construction was managed by Village Reconstruction Committees who handled all of the funds required. Photos: UN-Habitat Veronica Wijaya

After the disaster

Cyclone Nargis hit Myanmar in May 2008 damaging or destroying an estimated 800,000 houses. 450,000 of these were totally destroyed. Damage was caused by a combination of high winds and a storm surge up to 4m tall in coastal areas.

Village selection

The 50 worst affected villages in Dedaye were selected for community-wide interventions. Of these 50 villages, 32 were selected. Selection was based on damage assessments, perceived vulnerability to future cyclones and flooding. The selection was based on the experience of Nargis and other more recent storms.

The villages selected were located in relatively inaccessible areas and had benefitted the least from aid and recovery efforts by other humanitarian organisations during the two years following Nargis.

Village recovery committee

Community mobilisers visited the affected areas to establish a rapport within the communities and to help to organise mass meetings during which residents were encouraged to understand the need to organise themselves.

At these meetings, the communities nominated the individuals to represent them on the Village Recovery Committees. The committees worked directly with the implementing agency during the project.

The committees were generally comprised of 10 to 12 members, of which 4 members occupied the leadership positions of Chairman, Secretary, Treasurer, and Assistant Treasurer. Of the 287 members of the 32 committees, 46% were women, and 42% of members in management positions were women.

Training was provided to guide members in best practices for committees, such as ensuring representation of all village inhabitants, training on quality control, procurement, finance and bookkeeping. To ensure fairness of the procurement and certification process, lists of materials and local labour wages and charges were obtained from township and village authorities and upheld during the implementation process.

Selection of beneficiaries

Within villages, the community members were responsible for selecting the individual beneficiaries. The basic selection criteria was that the families and individuals were not capable of repairing or rebuilding their own homes. This included, for example, female-headed household, widows, the elderly and persons with disabilities that had no family support.

Priority was given to people currently living in structurally unsafe dwellings such as tents, camps or makeshift huts precariously constructed from weak, low quality and/or temporary materials like tarpaulin roofing. All of these families and individuals had faced acute water and sanitation problems.

Training of carpenters

Selection of carpenters began as soon as villages were selected. Training began during the third week of August 2010. The training emphasised cylone-resistant building techniques, consistent with the goal of "building back safer".

The basic criteria for selection of carpenters, as identified by the committees, included that the candidates come from the beneficiary village, maintain a strong sense of community spirit and service, and practice carpentry or a similar trade as a livelihood activity.

A total of 96 carpenters were trained, and each trainee received a tool kit containing 21 tools.

Community contracts

Once designs for house construction / retrofitting were agreed upon, 32 Community Contracts were signed with the 32 committees. These specified the work to be performed, its duration and the schedule of payments.

The allocated funds were disbursed in two instalments; 80% of funds were released at the inception and the remaining 20% were given once a benchmark of works stipulated by the Community Contract was completed.

The Village Reconstruction Committees were responsible for paying the carpenters, other artisans and labourers, and for disbursing funds for the purchase of materials. In the interest of transparency, the amount given to each committee and then to each group of beneficiaries, was publicly posted so that it could be reviewed by anyone in the community.

Community meeting. People organised themselves to identify and prioritise their needs and together take decisions on their recovery. Photo: UN-Habitat Veronica Wijaya

Women's participation

The project gave equal attention to involvement of local women in target areas. Out of 287 members of the Village Reconstruction Committees, 46% were women.

Women community facilitators played key roles in empowering and involving local women in activities of the programme in the field. Some committees had actively mobilised women in procuring, supervising and monitoring the retrofitting and construction of shelters in their villages.

Women participating in purchasing and transportation of construction materials, land cleaning and levelling, construction, supervision and monitoring of works and management of funding, gained confidence and benefited from learning programme implementation activities.

In all village reconstruction committees, the treasurers were women.

Environmental mitigation

Materials used such as toddy palm and bamboo are natural products and are sustainable sources of timber (growing locally and quickly). While concrete was only used for the footings of the shelter, the mixing of concrete can contaminate water sources if care is not taken. Carpenters and masons were trained to avoid this through the use of a system of settling ponds.

Crude oil was used as a wood preservative only for key structural components of the shelter. Only the exact amount of crude oil needed was bought.

Complementary activities

The programme had household water and sanitation facilities built in to the budget, so that every household receiving shelter support also received a water storage jar and a latrine.

The latrines provided are called "Fly-proof Latrines" because the toilet is covered with a wooden lid and waste goes directly into a septic tank before it can attract flies or other pests. Very little maintenance is required for these units. They can be flushed with water.

Hygiene education had previously been given to all communities.

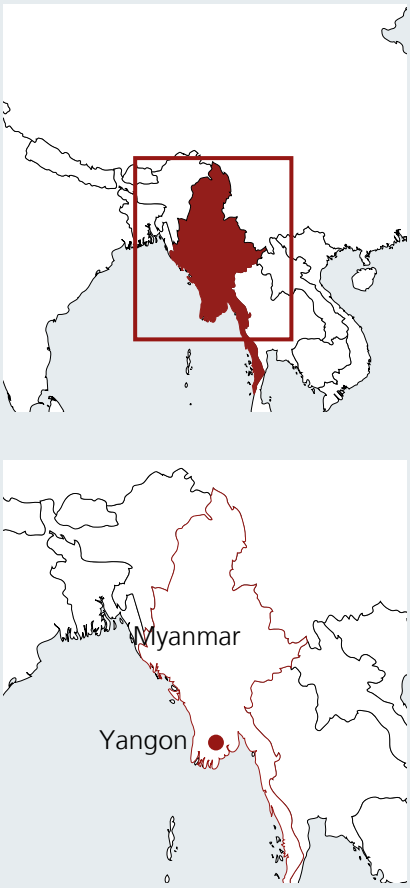
Communities were also engaged in upgrading village roads and footpaths, upgrading or constructing village flood protection dykes and embankments, upgrading and construction of small bridges and pond renovations.

Shelters were built using locally available materials including toddy palm and bamboo. Photo: UN-Habitat Veronica Wijaya

A.20 Myanmar - 2008 - Cyclone Nargis

Case study:

Country:
Myanmar
Disaster:
Cyclone Nargis
Disaster date:
2nd May 2008
No. of houses damaged:
172,000
No. of people affected:
2,433,300
Project target population:
533 households
Shelter size:
20m²
Materials cost per household:
600 USD
Project cost per household:
970 USD approximately



Project timeline

Project description
The project constructed 533 shelters by providing materials and carpenters, and was in response to a review one year after the cyclone which found many families remaining in poor shelter. The project had a significant training component, but had significant issues with procurement of materials of suitable quality.

Strengths and weaknesses

✓ The beneficiaries who received support were pleased with their new houses.

✓ The training of the carpenters was efficient and the work was well organised. This is particularly in evidence in the consistent good standard of construction.

✓ The houses are much stronger than contemporary houses built by families on their own.

✓ The beneficiary families were familiar with the key principles of safer construction, and were able to explain the majority of the points. However it was not clear how many non-beneficiaries learnt the techniques.

× Some families were not entirely happy about the beneficiary selection process. It would have benefitted from more transparency and community participation.

× Construction materials supplies and quality are the weakest point of the project. Yangon based suppliers were initially used, and there were problems with quality and timeliness of materials. Using local suppliers later in the project reduced these issues.

× The bill of quantities should have been better defined.

× There were missed opportunities to engage the beneficiaries in making the bamboo mats for walls and floors and in preparing the thatching panels.

× The project only provided shelters for families who had land to build on.

× The beneficiaries think the house will last 4 to 5 years, but some components will have to be changed before that time.

- Families said that the size of the house is fine for a quite small family, but for a large family it is a bit cramped and they wished to add on extensions. By the end of the project, many families were already adding a small extension to the rear of the house.

"It is not difficult to build a decent house, but it is hard to get good materials. "

The local partner organisation

A model house built as part of the project to illustrate improved cyclone resistant techniques.
Photo: Tina Salsbury

Before the cyclone

The four villages in the project area were home to 4,213 households. The region is largely flat and low lying, with salt flats and paddy fields, and is divided by streams and a few navigable waterways. Many houses were in sites that were exposed to the wind.

The main livelihood activities were fishing, fish drying, salt production, coconuts, rice, stone cutting and stove production, and some vegetable production. The inhabitants were poor and had a low capacity to improve their homes without support.

Most housing had a framed structure, bamboo secondary structures with thatched roofing and thatched walls. Some houses had sawn timber frames and plank walls with corrugated galvanised iron (CGI) roofing. There were a few masonry or stone block houses.

Houses did not incorporate any features designed to resist the impact of high winds. They relied on vertical posts for strength, but many of these snapped off at ground level.

After the cyclone

One year after the cyclone, 120,000 families were still living in inadequate shelter that was neither sufficient to protect families against the current monsoon, nor able to resist any future cyclones.

In May 2009, a review showed that the majority of the households that reported severe and complete damage to their house could not undertake repairs due to the absence of cash or materials.

Very few of the houses built after the cyclone incorporated significant disaster risks reduction features. There was a lack of bracing, connections were not good, and many roofs had too flat a pitch.

Implementation

The project initially targeted 569 households, focusing on the most vulnerable families, to assist with the provision of materials and the construction of shelters that are disaster resilient. Subsequently, the number of households was adjusted to 533, taking account of revised construction costs at the start of the project.

Institutional setup

The international organisation would partner with a local community based organisation which had been working on the island in support of local families.

At the beginning of the project, the international organisation trained the implementing organisation in:

- Safe construction: this covered the technical issues related to safe houses – which resulted in making some changes to the proposed design of the house. A full scale house was then built in Yangon over four days so that all the details could be worked out.
- Training on fraud awareness, on accountability and humanitarian accountability partnership principles. Guidelines were provided for activity and financial reporting.

There were requirements for monthly reporting, but in practice this was not very detailed. This made it difficult to clarify questions relating to the selection of beneficiaries that arose later.

The international organisation had a full time engineer to oversee the project. It also conducted support missions for technical and administrative control.

Training

Through seven workshops, of which two in Deedukone and the rest in five other villages, a total of 607 people were trained (carpenters, beneficiaries, local authorities and leaders). 46 village leaders were given information about the principles of safe construction at the beginning of the project.

The project reached 2,607 people through the awareness raising activities. 83% of these were non-beneficiaries of the project.

1,148 people participated in a competition about the safer construction principles, with 115 people

Training focussed on key messages such as making good connections. Photo: Tina Salsbury

Households were later able to upgrade their shelters.

winning the contest in 31 groups spread through the four villages.

13 teams of 4 carpenters were trained and helped to build the full scale model house in Yangon at the start of the project, so that they were familiar from the outset about the ten principles of cyclone resistant construction and about the different techniques being proposed to make the houses more storm resistant.

Posters were distributed. These showed ten key principles of safe construction and details about safe bamboo and frame construction. They were put up on nearly all the houses and in the villages.

Most groups of families could remember many of the ten key points, and in several cases this was done with considerable animation and mime. Non-beneficiary families also knew some of the principles.

In a project evaluation, carpenters knew the construction principles, but could not always articulate this verbally. They said that they did not know how to convince clients to spend money on greater safety.

Tools

The teams did not get any tool kits. Each house required about 110 holes to be drilled. The holes for bolts were made with an auger, which was laborious. The carpenters said that the work would have been easier if each team had been adequately supplied with good tools.

A table from an end of project evaluation assessing the quality of shelters and the shelter design

1: Choose location to avoid force of wind		Poor adaptation to local site : some sites flooding at high tide ; some on rock required different foundations.	✗
2: Use simple regular shape		Good.	✓
3: Keep roof angle above 30°		Good.	✓
4: Separate roof, avoid large roof overhang		No lean to structures were planned, and only at the end of the project have families started to add on to their house. Most know about having a separate roof and respecting the key principles.	✓
5: Good connections		Yes, quite good; families have difficulty to find the same fishing line, and suggest using nylon fishing string, which would be ok; people like the use of nuts and bolts.	✓
6: Diagonal bracing		Yes, well integrated.	✓
7: Fix roof down		Yes, with bamboo trellis frame over the thatching panels.	✓
8: Opposing openings		Yes.	✓
9: Window/door leaves shut		Yes.	✓
10: Plant trees as wind breaks		Many sites so far have nothing on them, and planting may be difficult because of terrain in 89 cases on rock.	✗

✓ Strong enough

✓ Acceptable quality, needs to be improved

✗ Poor, needs more attention in future

A.26 Philippines - 2010 - Typhoon Megi

Case study:

Country:
Philippines

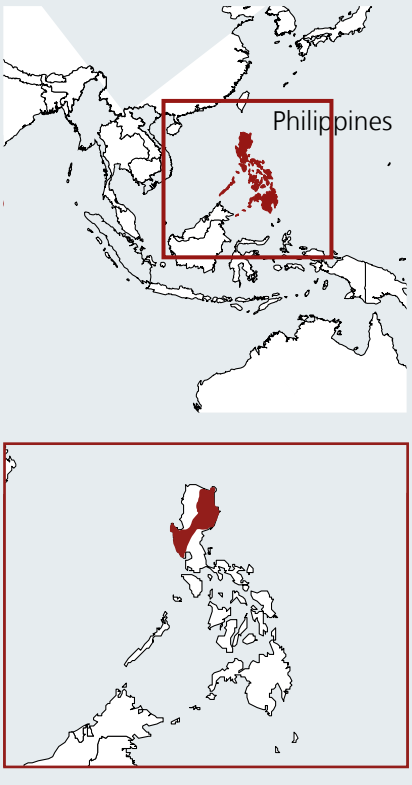
Disaster:
Typhoon Megi

Disaster date:
October 18th 2010

No. of houses destroyed:
30,048 (destroyed)
118,174 (damaged)

Project target population:
49,765 people (9,953 households) in Cagayan, Isabela, Kalinga and La Union

Materials Cost per household:
160 USD for damaged houses, 340 USD for destroyed houses through cash vouchers



Project timeline

Project description
Vouchers were distributed to provide materials for the repair of 9,953 shelters. Two types of vouchers were tried. Initially people could choose from a given list of materials. Due to supply issues the project was adjusted so that people could choose the materials that they wanted up to a given value and from an approved list of suppliers. Families also received information on how to reinforce their homes against typhoons.

Strengths and weaknesses

✓ The cash voucher approach ensured that beneficiaries played a bigger role in their own recovery.

✓ According to a project evaluation people assisted felt that orientation and information sessions enabled them to understand what they were entitled to receive.

✓ Recommending several hardware stores allowed people to shop around, but also allowed them to choose the most convenient stores.

✓ Vouchers allowed people to identify and prioritise their own needs.

✓ The value of the vouchers was sufficient to meet the immediate shelter needs. However many people added their own resources to repair their houses.

✓ The majority of people supported by the project preferred vouchers to direct cash. Their main reason was that vouchers enabled them to avoid spending cash on other needs. It also allowed the organisation to agree fixed prices with the suppliers and guarantee quality.

× Initial attempts to restrict which materials could be used failed due to supply shortages following a government ban on harvesting timber.

× Some dishonest suppliers could cheat beneficiaries of some items and claim them in invoices. Financial controls aiming to prevent this required a very large amount of documentation and massively increased the workload for project and finance staff.

× A minority of beneficiaries colluded with suppliers and used their cash vouchers for other unintended purposes. In part this was due to shelter not being seen by all of them as the highest priority.

× Not all households adopted improved typhoon-resilient construction techniques. The project could have better promoted and trained in safer construction techniques.

Vouchers were provided that could be used to purchase materials up to a given cash value.
Photo: Hajime Matsunaga/IFRC

Before the typhoon

The Philippines has a history of storms. In late 2009 Typhoons Ketsana and Parma caused considerable damage. Three of the districts hit in 2009 were also hit by typhoon Megi in 2010.

After the typhoon

Typhoon Megi caused significant damage to houses, livelihoods and infrastructure. The damage was mainly due to the powerful category 5 winds when the typhoon made landfall. The damage was largely focused on five provinces.

Two weeks after Typhoon Megi, heavy rains caused further damage. The typhoon and the rains combined further stretched community coping capacities.

Implementation

The shelter interventions had two components:

- Category I - shelter repair kits for families whose homes were damaged.
- Category II - shelter repair kits for families whose homes were destroyed.

Initial plan

For Category I shelter repair kits, families were provided 7,000 PHP (150 USD) .They could collect any combination of materials and tools in a predetermined list from a shop of their choosing, as long as the total cost did not exceed the allocated amount.

For Category II shelter repair kits, each beneficiary family would also receive an additional commodity voucher worth 7,000 PHP (150 USD) to obtain the same materials and tools as in Category I shelter repair kits. Under this category the families would also receive the following materials to enable them to place poles in reinforced concrete footings:

- three bags of cement,
- six timber posts - 6"x6" (150x150mm) or 4"x4" (100x100mm),
- eight x 6m, 10mm diameter steel bars,
- four x 6m, 8mm diameter bars.

Revised implementation

In February 2011 a government ban on harvesting timber was established. This lead to a new methodology being established. In this approach, people were provided with cash vouchers, which they then use to purchase their choice of shelter materials.

Families are not given a predefined list of materials. Instead, the organisation conducted price surveys and recommended several shops from which beneficiaries could obtain shelter materials.

Families repaired or rebuilt shelters through *bayanihan*. This is a tradition common in Philippine rural areas, where community members help each other. Through *bayanihan*, those households who are physically unable to build [older people, people with disabilities, households headed by women and households headed by children] are supported by their fellow community members.

The period during which vouchers could be redeemed was limited to a fixed period. This amount of time depended upon the capacity of the shops and number of beneficiaries per shop. Selected shops were required to display fixed prices of main shelter materials throughout the time.

Each voucher could only be redeemed in one shop. However, beneficiaries of Category II shelter repair kits received two vouchers of USD 150 and were able to redeem each voucher at separate shops.

Selection of beneficiaries

As relief operations progressed, the organisation reverified the beneficiary lists. Details were initially provided in lists by the government. During reverification, the sites of all damaged or destroyed homes

Families rebuilt the shelters through community self-help.
Photo: IFRC

The organisation monitored the shops. Photo: Hajime Matsunaga/IFRC

A typical house rebuilt using the grants. Photo: IFRC

were visited, to assess the extent of damage, and check that families met agreed beneficiary selection criteria. This was to ensure that the most vulnerable were supported and that they had not received assistance from other actors.

Shelter assistance targeted families that lacked the capacity to repair or rebuild their homes. In addition to this, the beneficiary selection criteria prioritised families headed by women without income, families headed by children, persons with disabilities, families with young children or elderly family members, families from ethnic minorities and other socially excluded groups.

Team members undertook continuous reverification to ensure that only deserving beneficiaries received shelter assistance. This took into account the reality that other actors could have served some of the targeted beneficiaries in between the initial reverification and the period they were scheduled to receive shelter materials.

Technical solutions

Before the beneficiaries received the materials, they attended orientation sessions organised by project teams composed of carpenters, and project staff. The orientation sessions highlighted basic building techniques. During the sessions, beneficiaries were provided with posters showing how to construct typhoon-resistant shelters to encourage them to construct houses with steady foundations, and to place poles in concrete footings with reinforcement.

In the initial approach of commodity vouchers, carpenters were part of the project team and participated in beneficiary orientation sessions. Their role extended to assisting beneficiaries in selecting materials and guiding them when repairing or rebuilding their houses.

In the new approach of providing cash vouchers, carpenters were no longer a part of project teams. Instead, beneficiaries were encouraged to engage the services of carpenters independently. This was because beneficiaries purchased their choice of materials according to their respective, unique needs.

Logistics supply

Throughout provision of shelter assistance using the cash voucher system, team members monitored the market prices and visited designated shops on a regular basis to observe how families were obtaining shelter materials. Through this monitoring, the team was able to recommend several shops from which people could obtain shelter materials.

These visits ensured that shops applied fixed pricing for basic shelter items as agreed prior to distribution. This helped to eliminate the possibility of shops inflating prices or overcharging beneficiaries.

People in the project were also encouraged to conduct their own independent comparison of prices, to bargain for better prices with the shops, and to decide independently from which of the recommended shops to redeem their vouchers.

Though prices varied slightly from shop to shop, monitoring showed that beneficiaries were able to select shops from which they got most competitive prices and therefore more materials from the fixed voucher amount. The shops saw an opportunity to make profit from larger sales volume rather than per item.

A.31 Vietnam - 2009 - Typhoons Ketsana and Mirinae

Case study:

Country:
Socialist Republic of Vietnam
Disaster:
Typhoon Ketsana and Typhoon Mirinae
Disaster date:
September 29th 2009 (Ketsana)
November 2nd 2009 (Mirinae)
No. of houses destroyed:
23,500
No. of people evacuated:
356,790 people evacuated
Project target population:
Around 2,730 people (650 households) in seven provinces
Occupancy rate on handover:
100% (estimate)
Shelter size:
26 m^2 average
Materials Cost per shelter:
1,650 USD cash grant
1,300 USD average spend on material only

Project timeline

15 months – Internal review
13 months – 650 houses completed
10 months – Beginning of construction
9 months – Shelter advisor present (4 months)
– Trainings, selection of beneficiaries and house design
4 months – Project start
– Shelter needs assessment
3 months – Household items distributed to 60,286 people
2 months – Typhoon Mirinae
September 29th 2009 – Typhoon Ketsana

Project description
This permanent shelter project was implemented as part of the recovery phase of the typhoon Ketsana response. 650 households who had lost their homes were supported through cash grants to rebuild storm/ flood resistant houses. A technical consultant was hired to support a national organisation to organise trainings on safe housing, develop house designs and supervise the construction of houses.

Strengths and weaknesses

✓ Houses were built according to traditional design with necessary reinforcement. Daily construction work was closely supervised by local engineers.
✓ Families decided on the house design and were able to adjust the home according to their individual needs.
✓ Many families made additional contributions as they considered it a lifetime investment.
✓ The conditional cash grant enabled families to select local suppliers and builders whom they trusted, while benefitting from technical advice.
✓ Technical training helped families to follow each step of the construction work while being supported by project engineers.
✓ A participatory approach helped to provide a sense of ownership of their own homes. Some members of ethnic minority groups expressed their appreciation for their houses being reinforced.
× The organisation was slow to start the project. In part this was due to not getting the right people in place in time to start recovery planning.
× Water and sanitation (both hardware and software components) should have been included in the shelter programme as part of the house package.
× The houses were not all culturally acceptable to ethnic minorities. More detailed needs assessments should have been conducted.
× More attention should have been given to the disparities between provinces regarding the availability of local labour and prices for material and transport.

Training was conducted on safe construction techniques. Photo: DWF


Households were allowed to choose from certain given designs and encouraged to adapt them to meet their needs. Photo: DWF

Before the typhoon

The Socialist Republic of Vietnam is a single-party state. The Government at local level is represented by the People's Committee, in every province, district and commune.

Vietnam had been rapidly industrialising and there had been a significant improvement in people's living standards. However there remained wide disparities in income and living standards across the country. The seven provinces covered by this shelter project are among these poorest provinces of Vietnam.

Vietnam has a tropical climate with a hot summer and colder winter (especially in the north). The storm / typhoon season mainly takes place from August to November.

Houses are mostly based upon traditional styles, but using different materials (brick, cement blocks, concrete, corrugated Iron sheet) instead of wood and clay tiles used in the past.

When Typhoon Ketsana struck the central and highland areas of Vietnam at the end of September 2009, the government evacuated over 100,000 households.

Five weeks later Typhoon Mirinae hit central Vietnam, causing floods that swept away nearly 2,400 houses, and hitting the same people who were recovering from Ketsana.

After the typhoon

Houses were destroyed because they were in vulnerable locations, were poorly constructed, materials were used poorly and lacked reinforcement. Houses were destroyed both by the winds and by flooding. The poor quality of construction was compounded by a lack of financial resources and awareness.

For the response the organisation provided support with food, safe water and support for livelihoods. It also distributed basic household items to 60,286 people within the first three months.

Implementation

The project started with trainings in each province to cover the specificities of the shelter programme, beneficiary selection criteria, cash grant distribution process and related guidelines. The trainings were targeted at members of the organisation, People's Committee (representatives of the Vietnamese government) representatives from the province, district and commune levels.

This training was followed by community meetings in each commune to select beneficiaries following agreed criteria.

An international partner organisation was identified to provide technical support and oversight. The houses were constructed according to the following process:

1. The organisation conducted field surveys to assess needs and local conditions for construction, paying special attention to ethnic minority needs and customs.
2. Based on information gained, house designs were prepared in line with Vietnamese national and local government standards, taking into account culture, geography and exposure to hazards. Three standard house designs were developed for each province, and later adapted for each household beneficiary.
3. The organisation approved final beneficiary lists and cross-checked information. Working with the partner organisation, each family was consulted on the design, family contributions, availability of materials and skilled local labour.
4. Trainings were conducted on safe construction techniques. These targeted local builders, project staff and beneficiaries.
5. Construction then began. Beneficiaries received the first allocation of the cash grants following the laying of foundations by local builders. Grants were paid in cash, as are all other transactions at this level in Vietnam. Payment was also made to material suppliers at this time. The organisation and its partner monitored all stages of construction.

6. Within two months, most of the 650 houses were completed. Some delay was experienced due to heavy rain and lack of access to certain communes. Eleven months after typhoon Ketsana, all houses were completed.
7. In the last month of the project an awareness campaign was conducted on "safe housing". This was implemented by the organisation with the technical support of the partner. This included the printing of 1,000 calendars displaying the storm/flood-resistant house designs, a children's play emphasising the basic principles of safe housing, posters of the newly constructed houses in each commune, and the preparation of an atlas displaying typical houses from the seven provinces .
8. In December 2010, the shelter project was externally reviewed.

Selection of beneficiaries

The organisation established the selection criteria that households:

- were listed on the poverty list,
- had lost their means of generating income as a result of the disaster,
- had no labour force (elders, family with young children (0-5 years), pregnant and lactating women, disabled people, single female headed households),
- had no significant support received from other sources.

Village chiefs and members of the organisation chaired the community meetings to select beneficiaries. The number of beneficiaries was defined based on the criteria and on the allocated amount of cash grants.

The list of beneficiaries was then reviewed. All beneficiaries were verified on site and finalised by all levels of the organisation in coordination with local authorities and other community based organisations representatives.

10% of the beneficiaries were later checked through field visits. Once approved, the lists were issued and publicly posted in each Commune's People's Committee office.

Technical solutions

The following technical issues were standardised to make the houses flood/storm resistant:

- reinforcement of the foundations,
- reinforcement of the structure, with reinforced concrete columns (example: 4 steel bars instead of the traditional 3 bars), ring beams,
- reinforcement of the links between roof structure and walls, and roof covering,
- protection of tiled roof with concrete ribs and of corrugated iron sheets, with steel bars in coastal areas (with high risks of strong winds),
- doors and windows which can be securely closed,
- there should be an attic above the flood levels.

Families were given cash to build houses according to given designs. Photo: DWF

Logistics and supply

Households living in highland provinces faced problems regarding the availability of qualified labour force and transport of material. One local company was often building all houses for a selected commune.

In all other areas, families could easily select the builders and buy building materials in the commune shops with credit. Payment was made after receiving the cash grants.

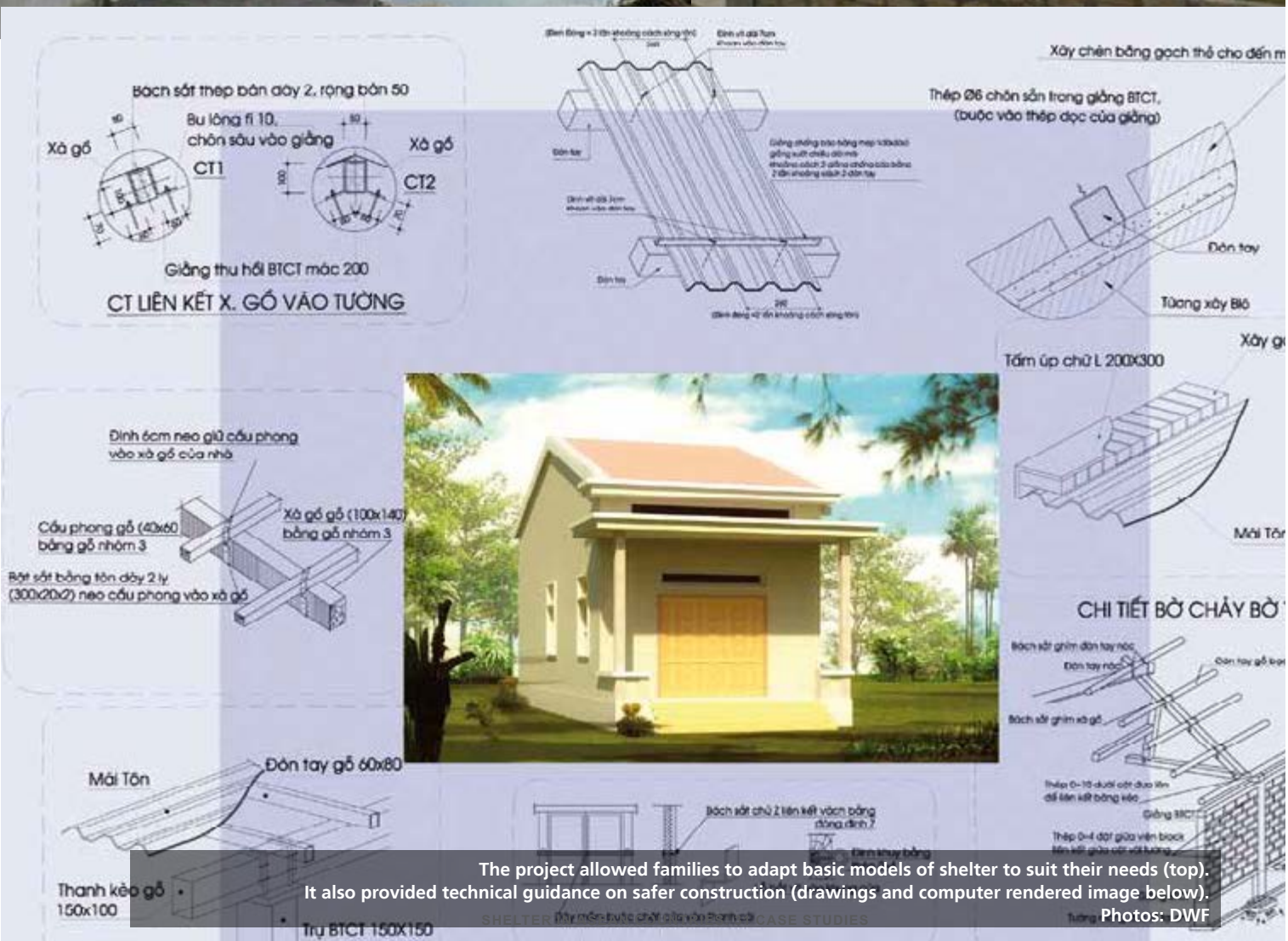
Generally speaking, all materials were available in the localities.

In two provinces, due to lack of capacity, the material supply and construction was done by small local companies paid for directly by the families. In the other provinces where more material and local builders were available, the families paid the material supplier and the local builder directly

Materials list

Example for a house built in Kon Tum province:

Materials	Quantity
Gravel	3m^3
Gravel	3.7 m^3
Cement	3,300 Kg
Sand	12 m^3
Sand	4 m^3
Brick	6,000.00
Steel bar 6mm diameter	55 Kg
Steel bar 8mm diameter	75 Kg
Steel bar 10mm diameter	120 Kg
Corrugated iron sheet	28 m^3
Door 2 opening	2.46 m^3
Door	1.64 m^3
Window	2.4 m^3
Window frame	3
Lime	52 Kg
Tool	1 Kg
Steel wire	10 Kg
Paint	7 Kg
Nail	1.5 Kg
Tiles edge	54
Timber 5mmx10mm	0.36 m^3



The project allowed families to adapt basic models of shelter to suit their needs (top). It also provided technical guidance on safer construction (drawings and computer rendered image below). Photos: DWF

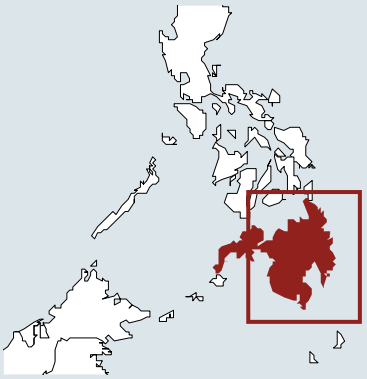
A.25 Philippines – 2011 – Cyclone

Overview:

Summary

In late 2011, over 39,000 houses were damaged and over 400,000 people were displaced by winds, floods and landslides following tropical storm Washi (also known as Sendong). Collective centres were established and non-food items were distributed in the first phase of the response.

After the emergency phase of response, transitional sites were established and programming shifted to include reconstruction on newly identified relocation sites (see A.27), transitional shelter programming in existing urban areas (see A.26), and repair and rehabilitation of damaged houses. After one year, 7,800 people remained in 38 different evacuation centres.



Background

The Philippines is a middle-income country, with a well-educated population and engaged local and national authorities. The Philippines regularly faces natural disasters and the country has had previous experience of coordination with the cluster system. This helped to manage the response efficiently.

Many low income families had settled in particularly vulnerable locations on river banks and other marginal land. In large parts of Mindanao there had not been any major disasters in recent memory.

In rural areas, families commonly lived in *amakan* type shelters (with woven bamboo walls) with frames made from bamboo and other varieties of wood.

For urban areas, people living at or below poverty line, lived in a mixture of raggedly constructed shanties and semi-concrete houses.

After the cyclone

Tropical storm Washi, (also known as Sendong), hit the Mindanao region of the Philippines from the 16th to the 18th of December 2011. The storm brought strong winds and heavy rain that led to flash floods, landslides and protracted flooding. 624,600 people were affected, 430,000 people were displaced and 39,000 houses were damaged or destroyed. The primary impacts were in Cagayan de Oro City and Iligan City.

In the immediate aftermath of the storm, people found shelter in evacuation centres, with host families, in rented accommodation, in makeshift shelters at the site of destroyed houses or in damaged houses.

The government immediately mounted a major emergency rescue, evacuation and response operation. Coordination was rapidly established in northern Mindanao by the Office of Civil Defence. It worked closely with international organisations, and established coordination groups for shelter, camp management coordination and for non-food items.

Approximately three quarters of those people affected by the storm lived at or below the poverty line with limited means for self-recovery. Of the partially damaged houses, nearly half had no structural damage but needed to be cleaned before families could move back in.

Two months after the storm, moderate to heavy rains fell over parts of Mindanao and Visayas islands, triggering some flooding and landslides. Although no flooding was reported in the areas affected by the tropical storm, the rain worsened the conditions in temporary shelters.

Before the cyclone, many families were living in locations that were vulnerable to storms and flooding, but that had access to livelihoods. The government declared that some of these were "no build" zones, and new sites had to be identified.
Photo: Wan Sophonpanich

Heavy rain caused over 400,000 people to be displaced. Most people made temporary repairs to their houses or moved in with host families. Photos: Anna Pont

Evacuation centres

A total of 119 evacuation centres were established, housing 100,000 people (20,000 families). Initial response mainly focussed on meeting the needs of people in these often crowded evacuation centres. Camp management committees were established in many of the sites.

By the end of 2012 many evacuation centres had closed, leaving 7,800 people (1,700 families) in 38 evacuation centres.

Tented camps

Some tented camps were established to decongest some of the most overcrowded evacuation centres, and to provide shelter for people living in evacuation centres which needed to be returned to their previous use (such as schools).

Transitional sites and Relocation sites

Where temporarily available land could be found, transitional sites were established as a more durable solution to camps (See A.26).

When land for construction could be negotiated on a long term basis, relocation sites were established (See A.27). After four months, seven relocation projects were underway, with a planned capacity of nearly 6,000 houses for households whose land was unsafe.

By the end of 2012, nine permanent relocation sites had been established by the local government working with NGOs. 3,147 shelters were complete, 2,943 of which were handed over. 359 more permanent shelters were being built.

Host families

Despite the early focus of relief activities on collective centres and the comparative ease of delivering large scale assistance to these centralised sites, the majority of the affected population found accommodation with host families. After 2 months, 260,000 people were living with host families. The main support that these families received was through emergency distribution.

Recovery

An interagency shelter assessment based on secondary data sources was conducted within the first month of the storm, but took some time to be finally published. It provided numbers of damaged and destroyed houses that were used as planning figures.

Following these results, the shelter organisations collectively agreed to prioritise support to the most vulnerable 65 per cent of people whose houses had been lost or damaged:

- families/occupants of the 13,850 structurally damaged houses who were at or below the poverty line
- families from all the 11,427 totally destroyed houses.

The government established a reconstruction policy that included:

- the establishment of no build zones
- permanent housing
- material supplies
- site upgrading for informal settler families
- housing loans for families in formal settlement sites.

In practice, the only no-build zones that were officially declared were in Isla de Oro and Cala-cala. These highly damaged settlements were directly in the path of the river. No official declaration was made regarding other high risk and medium risk areas.

Land

One of the major constraints in the provision of temporary and permanent shelter was the lack of available land. Identifying land and preparing transitional and permanent relocation sites took many months.

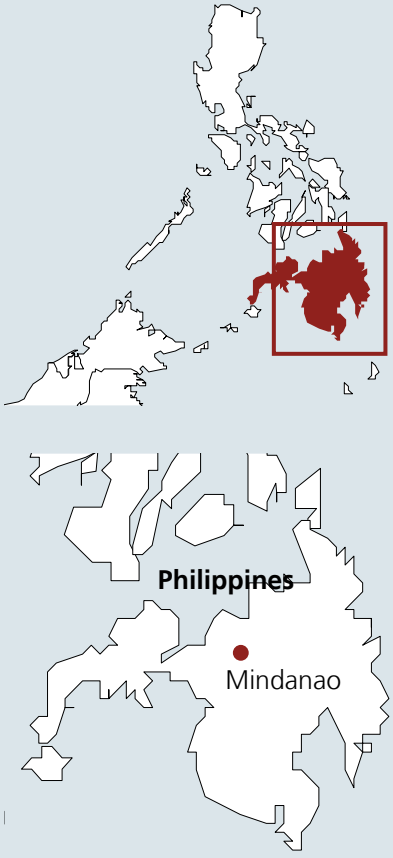
Camps were established for people living in closing or overcrowded evacuation centres. Some of the camps were very dense. Photo: Anna Pont

Some transitional sites were established as more durable solutions than camps. Photo: Anna Pont

A.26 Philippines – 2012 – Cyclone

Case Study:

Country:
The Philippines
Project location:
Mindanao
Disaster:
Tropical Storm Washi (Sendong)
Disaster date:
December 16th 2011
Number of houses damaged / destroyed:
39,000
Number of people displaced:
30 per cent of the 600,000 population of Cagayan de Oro City
Project outputs:
30 transitional settlement sites with services
1,823 t-shelters
Occupancy rate on handover:
92 per cent
Shelter size:
18m² for family of five
Materials cost per shelter:
US$ 410 for relocation sites
US$ 550 for on-site construction.



Project timeline

Project description

The organisation implemented an urban transitional settlement programme building 1,823 transitional shelters. Many complex issues arose, including land and property rights, zoning issues, high-risk settlements and providing shelter solutions to those without land rights. This programme demonstrated the importance of and challenges to acquiring land for transitional settlements.

Strengths and weaknesses

✓ The transitional shelter (t-shelter) design cost US$ 410, including labour. This was cheaper than emergency tents (US$ 800-1,000, including airfreight).
✓ The t-shelter design and was inspired by the local vernacular architecture. Shelters could be maintained and materials could be re-used.
✓ The integration of WASH and shelter was emphasised from the beginning of the program.
✓ The agency put a great deal of effort into persuading land owners to release their land.
✓ The agency successfully negotiated the free installation and use of water and electricity for two months for 7 relocation sites.
× There were questions around how disaster-resistant the t-shelter design was.
× The organisation would have benefitted from hiring a liaison officer to better understand the political system and accelerate the project.
× There were difficulties in verifying beneficiaries for on-site shelter support. Additional targeting criteria and stricter decision-making timeframes would have improved beneficiary selection.
× The project was unable to support some of the most vulnerable affected populations, notably people in 'high-risk zones' (due to official objections) and people with ambiguous land tenure.
× An alternative shelter design for people with disabilities should have been developed.
- An ill-defined 'no-build zone' policy created challenges. A number of landowners remained in 'limbo' because their homes were within no-build zones, and new land was not allocated.
- Different stakeholders, such as the church and local government, had different approaches to beneficiary selection and prioritisation.
- Some affected households refused to move into a transitional settlement because they thought this would impact on their right to promised permanent housing.

Before the cyclone

(See overview A.25 for background.)

Until 2011, there had been no major floods in the area since the 1950s. The population of Cagayan de Oro had spread along risk areas, such as river banks and delta areas. In Macasandig, one of the most affected areas, there was a mix of commercial and residential buildings. Residents ranged from poor in shanty areas to middle-class in apartment buildings.

Despite the well-developed local administration, the complexities of addressing housing, land and property issues in an urban transitional response presented real challenges in supporting the most vulnerable.

After the cyclone

The flash floods caused by Tropical Storm Washi destroyed a large portion of the city centre of Cagayan de Oro. Macasandig and Isla de Oro were the worst affected urban *barangays* (the smallest administrative boundary, equivalent to a village).

Poor families residing in makeshift shelters by the river banks suffered the most. Many middle-class households who rented or owned apartments were also affected.

As the emergency response unfolded, the government launched their permanent housing programme. The agency proposed a two-tier transitional shelter programme to plug the gap between emergency shelter and permanent housing.

Land Acquisition

The following criteria were used to verify the suitability of land:

- clarity of land ownership
- land is donated rent-free for up to 2 years
- land owner clearly understands the purpose and the nature of transitional settlements
- land is well drained and is not at risk of flooding or landslide
- access to roads
- access to water (either groundwater or pipe connection) and electricity
- costs of travelling into the city from the site were not prohibitively expensive for beneficiaries
- the proximity of public facilities such as schools, health centers and markets.

Emergency shelters such as schools and gymnasiums quickly became overcrowded in the aftermath of the storm. Photo: CRS/S.Hirano

Different types of agreement were required with different landowners. In most sites, there was a guarantee that land would be returned to owner. Overall 30 sites were established.

The types of agreement are summarised in the table below.

owner	type of agreement	endorsed by
City	Verbal agreement for temporary use. Other conditions included requests for certain shelter recipients or, in one case, early closure of the site in order for the land to be used for permanent shelter.	Mayor
Private	Written MoA between the Archdiocese of Cagayan de Oro and the landowner with terms and conditions.	Landowner
Church	Verbal agreement after request of Archbishop.	Archbishop

Selection of beneficiaries

Relocation

There were only two organisations who responded with transitional shelter projects in the Philippines. As a result, there was considerable pressure from government officials, church leaders, camp managers and other NGOs to prioritise certain evacuation centres or specific beneficiaries.

The government prioritised closing evacuation centers and tent cities before assisting community-based IDPs as the evacuation centres were costly and water and sanitation services were over-stretched. Meanwhile, organisations working on education issues advocated for emptying schools to address protection concerns associated with having displaced people living on school grounds.

Families who wanted to return to their places of origin were given lowest priority on the permanent housing waiting list.

The organisation faced the challenges of determining whether informal settlers had really lost their homes in the storm. There were some cases of 'opportunists' trying to use the system to receive a shelter although their home remained intact.


Transitional shelters could be relocated.
Photo: Charisse Mae Borja / CRS


Transitional shelters could be placed on available plots of land.
Photo: Seki Hirano / CRS

The organisation aimed to retain community social structures as far as possible when relocating beneficiaries in the most affected areas. This was not always possible due to variations in site location, timing of response, and the number of shelters available on each site.

On site Construction

Affected households whose houses had been totally destroyed, and who lived in low to medium risk zones, were offered flood-resistant transitional shelters sited in their original neighbourhood. Water and Sanitation facilities were organised within community groups and elevated septic tanks were constructed.

Informal settlers were often without official land or house tenure papers. This meant it was difficult to confirm whether they had lost their home during Washi or if they had lived elsewhere.

To identify households for on-site rebuilding, the organisation conducted a community mapping process. This involved visiting former housing locations, verifying the damage to houses, verifying the lack of shelter, interviewing neighbours and verifying lists of names with ward leaders and community leaders. This ward specific approach was taken helped to retain the community structure.

It was challenging to identify those most in need. As time passed, a number of people had begun re-building, making it difficult to verify the original level of damage.

Implementation

To address the range of needs the agency offered two transitional shelter options: construction on either the original site or in one of 15 relocation sites.

Transitional shelter design

Transitional shelters erected on relocation sites needed to be moveable and make minimal impact on the land.

The agency worked with a local architect and local engineers to design an adaptation of the traditional *Amakan* (bamboo or palm leaf weave) house.

Amakan houses have been built for centuries and are well adapted to the tropical climate of the Philippines. They can also easily be repaired or rebuilt. The design used locally available *amakan* (palm was used) for the walls and coco lumber, which is durable and inexpensive, for the structural frames.

The design was based on the following design criteria:

- Culturally appropriate: Provides privacy, uses local materials and provides protection from rain and heat
- Relocatable: Can be carried by 20 persons or easily dismantled
- Speed of construction: Can be built in 2-3 days
- Economical
- Flexible: Design can be adjusted for relocated families or those returning to original sites
- Upgradeable: Can be upgraded to a permanent home.

DRR components

Drainage, sewage channels and other essential infrastructure were provided where necessary. This was to ensure the protection of both the people living on the land and the land itself.

On-site transitional shelters were constructed using a reinforced concrete foundation enabling the shelter to be securely anchored, preventing it from being upturned by flood or strong winds.

The design featured a raised floor to provide flood protection, facilitate ventilation and to keep out vermin.

Logistics

Drying timber and limited road access were the biggest logistical issues, affecting delivery time and costs. One truck could carry enough timber for 28 transitional shelters, meaning that over 75 truckloads of timber were required for the whole project.

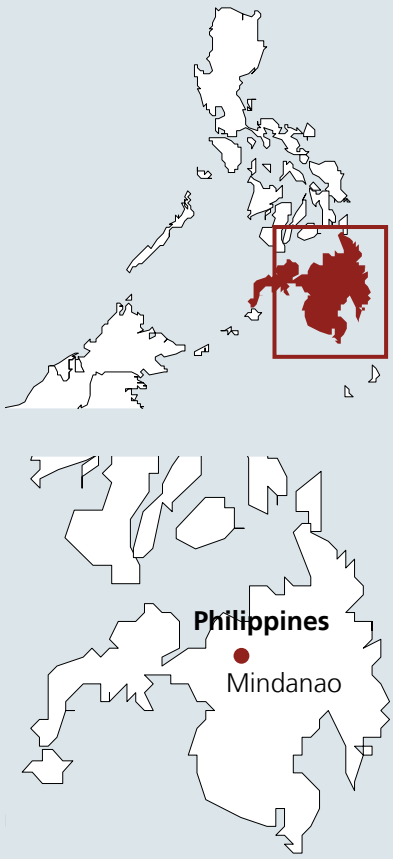
Materials list

Materials	Quantity
Portland cement(40kg)	5 bags
Mixed gravel	1 bags
10mmx6.0m re-bar	12m
8mmx6.0m re-bar	3m
Coco Lumber 4"x4"x12'	64 ft.
Coco Lumber 2"x3"x12'	128 ft.
Coco Lumber 2"x4"x8'	128 ft.
Coco Lumber 2"x2"x8'	75 ft.
Coco Lumber 2"x4"x8'	32 ft.
2" umbrella nails	1kg
Bamboo slats	3 bundle
Nails	9kg
Plywood ¾"x4"x8"	6 sheets
Plywood 3/16"x4'x8'	6 sheets
Amakan 4'x8'	13 sheets
Sealant	1 pint

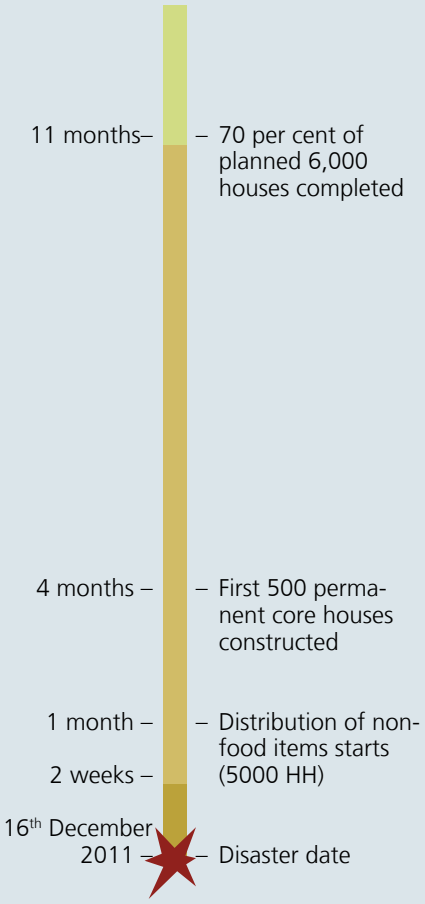
A.27 Philippines – 2012 – Cyclone

Case Study: **Keywords:** Resettlement, Household NFIs, Construction materials, Core housing construction, Housing repair and retrofitting, Site planning, Infrastructure, Training.

Country:
The Philippines
Project location:
Mindanao
Disaster:
Tropical Storm Washi (Sendong)
Disaster date:
16th December 2011
Number of houses damaged / destroyed:
39,000
Project outputs:
5,000 emergency shelter kits
6,000 permanent core houses (90 per cent complete)
Occupancy rate on handover:
70 per cent occupancy
Shelter size:
21m² - permanent core house
Materials cost per shelter:
US$ 50: emergency shelter kit
US$ 2,750: permanent core house
Project cost per shelter:
US$ 3,100



Project timeline



Project description

The organisation distributed 5,000 shelter repair kits and built 6,000 housing units for displaced families. It built the houses with services on new relocation sites using contractors, volunteers and working with partners. It deployed three construction mobilisation units for the repair and restoration of houses and communities damaged by the storm.

Strengths and weaknesses

✓ Good relations were established with local authorities. As a result, land for relocation sites and resources for site development were readily available from the authorities.

✓ Quick development of family selection criteria and process. As a result, displaced families could be offered a clear path to recovery in a relatively short time.

✓ Good management of construction activities in multiple sites with a variety of contractors contributing to a steady delivery of permanent shelter.

✓ The project has allowed the development of block-making, welding and carpentry skills among the affected populations.

× Due to limited availability of local construction materials and high prices, advance scouting became necessary to order from suppliers. This created some backlog in implementation.

× Price hikes of 30 per cent and more created a negative impact in the project and the local economy.

× Relocation introduced the need to develop new networks and community relations among the relocated population. These activities had very little funding support from the project.

× Delays among other organisations providing infrastrcuture and services to the sites meant that only 70 per cent of the houses were occupied by the end of 2012.

- Strong coordination with other organisations through national coordination and local interagency group meetings was needed to avoid duplication of material distributions. Several organisations provided similar products, such as repair kits.

- At the end of 2012, Typhoon Bopha (Pablo) hit Mindanao. Previously, Mindanao was seldom hit by cyclones and typhoons, as a result preparedness was lower than elsewhere.

The organisation rapidly completed 70 per cent of a planned 6,000 houses within 11 months of the storm on safer permanent relocation sites.
Photo: Mikel Flamm

Before the cyclone

See Section A.25 for background.

Families were settled along the river banks of the Cagayan de Oro river and other minor streams in northern Mindanao. The locations are extremely hazardous and in high-risk for flash floods. While being high risk areas, these locations were well located economically, being near the cities' commercial districts where most families found support for their livelihoods.

After the cyclone

Rain from the severe tropical storm Washi (Sendong) created flash floods. Most houses located by the river banks were completely destroyed. Homes in safer locations were damaged by high winds.

The government issued a decree to prevent re-settlement and reconstruction of houses in some high risk areas. As a result, families were displaced into camps set up by the local authorities and international humanitarian organisations.

The Government of the Philippines made an early decision after the disaster to relocate affected families who had been living in the river banks of the Cagayan de Oro river. Their homes were completely washed away by the floods.

Local government entities provided land for temporary camps in the outskirts of cities, to accommodate the displaced until permanent shelter could be secured.

New relocation sites were planned in locations with lower cyclone risk.
Photo: Mikel Flamm

Implementation

The organisation distributed 5,000 emergency shelter kits containing construction materials (timber, corrugated galvanised sheets, nails, etc.) and basic tools to support emergency repairs on damaged homes.

Staff made an initial damage assessment in affected neighbourhoods and issued vouchers. The distribution was made out of a centrally located warehouse.

In coordination with local and national authorities, the organisation conducted assessments and planned to construct 6,000 permanent shelters in 10 relocation sites in Cagayan de Oro City and Iligan.

Government agencies provided land from pre-existing land banks and facilitated planning resources and heavy machinery for site development. The organisation was put in charge of overall programme coordination and the construction of the permanent shelters.

Selection of beneficiaries

The Philippines' natioanl Department of Social Welfare and Development, conducted a thorough survey and census of affected families. It used this to determine eligibility for assistance and shelter support. Families prevented from resettling in high risk areas were placed in tented camps and selected for relocation to the nearest site where permanent shelter was being built.

Non-food items and housing repair kits were distributed to 5,000 households. Photo: Leonilo Escalada

Construction was implemented using contractors, volunteers and by working with partner organisations. Photo: Mikel Flamm

Implementation

The organisation used 22 small construction groups as external contractors. These worked in combination with its own staff, volunteers and implementing partnerorganisations.

Family participation in project activities was limited to unskilled tasks and attendance to skills development training (carpentry, welding, and concrete block-making).

Coordination

From the beginning of the response, it became clear that there would be a division of labour between humanitarian organisations responding to the disaster.

While some organisations invested efforts in tents and transitional shelter in camp settings, this organisation was keen to embark on a permanent shelter construction programme to allow for the next stage in the recovery. Coordination was key in helping to clearly define these roles, and to provide a pathway to permanent shelter for affected families.

DRR components

The different relocation sites were located in low-risk areas, with reduced natural threats. These relocation sites were safer than families' original plots by the river.

The permanent core houses were structurally designed by engineers, incorporating strapping and reinforcements and were approved by the relevant authorities. The sites were provided with drainage infrastructure and roads, and walkways were built to manage erosion.

Before families moved into their new homes, as part of the induction to the new settlements, they received an initial training induction on disaster preparedness. This was coordinated with the local emergency management agency.

Technical solutions

The core house was built from concrete blocks, with a reinforced masonry design. There were steel reinforcement bars, both vertically and horizontally. The roof structure was made of metal trusses and purlins, with a cover of zinc/aluminium sheeting. Doors and windows used metal frames, and the floor was covered with ceramic tiles.

Each shelter unit had a multiple purpose room, an attached sanitary unit (toilet and bath area) and a small kitchen area. The height of the buildings allowed a mezzanine level to be built by occupants to create a raised sleeping area. This could potentially increase the living space from 21m^2 to 36m^2.

"At the beginning, we were doubtful we could be in a permanent house so soon after Washi. We are happy that we could move out of the tent into a permanent house."

A new housholder at the Calaanan site, Cagayan de Oro City

Logistics

On account of its scale, the project presented many logistical hurdles related to the supply of construction materials.

The organisation purchased cement, reinforcement bar and other materials in bulk to minimize the price rises following the disaster. These materials were then distributed to contractors as required by the progress of construction.

The project benefitted from skilled and experienced managerial staff coming from the organisation's central office in Manila, as well as newly hired staff.

A.30 Thailand – 2011 – Bangkok Floods

Overview: **Keywords:** Non-displaced, Collective centres, Hosting, Urban neighbourhoods, Guidelines and training materials, mass communications.

Summary

During the 2011 floods in Thailand, social media became a crucial tool for information-sharing and decision-making, both for those affected by the floods and for agencies responding to needs.

The use of social media presents challenges in terms of filtering useful information from misinformation, the reliability and accountability of those distributing message, and identifying communication channels and strategies which will reach specific target groups. Some people may not use social media at all.

This overview draws particularly on two publications: "The role of Twitter during a natural disaster: Case study of 2011 Thai Flood," in Technology Management for Emerging Technologies (PICMET) and "Flooding in Thailand: flee, fight or float", Forced Migration Review No. 41, by Wan Sophonpanich.

This animated video explained the floods, and whether people should stay or evacuate, using whales to help explain the volume of flood waters. It has received over one million internet hits. Images: Roo Su Flood

Background

A combination of a heavy rainy season and tropical storms caused the worst flooding Thailand had seen for fifty years. Over five per cent of the country's land was under water by November 2011 and the flooding had affected 13 million people and caused 813 deaths.

A novel way of thinking about the volume of water that had accumulated and needed to be dispersed was presented by the animation group *Roo Su Flood* (Know, Fight, Flood).

The billions of litres of water was calculated to be the equivalent of 50 million blue whales, and Roo Su Flood made a popular online animation which explained the impact of the floods in terms of these millions of whales slowly trying to make their way out of the country and into the Gulf of Thailand.

(www.youtube.com/roosuflood)

Response options

As the floods slowly moved towards Bangkok and its surrounding areas, people began to make contingency plans.

Despite the scale of the floods and the number of people affected, the capacity of the Thai authorities, national NGOs, community groups and individuals to deal with problems meant that international organisations played a relatively small role in the response.

Flooding does not automatically lead to displacement. In fact, Thailand's traditional building designs historically coped with floods by allowing water to flow through the bottom floor of a house while the family retreated upstairs to wait for the water to disperse.

However, in many urban areas of Thailand the traditional cultural capacity to mitigate the effects of flooding has been lost. Those caught up by the flooding can be categorised into the following groups:

- **Precautionary displaced**: People sealed-up their houses and garages and moved away from risk areas until the water levels dropped.
- **Emergency displaced**: People forced to move to collective centres or friends once the flood swamped their homes.
- **Stayed with simple precautions**: People living in areas where flooding is more frequent were able to withstand flood heights of two to three metres, with minimal assistance needed to replace their temporarily lost livelihoods.
- **Stayed with advanced precautions**: People with considerable resources built flood-defence walls,

Livelihoods were most affected for those who chose to relocate. For most people, daily life continued despite the flood waters.
Photo: Thanchanitch Suttichote/IOM Thailand

sandbagged entrances, installed water pumps or bought motorboats. People in this group often helped out in their neighbourhoods.

- **Stayed with high level of need**: People who chose not to move but lacked the ability to cope with the consequences of the flood and relied on external assistance.

People who relocated sometimes found that they had under-estimated the impact of the floods and were forced to stay away much longer than they initially planned. This had knock-on effects for their livelihoods.

Some of those moving to collective centres were displaced for a second time when the centres themselves flooded.

Information flood

Information was available from a huge number of different sources: the private sector, print and online media, the government, NGOs and informal social media.

The founder of the animation group that produced the Roo Su Flood series, explained how the animations were a response to the difficulty in picking out useful information from misinformation.

Information was not only being communicated by a multitude of different actors but was also competing for attention.

In some cases, for example, politicians offered different advice and assessments with political point-scoring in mind.

"We are not only being flooded by floodwaters, but also by information."

Reliable information?

Twitter usage in Thailand soared by 20 per cent between September and October 2011. A research paper published in 2012 analysed the most prolific tweeters and most re-tweeted tweets.

The study showed that the content of tweets with the hashtag '#thaiflood' overwhelmingly concerned situational announcements and alerts (39 per cent). Support announcements made up ten per cent, requests for assistance accounted for eight per cent of tweets and requests for information five per cent. 37 per cent of tweets were categorised as "other". The study found that the majority of the situational and location-based information was tweeted by members of local communities.

To identify which Twitter users were seen as providing reliable information the study looked at the number of retweets users received. Those retweeted the most were not necessarily those who tweeted the most or had the most followers.

Those with the most retweets included:

- Thaiflood / kapookdotcom: These accounts tweeted information from the private sector site thaiflood.com. Thaiflood.com became a major source of information, with an active community and facebook page, and also collaborated with Google's Thailand Floods Crisis Response site.
- SiamArsa: An account belonging to one of the largest volunteer groups. It used Twitter and Facebook to share information about flooding and volunteer work.
- GCC_1111: The account belonging to the official government website for the Flood Relief Operation Center (http://floodthailand.net) which also facilitated the posting of assistance requests.

Lessons to learn

Using and monitoring social media is an important part of disaster response in today's world. An active analysis of the data can help prioritise communication channels and displacement patterns, while coordinated messaging can reduce panic and misinformation.

Some people moved to evacuation centres, where emergency support was available, often from volunteer group. However the majority of people decided to stay.
Photo: Thanchanitch Suttichote/IOM Thailand

The two reports in the summary note the following learnings:

- **Verification**: It was not always possible for people or agencies to easily identify misinformation.
- **Accountability**: Those actors giving advice did not always consider how they might be accountable for the messages they sent out.
- **Rights and responsibilities**: Knowledge and understanding of humanitarian principles and codes of good conduct was often overlooked.
- **Simplicity**: The popularity of Roo Su Flood demonstrated that there was an appetite for easily understandable messages communicated in novel ways.
- **Context and target audience**: The audience for the messages should be made clear. For example, providing information on how to seal up a door may be technically correct for low-level flooding but inappropriate and dangerous in high-risk areas.

Of course, not all the electronic information is available to everyone, and communities with little or no access to the internet not only had less access to information, but were also less able to vocalise their needs.

This is particularly true of highly-excluded groups, such as migrant workers. The migrant workers not only had less access to electronic information due to langues issues, but may also have had less access to the support available to Thais. There were reports migrants were denied access to some collective centres and relief items.

Collective centre in a university.
Photo: Thanchanitch Suttichote/IOM Thailand

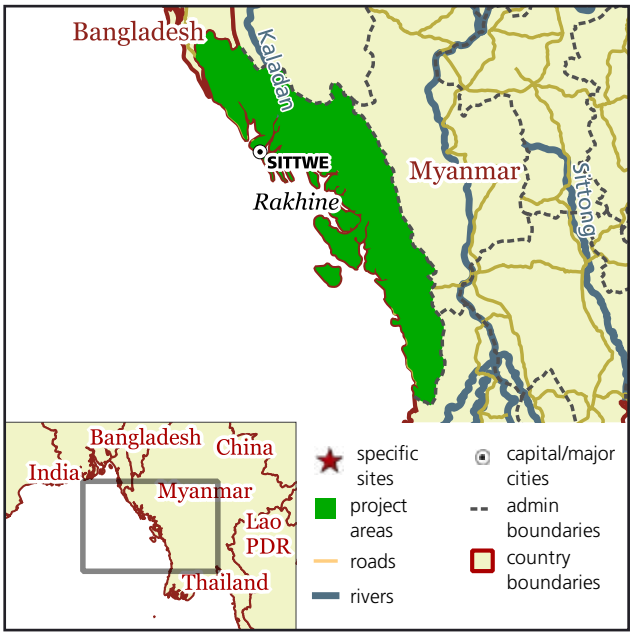
Most people decided to stay in their houses with various levels of precautions against the flood waters. Some vulnerable people did not relocate and did not have access to the electronic information, and required special assistance.
Photo: Wan Sophanpanich

A.16 Myanmar – 2012 – Conflict

Case study

Keywords: Emergency shelter; Site planning; Infrastructure.

Emergency:	Inter-communal violence in Rakhine State, Myanmar.
Date:	Early June 2012 and October 2012.
Damage:	8,600 (plus 1,500 public buildings).
People affected:	140,000 displaced.
Project location:	Rakhine State.
Beneficiaries:	140,000 people.
Outputs:	2,843 temporary 8-unit shelters.
Ocupancy rate:	99%.
Shelter size:	8-unit building: 45 ft x 30 ft [13.7m x 9.1m = 124.7 m²]. One room: 11.25 ft x 15 ft [3.4m x 4.6m = 15.6m²].
Cost per 8-unit shelter:	Labour and materials: US$ 4,800 (US$ 600 per room). Project administration costs: US$ 700 (US$ 88 per room).



Project description:

The project provided temporary shelter to IDPs displaced by conflict until a durable solution could be reached. Shelter was provided in the form of collective shelters, each housing eight families (8-unit buildings) with associated IDP camp infrastructure.

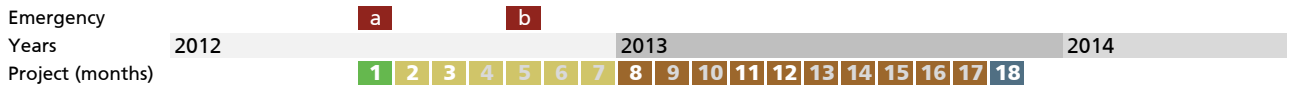
The shelters were constructed by both the main organisation (also the Cluster Lead), its partners in the Shelter Cluster, and the government. Beyond providing temporary shelter, the Shelter Cluster continues to advocate strongly for government provision of durable housing options.

Emergency timeline:

[a] June 2012: first wave of violence and displacement.
[b] October 2012: second wave of violence.

Project timeline (number of months):

[1-7] June 2012: First phase of construction - 525 shelters (30,000 IDPs).
[3] First shelters handed over and inhabited.
[8-11] Shelter Cluster established. Second phase of construction – 262 shelters (15,000 IDPs)
[12-18] Third phase of construction by multiple agencies and government – 2,056 shelters (95,000 IDPs).
[18] Project end.



Strengths (✓), weaknesses (×) and notes (-)

✓ Following strong advocacy from humanitarian actors and donors, the Rakhine State Government (RSG) participated in a huge scaling-up of activity prior to the rainy season, funding and constructing 45% of the multi-family shelters.
✓ The Government was willing to adapt, and sought to respect *Sphere* minimum standards.
✓ The main organisation's coordination with the three key government departments resulted in collaborative site-planning, shortening the approval processes for the construction of IDP camps.
✓ The project aimed to reduce tensions by supporting both groups equitably and successfully engaging Buddhist contractors to build shelters for Muslims.
✓ Shelters used locally available materials.

Weaknesses

× During the scaling-up of the project in May-September 2013, bamboo was not in season and the project was forced to use lower-quality materials.
× It took some time for the RSG to trust and become familiar with the Shelter Cluster system.
× Coordination with the WASH sector was not ideal; with WASH infrastructure set-up after IDPs had occupied shelters.

Observations

- Initially the RSG was reluctant to approve land for IDP camp use and for the first six months before the Cluster was activated, only 20% of the target temporary shelter needs were met. There were also many disputes over government compensation of landowners and in a minority of cases the construction of camp infrastructure had to be cancelled.

Constructing the 8-unit collective shelters. Only the government had the capacity to meet the shelter demands, so effective advocacy for increased government engagement was the deciding factor in meeting thousands of people's needs before the rainy season arrived.
Photos: UNHCR.

Situation before the violence

Rakhine State is the least developed state in Myanmar, characterised by high population density, high malnutrition rates, low income levels, poverty, and weak infrastructure. Conditions are worsened by two cyclone seasons, with associated flash flooding and landslides during the rainy season. There are two main ethnic groups in conflict with each other in Rakhine State. The first are the Rakhine, who are Buddhist. The second call themselves "Rohingya", and are Muslim.

Situation after the violence

Inter-community violence in parts of Rakhine State commenced in early June 2012 and flared once more in October 2012, resulting in the deaths of 167 people and injuries to 223 people. 10,100 buildings, including homes, churches and public buildings were damaged or destroyed and 140,000 people were displaced (95 per cent Muslim; 5 per cent Rakhine). There were two distinct IDP caseloads: those displaced from urban areas and those from rural areas. The IDP camps in rural Sittwe were home to 88,500 Muslim IDPs (63% of all IDPs) who fled urban areas in Sittwe where they had worked mostly as traders or as porters in Sittwe port, living in slum-like conditions.

IDPs originating from rural areas were generally displaced only a small distance from their original villages, where the quality of shelter was sub-standard. As part of the initial emergency response, the RSG distributed tents in rural Sittwe but the stock, residual from the 2010 Cyclone Giri response, was quickly exhausted. The main organisation distributed tarpaulins, rope and approximately 5,500 tents following the second wave of displacement.

Shelter strategy

Within a month of the first wave of the conflict in June 2012, the Union Ministry for Border Affairs published a shelter response plan targeting 7,110 households displaced from areas within urban Sittwe. The shelter response plan mirrored the emergency shelter response implemented previously in Kachin State by constructing communal shelters (30ft x 45ft), each with 10 family units. While this plan was being developed, the RSG constructed 235 temporary 10-unit shelters (37 for Rakhine IDPs and 198 for Muslims). The main organisation planned to build 300 shelters, but as construction started the RSG halted its own efforts and called on the international community for shelter assistance.

By the end of 2012, 525 temporary shelters, covering the needs of approximately 29,000 IDPs, had been constructed. In the first few months of 2013, it became clear that immediate return to place of origin was not possible on security grounds.

With the oncoming rainy season, and an average rainfall of three to four metres in as many months, providing improved temporary shelter to the remaining case load of tens of thousands of IDPs became urgent. The situation was chronic.

During this second phase of construction, the main organisation and its partners managed to construct just 262 additional shelters, well below the pace needed to provide temporary shelter to meet the needs of all 140,000 IDPs scattered across ten townships in Rakhine State, before the rainy season arrived.

In April 2013, the main organisation, which also led the Shelter Cluster, joined a high-level delegation to Rakhine State in April 2013, which included the ambassadors of several donor countries and national ministers. The delegation was critical in clarifying the maximum capacity of the international community and persuading the RSG to contribute to the shelter response.

Following the delegation, the decision was taken to scale-up shelter construction on a massive scale and to ensure that adequate shelter was provided for all displaced groups. The RSG achieved an extremely rapid construction pace and by November 2013, temporary shelter had been constructed for 99% of all eligible IDPs across all affected townships of Rakhine State. Of the 2,843 temporary shelters, 45% were constructed by the RSG, and 30% by

In some camps the shelters were raised from the ground and walkways constructed between the shelter. However, firewood was in such short supply that in some cases beneficiaries broke up the walkways for fuel. Rammed earth walkways had to be constructed instead.
Photos: Left - Danish Refugee Council. Right - UNHCR.

the main organisation and its implementing partner. The remaining 25% were constructed by the other eight Cluster members.

One potential donor was initially critical of the strategy of segregating the two communities, believing this would lead to a permanent divide, despite its life-saving necessity.

Noting the extreme dilemma faced on whether to build temporary shelters or not, all key discussions, decisions and by whom were systematically recorded and remain publicly available via the Cluster's website to ensure accountability and transparency

Project implementation

Shelters were constructed by hiring local building contractors that had been approved by the RSG. Contractors hired IDP labour (skilled and unskilled) where possible, to ensure cash injections into the fragile micro-economies evolving in the IDP camps. Workers were paid at the standard government rates. Site planning was conducted by the main organisation in collaboration with three government departments.

In the first two phases of the response, the availability of suitable land was a major restriction to progress, with many sites rejected for security reasons. Following the April 2013 delegation, land was made available with a compensation package organised for landowners.

Although the vast majority of beneficiaries were rehoused in the communal shelters by November 2013, some smaller groups refused to take up occupancy, remaining in their makeshift shelters. This was particularly true for the Kaman Muslims living in rural areas of Sittwe. Analysis suggests they used the issue to distinguish themselves from the Rohingya Muslims.

As well as the communal shelters, camp infrastructure was also built. Maintenance and repair programmes were then implemented, primarily through partners in the CCCM Cluster, a Cluster also led by the main organisation. This ensured a community-driven approach. The provision of toolkits to beneficiary families, however, was rejected by the RSG who feared that they would be used as weapons.

Beneficiary selection

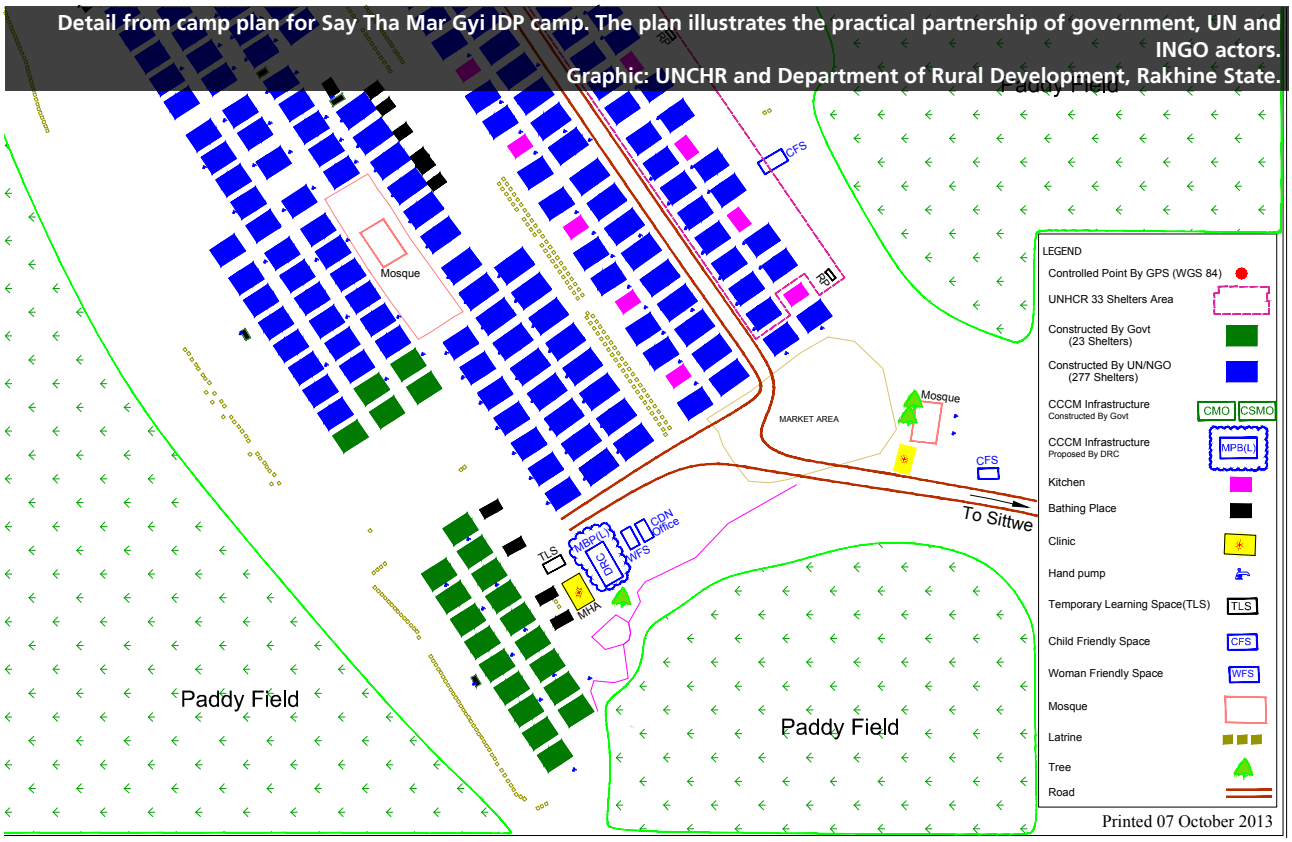
In the 2013 Shelter Cluster strategy, commitments were made to provide temporary shelter to all eligible IDPs. However, eligibility was strictly controlled by the RSG which has never produced clear criteria for entitlement, and during construction only the General Administration Department (GAD) knew which group of IDPs would move in, making planning very difficult.

Coordination

The Shelter and WASH Clusters were supported by an RSG State Minister and the main organisation, in its role as Shelter and CCCM Cluster leads, was able to develop strong personal and professional relationships with the key partners: the Department for Rural Development (DRD), the General Administration Department (GAD) and the Land Records Department (LRD). Joint site-planning activities created an opportunity to improve on the previously poor level of coordination between government departments and international organisations. A technical working group also provided the opportunity for all partners to contribute to the development of minimum standards.

Design

The initial design used by the RSG was based on shelters used in an emergency response in Kachin state. These shelters were 30ft x 45ft, providing 10 family units at around 12.5 m^2 per unit. As the average family was around 6 people the living space was only around 2m^2 per person. The main organisation advocated for the shelters to meet the *Sphere Project* indicator of 3.5m^2 per person, by reducing the number of families in a shelter from ten to six. In the end, a compromise of eight families per shelter was reached. It was imperative that the shelters



Detail from camp plan for Say Tha Mar Gyi IDP camp. The plan illustrates the practical partnership of government, UN and INGO actors.
Graphic: UNCHR and Department of Rural Development, Rakhine State.

were temporary in design and all structures, with the exception of the roof sheets, were built with local and degradable materials.

Disaster Risk Reduction (DRR)

The technical design drawings, estimates and specifications of the temporary shelter were shared with headquarters for clearance of its DRR components. Wooden bracings and twisted steel plates were added to the roof framing to resist high winds. Walls and floors were also reinforced with proper wooden bracings or joists. In camps located in paddy fields or low lying areas, the floor elevation of the shelters was increased by 1ft (from 2ft to 3ft) so as to mitigate against the risk of flooding.

Materials

The materials were mainly sourced within Rakhine State. As the best weavers of bamboo matting were to be found in the IDP population, much of the walling and floors were prefabricated in rural areas of Sittwe, and then delivered to the remote townships. The responsibility for sourcing of materials was outsourced to the contractors, but some did not follow state guidelines for the use of legal timber. This caused conflicts, though as the responsibility for procurement was out of the main organisation's hands, this issue remained between the RSG and the contractors themselves.

Wider project impacts

The constructive relationship with the RSG is considered to be a major and significant success of the project. Without the government's input, almost half of all IDP shelter needs would not have been met before the rains arrived.

From the beneficiaries' point of view, the temporary shelter design does not take into account the cultural need for women to bathe and cook within their shelters. This, together with congested conditions, has meant there is less sense of ownership of the structures and many have rapidly deteriorated. However, given the sensitive political situation, it was imperative that the shelters were designed to be and remain temporary, and that durable solutions are to be found in the future.

Bill of Quantities for one 8-unit shelter

Item	Quantity
Myaw posts (4"dia.-6"dia.)	35 pcs
Myaw posts (2"dia.-4"dia.)	215 pcs
Timber scant (local hardwood)	1.74 tons
7' 32G CGI sheets (roof cover)	162 sheets
GI plain sheet (2' wide) for ridging	56ft
Wire nails	30 kg
Bamboo (seasoned/dry)	2,345 pcs
Dahnee/nipa	820 pcs
Roofing nails (umbrella nail)	12 kg
Nylon rope	15 coils
Plastic rope	5 coils
Twisted steel plate (min. 1/16" thick x 1" x 6") with screws	15 pcs

A.22 Philippines – 2012 – Typhoon Bopha

Case study

Keywords: Household items; Transitional shelter / T-shelter; Training.

Emergency: Typhoon Bopha (Pablo), Philippines.

Date: December 4 2012.

Damage: 216,817 houses damaged (89,666 destroyed and 127,151 partially damaged), of which 58% in the target provinces.

People affected: 6.2 million affected, 973,207 displaced.

Project location: Compostela Valley and Davao Oriental provinces, Mindanao.

Beneficiaries: 20,000 people.

Outputs: 4,139 transitional shelters. 18,193 households received NFIs and 10,233 received emergency shelter materials.

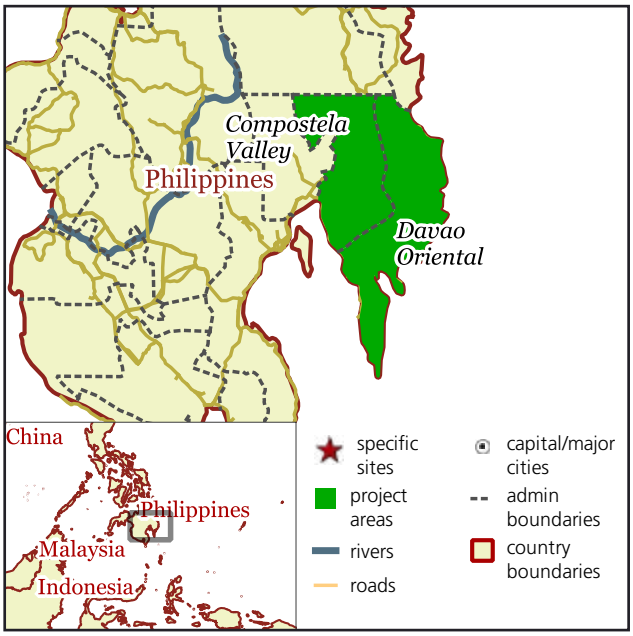
Ocupancy rate: 100%.

Shelter size: 18m² for up to six people, 24m² for seven or more people.

Cost per shelter: Materials: US$ 380. Project costs: US$ 580.

Project description:

Families were supported to rebuild shelters with materials they salvaged (mostly coco lumber) and materials provided by the organisation (roofing materials and strapping). The organisation paid carpenters to build the main structures after receiving training in safe construction techniques. A focus on community participation and low-cost materials maximised the project outputs.



Emergency timeline:

[a] December 4 2012: Typhoon Bopha hits.

Project timeline (number of months):

[1-3] Emergency response (NFIs, WASH and debris clearance). **[2]** Household interviews and assessments.
[4] Construction begins in Davao Oriental province.
[5] Construction begins in Compostela Valley province.
[9-10] Peak construction rate of 800 shelters per month.
[13] Handover completed.

Emergency		a											
Years	2012	2013											2014
Project (months)		1	2	3	4	5	6	7	8	9	10	11	12	13

Strengths

- ✓ The percentage of community members aware of DRR construction techniques rose from 9% to 98%.
- ✓ Model shelters were built to facilitate the training of carpenters and feedback from beneficiaries, resulting in a 99% satisfaction rating for the final design.
- ✓ A strong emphasis was placed on community involvement and local-level planning and execution.
- ✓ Effective feedback process during beneficiary selection and a resolution mechanism for complaints through Project Implementation Committees.
- ✓ Relatively low costs per shelter meant that a larger number of beneficiaries could be assisted.

Weaknesses

- × Availability of fallen coco lumber was based on an assessment in Davao Oriental, but no assessment was made in Compestela Valley, where salvageable materials were less available, causing delays.
- × Financial coping capacity was not included in selection criteria, meaning that some households who could not afford to rebuild were not assisted.
- × Tensions between beneficiaries and non-beneficiaries were reported in the early part of the project. Improved methods of communicating selection criteria might have helped to avoid this.
- × Combining different project activities (NFI distribution, WASH etc.) would have streamlined community mobilisation and project monitoring.
- × Humanitarian organiastions were unable to coordinate when it came to competing for the scarce number of skilled carpenters and chainsaw operators.

Left: Beneficiaries are introduced to the shelter design which was developed after studying local techniques. Improvements such as bracing (right) were included in the new design. Photos: Seki Hirano/CRS.

Situation before the disaster

After a long period of time without severe weather events, southern Mindanao was hit by Tropical Storm Washi (Sendong) in late 2011 and Typhoon Bopha (Pablo) at the end of 2012.

The lack of previous experience of such powerful storms meant that most houses were not built to withstand them.

The organisation conducted household surveys immediately after the typhoon. Families reported that, prior to the typhoon, they lived in houses constructed mainly with light materials: roofing was mainly CGI sheeting (90%); walls were constructed with plywood or amakan (weaved palm leaves or bamboo) (50%); a combination of wood and cement (30%); or cement only (20%). The damage was reported to be highest among homes with plywood or amakan walls

In focus groups, families indicated that they were not familiar with simple resilient construction techniques.

Situation after the disaster

Shelter damage was concentrated in Compostela Valley (95,054 damaged houses, 40% of them totally damaged) and Davao Oriental (30,245 damaged, 75% totally damaged).

The majority of those made homeless returned to the site of their original home and built makeshift shelters or slept in tents. Others stayed with host families.

These makeshift shelters were extremely vulnerable to further hazards and most people did not have the resources to rebuild basic shelters to *Sphere* standards.

Shelter strategy

The Philippines Department of Social Welfare and Development released 160 million pesos (US$ 3.65 million) in assistance. Half the money was for repairs (approximately US$ 232 per household) and the other half intended for building new houses on original plots or on resettlement sites.

"[The time after the typhoon] was very difficult. It was just one day at a time trying to meet your daily need. But now there is a feeling of confidence because we have proved to ourselves that we can overcome."
Beneficiary, Compostela Valley province.

In order to complement the government response, Shelter Cluster members provided shelter recovery assistance to two broad groups of beneficiaries. Communities in designated safe areas were assisted to rebuild on their original plots, whilst families who had to move from high-risk areas to relocation sites were assisted to build new houses.

The shelter strategy promoted "building back better" construction techniques and was part of a wider integrated approach, including livelihoods and WASH assistance.

Beneficiary selection

Once the geographical selection had been made, beneficiaries were selected based on three types of criteria:

1) Inclusion criteria

Beneficiaries had to be residents of the target barangay, have a totally damaged house, and not be a beneficiary of any other significant shelter project.

2) Vulnerability criteria

This was used for prioritising beneficiaries, and was based on whether one or more family members were pregnant or lactating, disabled, under five years of age, or elderly. Single-parent families and families with more than five members were also prioritised. Families with unstable or

Two finished shelters. Three pilot models were built to elicit beneficiary feedback. Left photo: CRS. Right photo: Seki Hirano/CRS.

very limited income were included on a case-by-case basis, but others that did not meet vulnerability criteria, but were still too poor to rebuild, were not reached by the response.

3) Beneficiary requirements

Before construction could begin, beneficiaries needed to prove land ownership, which could include written consent from a land-owner, and the land had to be classified as "safe". Families living in evacuation centres had to be willing to return to their original place of residence. Each family had to provide three volunteers to assist in construction and a household could not consist of multiple beneficiary families.

Project Implementation Committees (PICs), comprised of local political leaders and health workers, were formed and briefed as to their role in assisting with the resolution of beneficiary concerns and in ensuring project implementation.

The community mobilisation team conducted meetings at purok (sub-village) level, providing information about the organisation, the project and beneficiary selection criteria. During the meetings, the community nominated households that met the selection criteria.

The organisation then registered potential beneficiaries using a screening form, to validate the criteria. The beneficiary lists were validated by the PICs and then displayed publicly in the community. A hotline for feedback or disputes was open for three days, and beneficiaries could also direct their feedback directly to staff members present in the community.

Feedback was resolved with the involvement of the PIC, to ensure a locally acceptable list of beneficiaries.

Project implementation

NFI distribution and debris clearance

In the immediate aftermath of the typhoon, 18,193 households received water-storage materials, hygiene kits, and household items, and 10,233 households received emergency shelter materials.

Nearly 1,000 people were paid for clearing debris from public spaces, providing a temporary source of income for workers.

WASH activities included water infrastructure repairs benefitting 4,472 families, and the construction of latrines. Other activities included livelihoods support for 500 farmers.

Recovery

The shelter recovery project, which ultimately reached 4,139 households, was implemented through two complementary teams: a community mobilisation team and a construction team.

Once beneficiaries had been selected, land ownership established, and sites approved by organisation engineers, each family began to collect coco lumber logs to begin construction.

If a family could not prove ownership, or if the plot was on an unsafe site, they could seek permission from another landowner or approach barangay officials for a new plot.

Construction began once beneficiary households had cleared the construction site and provided the lumber needed for the walls. Organisation engineers and foremen oversaw construction by local carpenters, who received payment after an engineer or foreman had completed a technical checklist which included disaster resilient techniques.

In cases where families were unable to provide voluntary labour, the carpenters agreed to complete the work themselves.

The hotline was active throughout the entire project. Calls were received by staff not directly involved in project implementation, and the nature of the calls as well as the resulting actions were logged. In cases of dispute, the PICs were asked to assist in resolving the issue.

The organisation carried out multiple types of assistance at the same time (NFI distribution, WASH infrastructure, livelihoods assistance and shelter) but each activity was implemented separately with its own selection criteria. Combining them may have improved the efficiency of the project.

Coordination

The organisation was the first and primary provider of shelter assistance in the area, which meant that coordination was focussed on inter-sector

coordination. Shelter designs were shared within the Shelter Cluster.

Technical solutions

Affected households expressed a need for a simple, standardised design for a disaster-resilient shelter that could be built in 3-5 days. The organisation promoted a standard design of 18m² for families of six, adapted to 24m² shelters for larger families.

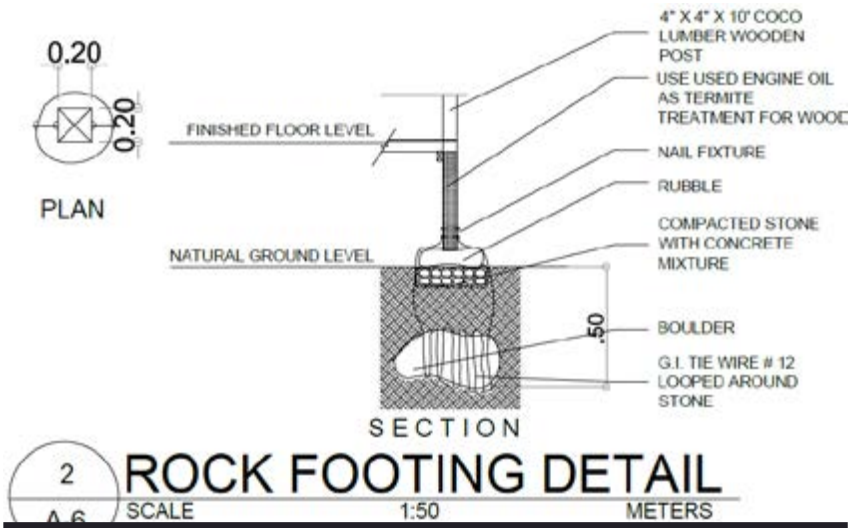
The organisation's senior technical advisor, in collaboration with engineering staff, developed three pilot models, all of which used locally available materials, and enhanced local construction knowledge. Community feedback sessions were held to select the preferred model.

Disaster Risk Reduction (DRR)

Five disaster-resilient construction techniques were incorporated in the shelter design:

- Reinforcement of key structural joints: Connections between wooden pillars, beams, trusses, roof purlins, and bracing were reinforced with metal strapping.
- Lateral bracing: Cross- or corner-bracing was applied to increase the frame's resistance to lateral forces.
- Firm anchoring of roofing sheets: Sheets were held in place using fasteners such as J-hooks or bolts.
- Raised floor: Shelters were constructed above typical flood levels.
- Foundations: Frames were built upon, and anchored to, concrete or stone foundations buried 50cm-100cm below ground, to prevent both uplift during storms and subsidence.

The organisation trained local, skilled carpenters in how to implement the techniques and paid them to apply these techniques to the shelters.



Detail of foundation from shelter design. Drawing: Arnold L. Gasta/CRS.

Although only 9% of beneficiaries reported awareness of any of these disaster-resilient techniques before the project, 98% remembered at least one technique and 83% remembered two or more techniques approximately two weeks after the construction of their home.

As some households re-built their shelters before the organisation implemented its project, it may have been more effective to have begun the DRR messaging across the whole community much earlier.

Materials

During initial assessments, it was determined that families could provide the walling using tarpaulins and other salvaged materials. Good-quality lumber was not available for the construction of shelter foundations and frames, but fallen coconut trees proved a good alternative.

Standard-size lumber was required to build the shelters according to the design, and initially the option of giving households cash to pay chainsaw operators for cut lumber was considered. However, chainsaw operators were in such high demand that the organisation decided to centralise the process and hire chainsaw operators directly.

Wider project impacts

Some non-beneficiaries applied the DRR construction techniques in the reconstruction of their own shelters. A rapid analysis suggested that these families displayed a better understanding of the causes of typhoons and the effectiveness of mitigation measures.

Non-beneficiaries who did not adopt DRR techniques perceived the labour and materials involved to be too expensive.

Bill of Quantities

Description	Qty
10ft Coco Lumber posts (2" x 4" & 4" x 4")	26 boards
12ft Coco Lumber (2" x 3" purlins)	34 boards
8ft Coco lumber (2" x 4" & 4" x 4")	28 boards
10ft Coco lumber (1" x 8" floor & 2" x 2")	50 boards
Coco log	6 pcs
Common wire nails (various sizes) and roofing nails	8kg
Roofing sheets (gauge 26 Corrugated G.I plus 2 plain)	22 sheets
Vulcaseal	1 pint
Tie-wire hooks	50 pcs
2-1/2" Roofing Nails	2kg
Tie-wire (various types)	1.75kg
Gravel	0.5m3
Cement (40kg)	2 bags
Deformed Round Bar (6m length)	6 bars

A.23 Philippines – 2013 - Typhoon - Overview

Overview

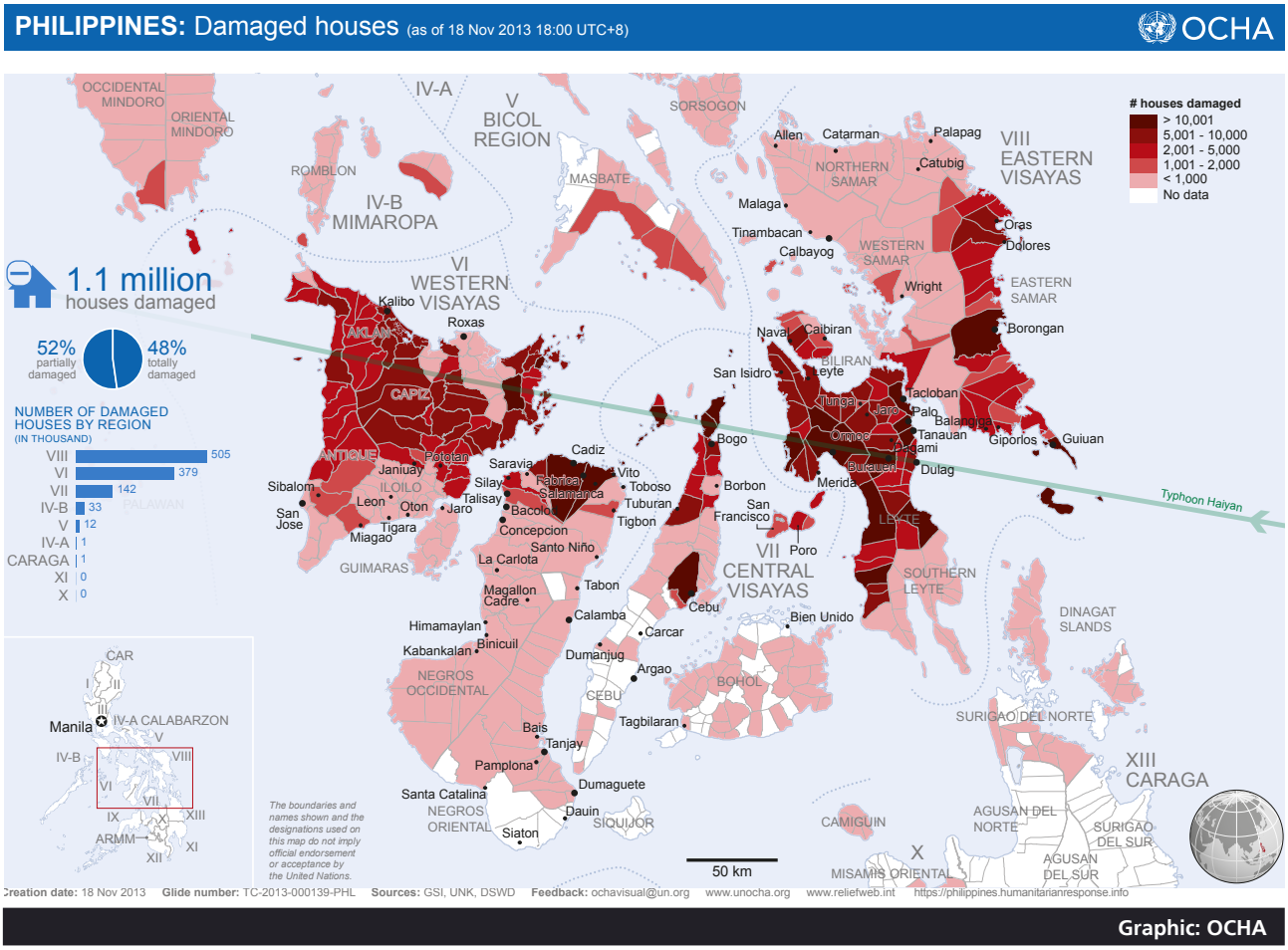
Emergency: Typhoon Haiyan (Yolanda), Philippines.

Date: 8th November 2013.

Impact: 1.12 million houses damaged. Over 4 million people displaced.

Summary of emergency:

Typhoon Haiyan (locally known as Yolanda) was one of the largest typhoons ever to make landfall, and the deadliest in the history of the Philippines. It brought unprecedented levels of damage to a vast area of the country, affecting more than 10% of the population.



Graphic: OCHA

Situation before the disaster

Philippines is a lower-middle income country that is highly prone to volcanic, tectonic and climatic disasters. Averaging more than 20 typhoons per year, the country has a well-developed disaster response capacity, though Typhoon Haiyan was exceptionally severe.

The country was still recovering from Typhoon Pablo (December 2012), the Zamboanga conflict (September 2013) and the Bohol Earthquake (October 2013).

Much of the affected rural and coastal population is highly dependent on fishing and coconut farming for their primary livelihoods. Land tenure is a major issue, with the majority of people living with varying levels of formal or informal tenure arrangements on other peoples' land.

Emergency

Preparation and early warning systems led to the evacuation of 800,000 people. However, with sustained wind speeds of over 235km/hour, gusts over 300km/hour and a tidal surge of up to five metres in some areas, over 6,000 people lost their lives, and over 25,000 were injured.

One-hundred-thousand people remained in evacuation centres, and many airports, seaports, roads and bridges were rendered unusable, leading to substantial logistical and transport issues.

Given the severity and scale, Haiyan was designated as a Level 3 disaster by the IASC.

Damage

Haiyan left a swathe of damage from Leyte and Samar in the east of

the country right through to Palawan in the west. Over 1.1 million houses were damaged in the 100km corridor path, with more than 50% of these totally destroyed. An additional 300,000 houses were damaged outside of the 100km corridor.

Damage levels and typology varied greatly across the affected areas. Some areas were densely urban or peri-urban, comprised of a mixture of timber and masonry single- and multi-storey constructions such as in Tacloban, Guiuan and Ormoc. Other areas were remote, isolated island and mountain communities, with primarily single-storey timber or bamboo-framed huts. Informal settler communities by waterways were some of the most heavily affected, due to storm surges.

Displacement

Over four million people were displaced by the typhoon, with many taking initial refuge in emergency evacuation centres and larger public facilities. Some evacuated to safe areas including Manila and Cebu.

Over the coming months many found themselves living in small tent cities, government-managed bunkhouses (emergency barracks), or with host families, though the majority remained on-site, living in self-made makeshift shelters.

A short time after the initial disaster a "No Build Zone" (NBZ) of 40 metres from the coast was declared across the affected area, leaving more than 200,000 families facing permanent relocation.

Shelter strategy

The Philippines' Humanitarian Country Team Strategic Response Plan's overall goal was to ensure that 'Communities and local governments recover from the disaster, build back safer and avoid relapses while strengthening resilience'.

The Shelter Cluster strategy was developed within the first month, in consultation with Cluster partners and the Department of Social Welfare and Development (DSWD – the Government lead for the shelter cluster). Two objectives were formulated:

- Provide immediate, life-saving emergency shelter and NFIs to 300,000 of the most vulnerable households.
- Support for self-recovery to 500,000 households through incremental housing solutions using consultative and participatory processes.

A variety of recovery intervention types were proposed: the supply of materials for roofing and framing, salvaging lumber and debris for re-use, training of skilled and unskilled labour, awareness-raising in safer building practices, technical assistance, and cash-based programmes.

The overall aim for the Shelter Cluster was to promote self-recovery solutions and ultimately owner-driven reconstruction practices. This resulted in predominately the provision of shelter repair kits in the first year.

As the emergency phase receded, the Shelter Cluster consulted with organisations and government counterparts to develop recovery guidelines that advocated for prioritising permanent solutions, with adherence to key principles, and parameters around safety, adequacy, appropriateness and accessibility, where possible.

These Recovery Guidelines emphasised that temporary assistance in high-risk areas, where allowed, should include preparedness and evacuation plans.

The guidelines also used the Right to Adequate Housing as one of its underlying principles, and organisations were encouraged to ensure that assistance was provided regardless of tenure status.

Given the early Government announcement of a proposed 40m NBZ, the Shelter Cluster worked with the CCCM, Protection, WASH, and Early Recovery & Livelihoods Clusters in the development of three HCT endorsed inter-cluster advisories on:

- Recommended minimum standards for bunkhouses.
- Standards for relocation to transitional sites.
- NBZs to be determined by hazard mapping as opposed to an arbitrary 40m measurement.

Advocacy around durable solutions both in situ and in resettlement sites continued throughout the response, especially around themes of building back safer.

Response phases

In the first 10 months 570,000 households were provided with emergency shelter, and 160,000 households were provided with a 'durable roofing solution'.

Funding and material constraints meant that at the time of publication approximately another 140,000 households will hopefully receive a shelter recovery solution (minor/major repair kit, core shelter or permanent house), and thus a total of 300,000 households will hopefully be assisted - 60% of the original target.

Future developments and challenges

Disaster-resistant construction knowledge and practice remains low amongst much of the affected area. High background poverty levels, land rights' issues and poor enforcement of building regulations have combined to create a building culture of low quality construction.

Changes in dominant building materials, from timber and bamboo frames with 'nippa' thatched roofs and woven bamboo walls to materials such as plywood cladding, masonry walls and CGI roofing have occurred without corresponding changes in technical construction knowledge, increasing the risk of catastrophic failure when disasters strike.

Global warming is likely to increase the intensity and frequency of storms, whilst population growth and increasing urbanisation are predicted to increase vulnerable urban and peri-urban populations.

This, combined with poor building practices, may result in an increased risk of future displacement. Addressing these increasing risks in the housing sector remains a major challenge for the Philippine Government and other organisations.

A.24 Philippines – 2013 – Typhoon Haiyan

Case study

Keywords: Household items; Construction materials; Transitional shelter / T-shelter; Training.

Emergency: Typhoon Haiyan (Yolanda), Philippines.

Date: 8th November 2013.

Damage: 1.12 million houses damaged.

People affected: Approximately 14 million affected, 4.1 million displaced.

Project location: Tacloban, Santa Fe and Tanauan Municipalities in Leyte.

Beneficiaries: 16,079 households.

Outputs: 16,079 Shelter kits were distributed (90% complete as of October 2014).

Ocupancy rate: To be evaluated.

Shelter size: Large kit/Roofing kit: 12 x 16ft (3.65m x 4.88m); Small kit: 12 x 12ft (3.65m x 3.65m). Partial kit (70%) was also provided.

Cost per shelter: Large: 18,500 Philippine Pesos (PHP) (US$ 413); small: 16,700 PHP (US$ 373) ; roof kit: 10,300 PHP (US$ 230). Transport and labour costs: 700 PHP (US$ 16) per shelter.

Project description:

The project addressed the need for temporary shelter in the municipalities of Tanauan, Santa Fe and Tacloban through the provision of four types of shelter kit based on the degree of damage to a house. The project prioritised households living in inadequate shelter conditions and with low self-recovery capacity. The organisation supported self-recovery through "Build Back Safer" trainings conducted before shelter kit distributions.

Emergency timeline:

[a] 8 November 2013: Typhoon Haiyan hits. **[b]** Heavy rains affect those in makeshift shelters. **[c]** July: Typhoon Glenda. Some evacuations in Tacloban.

Project timeline [number of months]:

[1-3] Planning phase.
[4] Implementation in Santa Fe.
[5] Household assessments completed. Distributions completed in Santa Fe.
[6] Distributions in Tanuan completed.
[7] Distributions in Tacloban finished.
[8] Project completed and final evaluation.

Strengths

✓ The decision to produce coco lumber ensured supply early on. The switch to local lumber suppliers meant distribution goals were surpassed.
✓ Partnership agreement with a second organisation meant more components could be provided in the shelter kit.
✓ High capacity national staff allowed for rapid response in assessments and distribution.
✓ WASH and Shelter was prioritized from the start.
✓ The local economy was stimulated through the cash-for-assets initiative to process fallen coconut trees into lumber.

Weaknesses

× Coordination with local government could have been stronger. The organisation had to revise beneficiary lists when the local government began duplicating the provision of materials.
× Shared organisational logistical pipelines led to conflicts and breakdowns. The Tacloban port was functioning at 20% capacity in the months following the typhoon and greater coordination would have helped to mitigate problems of delays.
× The local market for coco lumber recovered quicker than anticipated, but heavy investment in milling and processing meant a slow transition to purchasing from suppliers. Production could have sped up if the switch had been quicker.

Shelter kit vouchers were handed out during the training sessions. Kits were then delivered three days later. Photos: Rebekah Price.

Situation before the disaster

In Region VIII, the region hardest-hit by Haiyan, the poverty rate had been worsening and was 20 percentage points higher in 2012 than the national average of 25%. The lack of secure access to land was closely linked to poverty, with roughly 32% of the region's population living in informal settlements.

A Shelter Cluster and REACH Rapid Assessment reported that over half of the population of the area had been living in dwellings that offered little protection from climate hazards, with 24% living in 'nipa' huts (huts with roofs made from leaves from the nipa tree, sewn together over bamboo sticks) and around 60% in timber or timber and concrete houses.

Situation after the disaster

According to the Shelter Cluster and REACH Rapid Assessment, 13% of all homes were classified as totally destroyed while 29% experienced major damage and 37% partial damage (79% in total).

Despite rapid progress made by the affected population with the support of the government and the humanitarian community, an estimated 1.27 million people in Leyte were still without durable shelter by July 2014. Of the homes that have been repaired, many will not be able to withstand heavy rains or major storms in the coming months.

Shelter strategy

A Damage Loss and Need Assessment (DaLA) led by the National Economic and Development Authority (NEDA) and supported by the Shelter Cluster, was completed in December 2013. The conclusions recommended supporting a self-recovery approach for rapid recovery.

The organisation was actively involved in the Shelter Cluster in Region VIII and regularly met with municipal mayors and 'barangay' (village/community) captains.

The shelter design was informed by the Cluster "Build Back Safer" guidelines.

Project implementation

After an initial distribution of emergency shelter materials the organisation decided to adopt a project methodology of shelter kit distribution coupled with Build Back Safer (BBS) training.

After identifying areas for intervention, the organisation met with barangay captains and committees to discuss the shelter distribution process and present the project's activities. Barangays are the smallest administrative unit in the Philippines, equivalent to a village.

Following sensitisation, blanket household assessments of each community were made using tablet computers and a software application designed by the organisation. The assessments determined which type of kits a household would receive.

The lists of beneficiaries were distributed to the barangay captains three days before the BBS trainings began, with teams of mobilisers on motorcycles dispersing information about training dates. A complaints desk was set up during selection, distribution and trainings. Complaints about exclusion based on vulnerability criteria led to re-assessments being made by the organisation, and inclusion of new beneficiaries if they met the criteria.

The trainings were conducted at a central location within each barangay, with shelter kit vouchers distributed during the trainings. An order form for each beneficiary was created and sent to the warehouse to ensure that trucks were loaded with the correct kits on the day of each distribution.

Shelter kits were distributed three days after a training occurred, to give families time to organise the pick-up of their kits. On collection the beneficiary checked the materials against the order form created and signed an invoice to confirm reception.

Evaluations were conducted two to three months after the distributions, with the results currently being processed in September 2014. Household survey tools were used to determine how effective the response had been in targeting vulnerable households, differences between inland and coastal barangays, and the degree to which BBS trainings had been effective.

Beneficiary selection

The organisation followed the Shelter Cluster guidelines on vulnerable beneficiary selection and delivered 15,000 shelters to the most vulnerable households (determined by gender, age, income, household size, etc.) and households with the most damage to their homes.

A shelter built from the kit. The high-specification plastic sheeting could not be sourced locally and had to be imported. Photo: Rebekah Price.

Coordination

The organisation worked as part of the Shelter Cluster, helping to identify gaps in the humanitarian response, and coordinate resources accordingly. The organisation developed a specific partnership with one other INGO in order to cover a larger area and to take advantage of the other organisation's supply of Corrugated Galvanised Iron (CGI) sheeting.

Some duplication occurred when the Department of Social Welfare and Development managed to source CGI that had been very hard to obtain and did not wish to delay its distributions any longer. Beneficiary lists had to be revised accordingly.

The local government provided crucial support to the project. Mayors offered covered spaces for sawmills to operate and for processed lumber to be stored.

Technical solutions

The shelter kits were designed to be flexible in order to meet beneficiary needs. Four different kits were designed in response to different levels of damage:

- Full Kit (3.65m x 4.88m) – for families of more than three people.
- Small Kit (3.65m x 3.65m) - For families of three people or less.
- 70% Shelter Kit (for damaged houses).
- Roof Kit only.

The kits were reasonably light and most households were able to transport the kits from the central distribution point back to their plots without assistance.

For those who were not able to carry the shelter kit, the community always found a solution to help them get the kits home.

The shelter kit contents were designed by the organisation's technical advisor, with the Cluster concentrating on coordinating BBS messages rather than standardising shelter designs.

A small number of beneficiaries have used the kit to build structures for business use (52 out of 2,900 beneficiaries in Tanauan). Around 7% of beneficiaries in Tanauan sold the kit, using the cash to buy medicine, food, or other items.

Disaster Risk Reduction (DRR)

There were eight key Build Back Safer messages (see poster).

The training consisted of one-day shelter workshops, co-hosted with the Philippines Department of Social Welfare. In the morning, local and foreign engineers provided participants with lessons on house shapes and ratios as well as how to build different parts of the structure, such as the foundation and roofing.

In the afternoon, the engineers demonstrated these concepts with real wood and nails, and teams of trainees were afforded the opportunity to practice what they had learned by producing scale-model houses.

Barangay captains and engineers were given a checklist to determine if Build Back Safer techniques were being incorporated into the construction of the shelters. No separate follow-ups were made by organisation technical staff and a full evaluation of construction quality has yet to be made.

Materials

CGI for roofing was not readily available in the months following the typhoon. According to the Emergency Market Mapping & Analysis (EMMA: see *Shelter Projects 2010,* A.13) of CGI undertaken in January 2014, constraints on CGI supply were caused by damaged ports and the disruption of transport systems, something which meant that even pre-positioning might not have increased supply.

The shelter kit was composed of coco lumber, various nail types, plastic sheet, CGI roofing, a tool kit, and a fixing kit (high tensile wire and a roof sealant).

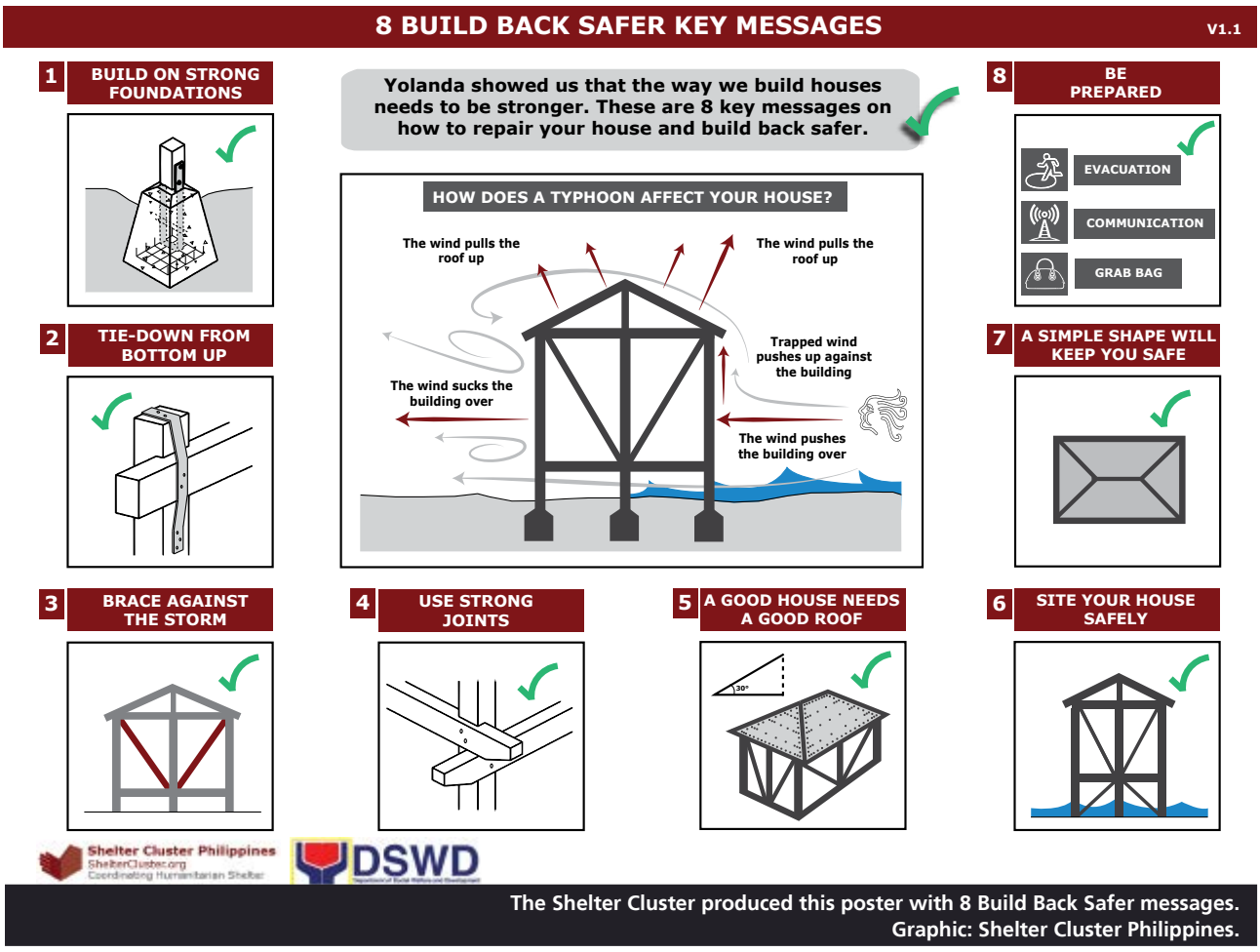
The typhoon resulted in 33 million coconut trees being damaged or destroyed. This provided a huge, salvageable resource for construction materials.

Coco lumber is a familiar construction material, though houses built with coconut lumber are normally seen as temporary. Households will eventually use other materials when building more permanent houses, most likely adapting the coco lumber structure

Initially the organisation processed the lumber itself, as local processors had been unable to recover their activities. As the market recovered, lumber was purchased directly from local sawmills.

During the early phase of organisation-led processing, over 1,000 beneficiaries were enrolled in a "cash-for-assets" initiative (coordinated with the Philippines Coconut Authority), in order to source the fallen coco trees from local farmers and to pay for the processing labour.

The organisation employed a team of chainsaw operators who were instructed by an organisation



The Shelter Cluster produced this poster with 8 Build Back Safer messages. Graphic: Shelter Cluster Philippines.

expert in how to process the lumber efficiently and safely. Trees were not transported, as it was too dangerous and difficult to transport whole logs (live trees were not cut down). Instead, lumber was processed where the tree had fallen, and additional labourers carried the finished planks to the trucks for transportation.

Lumber was checked by local arborists and civil engineers employed by the project, to make sure it met the appropriate standards and wasn't affected by rot or parasites. Due to time pressures, deflection testing was not part of the quality control.

The organisation included advice developed by the Cluster's Coco Lumber Working Group and from the book "Coconut Palm Stem Processing Technical Handbook" by GTZ (now GIZ).

The rip-stop plastic sheeting provided by the organisation (tightly interwoven nylon threads to prevent punctures and rips with a five-year lifetime) could not be sourced locally or regionally and was imported from the USA.

All other components were procured from national markets.

Kit contents

Item	Unit
CGI	12 Sheets
Ridge Roll	3 pieces
Elastoseal	4 tubes
Bucket	1 unit
Rope	30 meters
Tie Wire	1kg
Sack	1 unit
Hammer	1 unit
Crow bar	1 unit
Pliers	1 unit
Crosscut saw	1 unit
3m tape measure	1 unit
Shovel	1 unit

A.25 Philippines – 2013 – Typhoon Haiyan

Case study

Keywords: Cash / vouchers; Advocacy / legal; Training.

Emergency: Typhoon Haiyan (Yolanda), Philippines.

Date: 8th November 2013.

Damage: 1.12 million houses damaged.

People affected: Approximately 14 million affected, 4.1 million displaced.

Project location: Tanauan and Tacloban, Eastern Leyte.

Beneficiaries: 35,000 - 45,000 people.

Outputs: 6,615 shelters (3,277 completed as of September 2014).

Ocupancy rate: 100%.

Shelter size: Average of 12.5m² depending on household inputs. Engineers make recommendations based upon *Sphere*.

Cost per shelter: The organisation provides US$ 450, with beneficiaries' self-recovery efforts valued at around US$ 250.

Project description:

The main organisation, in collaboration with a local implementing partner, supported the self-recovery of those affected by Haiyan through the provision of direct cash grants, vouchers for quality-controlled materials, and training and guidance in DRR techniques.

The two organisations lobbied the government to allow assistance to families waiting to be relocated who were living in the "No Build Zone" (NBZ). Relocation is likely to take 1-2 years.

Emergency timeline:

[a] 8 November 2013: Typhoon Haiyan hits. **[b]** Heavy rains affect those in makeshift shelters. **[c]** July: Typhoon Glenda. Some evacuations in Tacloban.

Project timeline [number of months]:

[1-3] March 2014: strategy development and community consultation in Tanauan.
[3] Implementation in Tanauan; assessment in Tacloban.
[4] Beneficiary selection. Gov. approves light-material assistance in NBZ.
[4-9] Conditional cash grant payment.
[6] Land-use problems resolved in Tacloban.
[5-11] Voucher redemption. Project forecast to end February 2015.

Strengths

✓ The project provides choice, rather than imposing one shelter solution on all beneficiaries.
✓ Price and quality control components ensure value for money and safety, with vouchers reducing the potential for corruption.
✓ Material assistance is delivered with minimal transportation costs by mobile hardware stores.
✓ The local economy has been stimulated, and local suppliers have been keen to provide good quality products and service to their local customers.
✓ The relocation process away from the NBZ takes time, and the main organisation, following the lead of its local partner, successfully advocated for the government to allow light material assistance to those still waiting in the NBZ.

Weaknesses

× The voucher system can end up causing delays since small traders have limited capacity and are unfamiliar with the process.
× The cash-on-delivery procurement mechanism does not suit small traders who need cash up-front to buy in stock. Revising the procurement procedures to resolve this issue delayed the project implementation.

Observations

- Sourcing quality materials from small suppliers has proved to be problematic.

Situation before the disaster

The Municipality of Tanauan's economic activity is based around fishing and farming, whilst Tacloban City is a large urban area. Poor families, whether living in urban or rural areas, were mostly living in one-room shelters made of coco lumber with bamboo or plywood walling and CGI sheet or 'nipa' shingles (leaves from the nipa tree sewn together over bamboo sticks) for roofing.

In urban areas foundations were more likely to be made with concrete, but in general shelters were poorly constructed, because of limited financial resources and because skilled craftsmen with good technical knowledge tended to work in larger cities.

Demonstration of prototype collapsible transitional shelter. While the design is in development, beneficiaries are assisted through the standard voucher modality. Photo: Oxfam.

Situation after the disaster

Six months after Typhoon Haiyan struck, shelter remained the highest priority need, with only 22% coverage out of 1.12 million affected houses across the Philippines by the end of April 2014, when the project was just beginning.

The city of Tacloban presented complex challenges due to the high level of damage and the large urban population. Those that began recovery in "safe zones" were often re-building their shelters to an even lower standard than before the typhoon, due to limited financial resources and poor quality materials. In April 2014 heavy rains caused flooding, especially in Tacloban and in July Typhoon Glenda hit, which resulted in some families being evacuated for up to two weeks.

Shelter strategy

A Damage Loss and Need Assessment (DaLA) led by the National Economic and Development Authority (NEDA) and supported by the Shelter Cluster, was completed in December 2013. The conclusions recommended supporting a self-recovery approach for rapid recovery.

A "No Build Zone" (NBZ) was announced by the President a few weeks after the Typhoon hit, and humanitarian agencies were prevented from providing non-emergency assistance in the NBZ whilst people were moved to temporary shelters away from the NBZ (tent cities or bunkhouses) in preparation for permanent relocation.

Government relocation plans involve the moving of 200,000 households in total, with 10,000 households being relocated from parts of Tacloban City. While waiting for relocation to take place, some families have lived in tents and makeshift shelters for nearly a year and the relocation process continues at a slow pace.

For the first six months, no shelter assistance to these families was permitted, apart from the distribution of tarpaulins.

Humanitarian organisations, including efforts made by the project's local partner, advocated for the provision of more substantial shelter support in the NBZ.

In March 2014, the NBZ was re-classified as a No Dwelling Zone (NDZ) by the Office of the Presidential Assistant for Rehabilitation and Recovery, in order to allow work to begin on the reconstruction of buildings for tourism and other livelihoods activities. However, local government authorities retained the power to take final decisions on policy, and the impact of the decision was not immediately felt.

After further advocacy by humanitarian organisations, it was accepted by the local government that light materials assistance could be provided in the original NBZ. Whilst the authorities in Tanauan allowed assistance to families on the site they were currently living in, authorities in Tacloban wanted all potential plots where temporary shelter would be provided to be officially accepted. This meant that a number of alternative plots had to be identified by the project, delaying the response until August 2014.

As of end of October 2014 , 325 IDPs living in tents have been assisted by helping them to move to a safe lot, signing an agreement with the lot owner to pay a rent of US$ 2 per month.

Project implementation

Prior to beneficiary selection, several community consultation sessions were conducted in Tanauan, in order to provide feedback on the proposed strategy. Following the meetings, several adjustments to the plan were made, including replacing tools with additional money for roofing materials, and adjustments to beneficiary criteria to include financial considerations and the need for extra construction support for the most vulnerable (they were given additional money to pay for four days' worth of unskilled labour).

Build Back Safer Committees (BBSC) were formed, with their membership including representatives from local government, community leaders, beneficiary representatives,

Left: A mobile hardware store in operation, with items delivered by truck and checks made by the organisation. Right: Full-size frames erected showing correct and incorrect bracing for training purposes. Left photo: Francisco Montiero. Right photo: Oxfam.

grassroots organisations, women's representatives and representatives of religious groups. This community participation mechanism played a crucial role in the transparency and effectiveness of the project.

Following beneficiary selection, beneficiaries were grouped into clusters of 25-30 households, with each cluster choosing a representative who became a member of the BBSC.

There were three main components of the assistance programme, described below:

1) Technical assistance

Prior to the cash and voucher distribution, the two organisations provide training in DRR techniques with on-site demonstrations, educational material and scale models. The quality of salvaged materials is validated, and support is given to the families to identify their specific needs and recommend how to best utilise the cash and voucher to recover the shelter.

2) Conditional cash grant

The organisations link local suppliers to the community, with the leader of each group of beneficiary households being supported to produce a procurement order. Suppliers agree standard prices and quality levels with the organisations. The grant is paid through the Philippine Post Office once the beneficiary cluster has completed the training.

3) Cash voucher for roofing materials

Vouchers are distributed once the structures are complete, and can be redeemed at mobile hardware stores, with a master-list of available materials printed on the beneficiary's registration card.

The materials are quality-controlled by a team made up of BBSC members, staff from the main organisation and its local partner, and local government representatives. A certificate of satisfaction is signed by the team once the quality of the materials presented by the supplier on distribution day has been validated and cross-checked against previous warehouse joint visits.

The implementation of key DRR messages is monitored during the project, with checks made before the next phase of support is provided. The project records all information on materials-use and DRR techniques implemented in a database, to facilitate a final evaluation.

Beneficiary selection

The Disaster Assistance Family Access Card (DAFAC) database and Local Government Unit (LGU) damage assessment were used as initial data to triangulate beneficiary needs and avoid duplication of responses.

Due to many people's identity documents being destroyed in the typhoon, assistance has been based on pre-issued tokens combined with the detailed beneficiary databases. Vulnerability criteria are then used to select households, whose needs are validated by a home visit. Criteria include prioritising female-headed households, the elderly, and people with disabilities.

The BBSCs have an important role to play, helping to resolve problems and ensure that beneficiary lists are correct. Beneficiary lists are made public (through notice boards or committee meetings) for two days, to allow time for beneficiary feedback through help desks and complaints boxes. After following up feedback (in the presence of the BBSC, to ensure the process is transparent) the final list is posted, along with written responses to complaints.

Coordination

The organisations were actively involved in the Shelter Cluster, which operated at national, regional, provincial and LGU levels, done in order to prevent duplication. The organisations also cooperate closely with the local government. In order to reduce the potential for conflict and tensions in the communities, the organisations within the Cluster agree to make sure that their assistance packages do not greatly differ in value.

The main organisation's partnership with the local partner, who had led the advocacy for a change in policy on the NBZ, added a great deal of local knowledge and understanding

Amakan being attached to a shelter. Photo: Green Mindanao

of context when planning and implementing the project.

The project also plans to work with Philippine university academics to test a prototype collapsible shelter for structural integrity and social acceptance to see if it is a viable sheltering solution for communities living with disasters.

Technical solutions

As part of the project, a prototype collapsible shelter has been developed and is currently being tested. In the meantime, the project's standard shelter response is being implemented in Tacloban.

To deal with the restrictions on rebuilding in the NBZ, the project engineering team designed the prototype shelter so that it would be easy to dismantle and re-locate. The design is extendable and can be upgraded if sited in a safe area.

The purpose of the design was to initiate more productive discussions with the Tacloban authorities on what kind of assistance could be provided in the NBZ in order to support families who had been waiting to be relocated for months, and a model shelter was erected in Tacloban in July 2014. However, the organisations would prefer to provide more flexible shelter assistance to beneficiaries in these problem areas.

Following a detailed field survey which included discussions with craftsman and households, the shelter size was designed to be a minimum of 12.5m^2 for an average family of five people. Beneficiaries can modify the design to enlarge it using additional materials which they provide themselves.

The survey also indicated that the communities were able to provide around a third of the cost of the shelter in terms of providing unskilled labour and salvaged materials.

The final collapsible shelter design can be dismantled in 2-3 hours, making it possible to completely collapse the shelter if there is advance warning of an extreme typhoon. The dismantling requires no skilled labour and the shelter itself is made from local materials.

Disaster Risk Reduction (DRR)

The Build Back Safer techniques include:

- Using hurricane strapping to tie down the frame and roofing.
- Assessing the quality of salvaged materials.
- Elevating structures in flood-prone areas.

At the beginning of the project, an international training organisation organised and ran the Training of Trainers sessions for the staff of the main organisation and its local partner in order to establish a model for training the household clusters.

Each household cluster participated in a half-day construction training. This involved on-site demonstrations with models and training material identifying ten key points for typhoon-resistant construction.

A separate four-day training workshop, targeted only at specific villages in Tacloban, comprised of practising emergency evacuation drills and developing contingency plans for the most vulnerable areas. The BBSCs also received preparedness training in order for them to become rescue teams in an emergency.

A disaster preparedness campaign was launched, with educational material developed and distributed in collaboration with local government. The wall and roof frames are built with coco lumber and wall screens are made from either plywood or weaved bamboo mats locally known as 'amakan'. Roof options include cladding with leaf mats, locally known as nipa shingles, or corrugated iron sheets.

By providing materials through local suppliers using mobile hardware stores, the organisation avoids the overheads of centralised procurement, warehousing and transport costs.

Wider project impacts

The project voucher approach has influenced the national government to review their own roofing material distribution process, changing from in-kind distribution to vouchers in order to increase beneficiaries' choice and reduce supply chain problems.

The project approach has resulted in the injection of direct and indirect cash payments worth US$ 2.5 million into the local economy of the specific target municipalities.

The certified training of 200 women carpenters is linked with long-term gender programmes in the area.

CASE STUDY

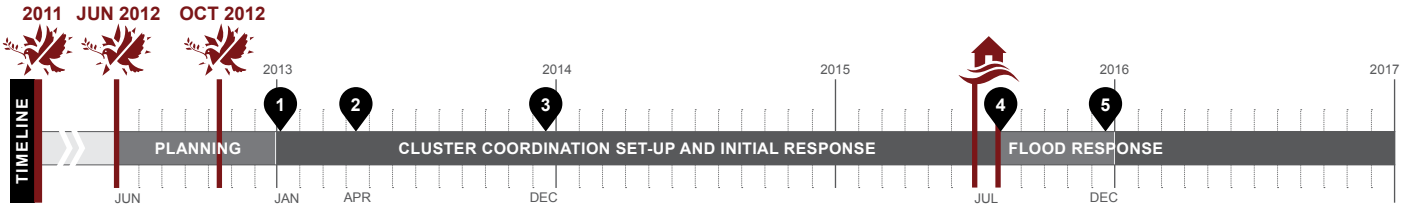
MYANMAR 2013-2016 / COORDINATION

KEYWORDS: Coordination, Technical assistance, Advocacy, Training

CRISIS	**Myanmar, multiple crises:** • **Internal conflict in Kachin/Northern Shan states** (2011-ongoing) • **Inter-communal violence in Rakhine state** (Jun and Oct 2012) • **Cyclone Komen floods** (Aug-Dec 2015)
TOTAL PEOPLE AFFECTED	**Rakhine: 145,000** displaced **Kachin/Northern Shan: 100,000** displaced **2015 floods: 1.7 million** displaced **150,000** people with moderately or severely damaged houses (Myanmar Humanitarian Response Plan, 2016).
PROJECT LOCATIONS	**Myanmar country-wide, national and subnational level.**
PROJECT OUTPUTS	**Shelter/NFI/CCCM coordination provided at national and subnational level** (2013-2016).
OUTCOME INDICATORS	**100%** of IDPs living in temporary shelters complying with internationally recognized standards. **100%** of IDP camps with appropriate infrastructure supporting effective camp management.

PROJECT SUMMARY

The Shelter/NFI/CCCM Cluster in Myanmar has provided – and continues to support – coordination of shelter and CCCM agencies at national and subnational level through a decentralized approach, since January 2013. The national level provided overall direction, Information Management support and liaised with national authorities, donors and the Humanitarian Country Team, as well as with the Global Shelter and CCCM Clusters; two subnational clusters were established for operational response. The overall goals were to provide emergency shelter and to seek durable solutions for populations affected by violence and disasters. This case study focuses on the coordination structures and how they evolved over time.



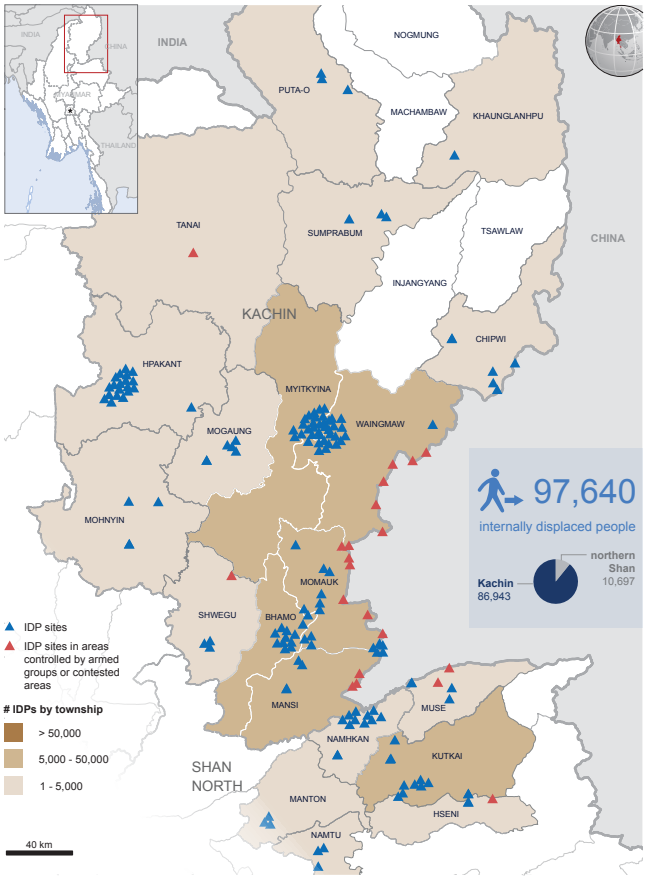
1. Jan 2013: **National Shelter/NFI/CCCM Cluster established.**
2. Apr 2013: **Rakhine State Government and Cluster Lead Agency agree on shelter design and standards** (eight-unit long-houses).
3. Dec 2013: **Completion of 2,843 eight-unit longhouses in Rakhine State** (see A.16 in *Shelter Projects 2013-2014*).
4. Aug 2015: **Deployment of Flood Response Coordination Team.**
5. Dec 2015: **Departure of Flood Response Coordination Team and handover to national Cluster.**

STRENGTHS

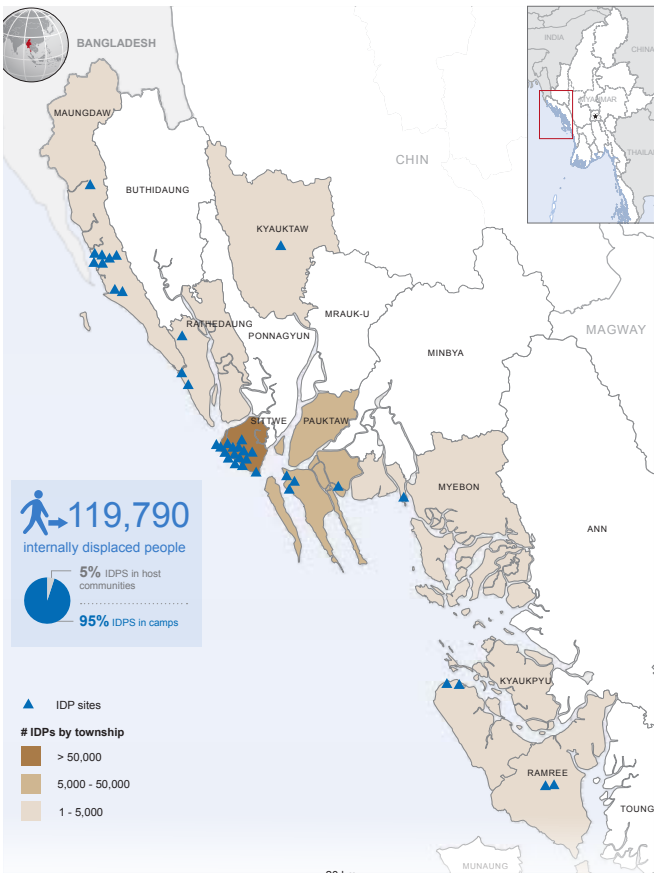
+ Adequate dedicated capacity since cluster activation.
+ 48-hour deployment of the Coordinator and continuity for 4 years.
+ Inclusive coordination mechanism for all partners.
+ Regular engagement with other clusters and sectors, at all levels.
+ Sustained advocacy contributed to high government involvement.
+ The merged Shelter/NFI/CCCM subnational Cluster facilitated operational partners agreement on common designs and guidance.

WEAKNESSES

- Over 200,000 individuals continued to be in a protracted displacement situation.
- Delayed Cluster activation In Kachin/Northern Shan.
- Compromised design solutions did not reach minimum standards.
- The protracted crisis has not allowed constructive discussion on possible exit strategy or handover.
- Lack of durable solutions led to a constant and costly cycle of repair and maintenance.



Nearly 100,000 people were internally displaced due to violence, across many IDP sites in Kachin and Northern Shan States (UN OCHA, Aug 2016).



In Rhakine State, internally displaced persons were living in many IDP sites coordinated by the Shelter/NFI/CCCM Cluster (UN OCHA, Jul 2016).

CONTEXT

Despite the internationally welcomed transition to democracy in 2011, after decades of isolation, Myanmar remains one of the poorest countries in South-East Asia. The relatively low level of development and wide-spread poverty is often further hampered by heavy monsoon rains and frequent natural disasters (such as typhoons Nargis in 2008[1] and Giri in 2010). Myanmar's population make-up includes multiple ethnic groups which have long opposed the government's policy of centralization.

SITUATION IN KACHIN/NORTHERN SHAN

Fighting between the Myanmar governmental army and the Kachin Independence Army (KIA) broke out in June 2011, after a 17 year cease-fire, which led to the displacement of an estimated 100,000 people, as of August 2013[2]. In 2016, approximately 50% of IDP camps were located in non-government controlled areas, with limited access to services and international humanitarian assistance.

SITUATION IN RAKHINE STATE

For more information on Rakhine State, see case study A.2.

Inter-communal violence between the Buddhist population and Rohingya Muslims in 2012 resulted in massive destruction of homes and displacement across the state. The main IDP caseload fled urban areas and settled into rural camps around Sittwe, with heavy restrictions on freedom of movement and limited access to services outside the camps.

NATIONAL SHELTER CLUSTER

Before the Cluster was activated, the lead agency had been coordinating the shelter and CCCM response in Kachin (since 2011) and in Rakhine (since 2012). Support was requested from the global level Clusters for response coordination, resource mobilization and scale up. In January 2013, the Shelter/NFI/CCCM Cluster was formally activated to respond to large-scale displacement in predominantly camp and camp-like settings across Rakhine and Kachin/Northern Shan states. While merged clusters are not preferred in IDP situations, in the case of Myanmar, Shelter and Camp Coordination partners overlapped to an extent that justified bringing the two sectors together. Local organizations also expressed preference for one common forum.

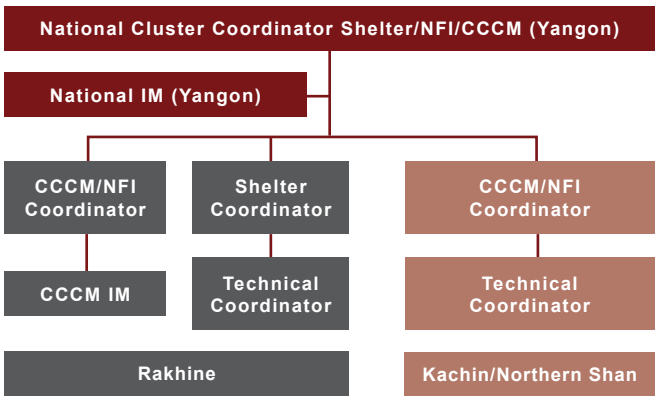
The Global Shelter Cluster (GSC) deployed an experienced, dedicated, national Coordinator within 48 hours of Cluster activation, to head the newly formed national Cluster team in Yangon. The Cluster aimed to ensure adequate temporary accommodation (according to agreed international standards and government requirements) using eight-unit shelters known as "long-houses"[3].

SUBNATIONAL COORDINATION STRUCTURE

The coordination team had to address two displacement contexts, in two different geographical locations, which called for a decentralized subnational coordination approach. A merged Shelter/NFI/CCCM subnational Cluster was established in Kachin/Northern Shan states to coordinate the response across the 167 camps. Due to the highly volatile situation and the larger caseload in Rakhine, the subnational

[1] See case studies A.19-A.20 in *Shelter Projects 2010* for projects in response to Typhoon Nargis.
[2] Kachin & Northern Shan Shelter Cluster Strategic Framework, Sep 2013.
[3] This is described in case study A.16 in *Shelter Projects 2013-2014*.

Cluster in Sittwe town was set up differently – separate Shelter and CCCM/NFI Clusters – both under the coordination of the national Cluster Coordinator in Yangon.



Myanmar Shelter/NFI/CCCM Cluster Organigram, 2013-2015.

RESPONSE IN KACHIN/NORTHERN SHAN

The initial response was carried out by the local community and faith-based organizations through the construction of **temporary five-unit shelters in camp-like settings,** evolving mainly around church compounds. While having distinct advantages (knowledge of the local context, access to non-governmental areas, extensive networks and positive relation with state and local authorities), the initial response suffered from the organizations' lack of technical and sectoral expertise, as well as limited donor confidence and support. Temporary shelters provided in the early stages of the emergency varied significantly across the 167 camps in terms of covered living area, quality of construction materials used, occupancy criteria and surrounding infrastructure.

By March 2013, there were 85,000 registered IDPs and an additional 35,000 individuals in need of humanitarian assistance. The international community engaged late and access to non-government controlled areas was limited. This caused a lack of basic data to support identification of gaps and inform shelter and camp management response. The Shelter/NFI/CCCM Cluster in Kachin **piloted and supported a substantial camp profiling exercise** in March 2013, to gather baseline disaggregated data on IDPs. As of September 2016, five rounds of camp profiling have been coordinated by the Cluster and carried out by partners on the ground[4].

The main challenge for the Cluster subnational team was to establish a formal coordination mechanism and help improving the response, **18 months after its start.** The Cluster benefited from a dedicated subnational Coordinator and a shelter technical expert supported by the Cluster lead agency.

The main objective in 2013 was to provide **temporary shelters to meet the needs of an additional 10,000 IDPs**. This was achieved through consultations with beneficiaries and local shelter actors on culturally appropriate shelter designs and harmonization, and provision of guidance on Build Back Safer techniques. In July 2013, a technical working group (TWiG) **agreed on a five-unit shelter design,** which has been implemented by all partners since. In July 2016, the TWiG adapted the design to take into account feedback from beneficiaries and partners, availability of local materials, minimum standards and other cultural considerations. Additionally, the Cluster lead agency **conducted 12 trainings** for approximately 300 Camp Managers, Camp Focal Points and Government actors, across 84 camps[5].

Additionally, **repairs had to be conducted on the shelters built in 2011**. This was done through an owner-driven approach (supported by the Cluster), bringing existing shelters up to Sphere standards, to avoid overcrowding and improve privacy and protection. Temporary shelters have a life span of 2-3 years and require shelter actors in the area to engage in a constant and costly cycle of maintenance and repair, until durable solutions become feasible.

RESPONSE IN RAKHINE

Immediately after the violence, emergency tents were provided, while the Cluster lead agency provided tarpaulins, rope and tents at the end of 2012. Additionally, after the second wave of violence in October 2012, the government completed 525 temporary shelters and "long-houses" for approximately 29,000 IDPs, across 10 townships. Some of the camps were established in 2012-2013, others were clusters of long-houses built within (or in close proximity to) the IDPs' villages of origin.

In April 2013, the Cluster lead agency joined a high-level delegation to Rakhine, to clarify the maximum capacity of the international community and persuade the Rakhine State Government (RSG) to contribute to the shelter response. The initial design used by the RSG envisaged the construction of 10-unit long-houses, providing a living space of only $2m^2$ per person. **The Cluster advocated for the shelters to meet the Sphere indicator** of $3.5m^2$ per person and managed to reduce the number of families per shelter from ten to eight. However, with an average of 5.5 family members, IDPs ended up occupying a space of $2.9m^2$ per person. On the basis of this agreement with the RSG, Cluster partners achieved 51% coverage of identified temporary shelter needs in June 2013 and 99% by December[6].

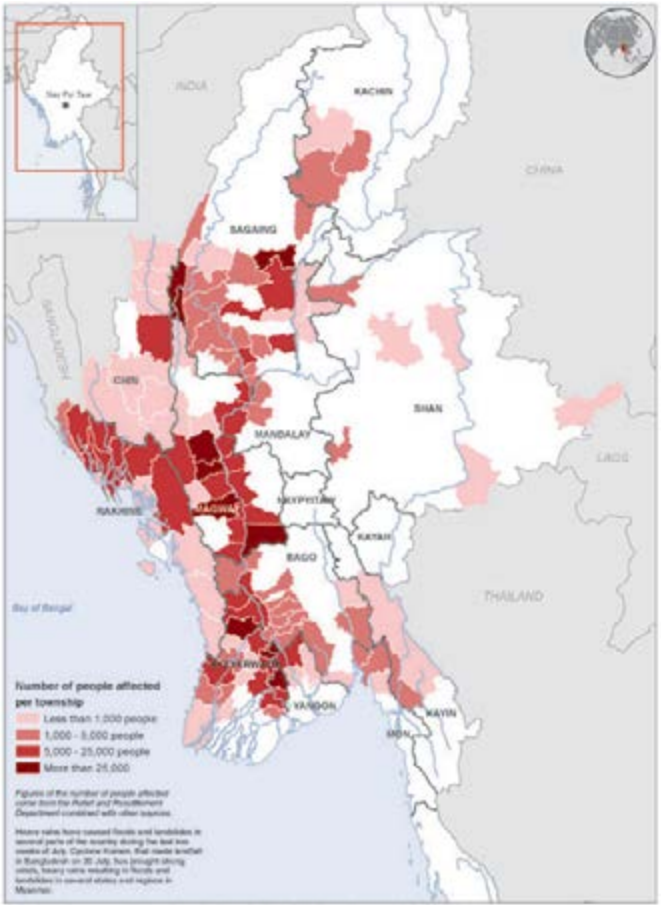
Temporary shelters were built in IDP sites for people fleeing violence.

During 2013 and 2014, a TWiG co-chaired by the Department for Rural Development (DRD) **agreed on minimum technical standards and designs for temporary and permanent shelter,** and further developed an effective shelter and maintenance programme. The established co-chairing arrangement

[4] Analysis of Camp Profiling Round 5 Kachin & Northern Shan, http://bit.ly/2jK46LR

[5] Kachin Response Plan Myanmar March-December 2013, http://bit.ly/2j8MjNK.
[6] Rakhine State Shelter Cluster Strategic Framework, http://bit.ly/2iQlZKh.

allowed Cluster partners to **develop strong professional relationships with the RSG** and improved the previously poor level of coordination between government departments and international organizations. Additionally, constructive government engagement trickled down to the local level.

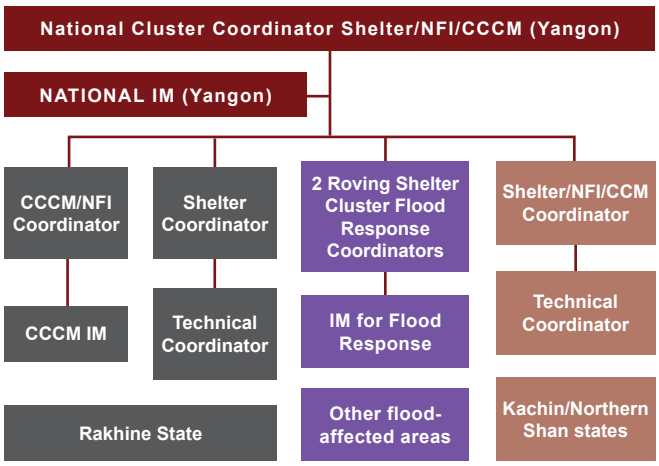


Several areas were affected by the floods in 2015 (UN OCHA, 10 Aug 2015).

In 2014, the Shelter Cluster, both in Rakhine and at national level, renewed its advocacy efforts with the RSG to take the lead in addressing the protracted IDP situation through durable solutions. It also offered technical support on design and construction. In 2015, the RSG supported individual housing solutions through cash grants for 25,000 individuals[7]. **Attaining durable solutions and advocacy with the government remained key objectives** in the 2016-2017 strategy. Since 2013, both subnational Clusters have continuously engaged in preparedness activities, tracking of emergency stocks and local response capacity. Both have also advocated for early recovery and coordinated with relevant clusters and sectors (most notably Protection – to ensure protection mainstreaming – and WASH – to ensure sufficient links between shelter interventions and WASH infrastructure).

SITUATION AFTER THE 2015 FLOODS

In July and August 2015, heavy monsoon rains, combined with the effect of Cyclone Komen on the region, affected nine million people across 12 of the country's 14 states, causing heavy loss of homes, livelihoods, crops and food stocks. Floods and landslides killed 117 people and temporarily displaces 1.7 million. The Government reported that the highest numbers of affected people were in Ayeyarwady, Sagaing and Magway regions, while Rakhine suffered the highest number of destroyed homes. The Humanitarian Country Team agreed that the response to these floods would be coordinated by the existing Clusters, rather than creating new ones.



Myanmar Shelter/NFI/CCCM Cluster Organigram, Aug-Dec 2015.

FLOOD RESPONSE 2015

Given the extensive reach and impact of the natural disaster, the GSC co-lead agency for natural disasters deployed a coordination team to support the subnational level. The two GSC co-leads agreed that the newly deployed team would coordinate the response outside Rakhine, Kachin and Shan states. **The flood shelter coordination team (FSCT)** – consisting of two dedicated Coordinators and one information manager – **was set up to operate under the strategic guidance of the national Cluster.** The FSCT organized shelter partner meetings at the same location and date of the regular national Cluster meeting, allowing agencies to attend both meetings.

The FSCT used and triangulated government data to coordinate the shelter response in seven regions, developed a reporting mechanisms and a dedicated webpage[8]. It operated from Yangon, with field trips to affected locations, to assess housing damage, households' needs and existing gaps in the response. By September 2015, Cluster partners provided emergency shelter to 9,525 households in all regions (outside Rakhine, Kachin and Stan states) through a combination of shelter repair kits, tarpaulins and tents[9].

WIDER IMPACTS OF THE CLUSTER IN MYANMAR

The clear mandate and geographical separation of responsibilities between the two Cluster lead agencies, as well as the close collaboration with the national Cluster team, ensured that the coordination of this response was successful. **An agreement between the two global co-leads** existed before the floods, and was further solidified and practically tested through the 2015 collaboration. This allows the timely deployment of coordination teams and development of Standard Operating Procedures (SOPs) and technical guidelines.

[7] See case study A.2.

[8] www.sheltercluster.org/response/myanmar-floods-2015.
[9] Myanmar Central Area Flood Response Situation Report #4, http://bit.ly/2jKy7ew.

STRENGTHS, WEAKNESSES AND LESSONS LEARNED

People in an IDP site, coordinated and managed by merged Shelter/CCCM Clusters (Tat Kone Baptist Church IDP camp in Kachin State, Nov 2013).

The Cluster coordinated the construction of temporary shelters for people fleeing inter-communal violence in Rakhine State (Ohn Taw Gyi IDP camp, May 2013).

STRENGTHS

+ Adequate dedicated capacity since Cluster activation, and benefits from using the **lead agency existing capacities.**

+ 48-hour deployment of the Shelter/NFI/CCCM Coordinator (and continuity since then). This provided **predictability, extensive knowledge** on the context and the response, as well as **strong personal and professional relations** with the wider international community, local partners, authorities and donors.

+ Inclusive coordination mechanism for all partners to engage, consult and disseminate best practices. 21 Cluster partners have been regularly attending meetings.

+ Regular engagement with other clusters and sectors, at all levels (especially Protection, WASH and Early Recovery), as well as donors and relevant stakeholders.

+ Sustained advocacy from the Cluster lead agency and partners contributed to high government involvement in Rakhine State. Many shelters built by the government used Cluster-agreed technical standards and designs.

+ The merged Shelter/NFI/CCCM Cluster in Kachin/Northern Shan managed to **bring local operational partners together**, agree on a common shelter design and technical guidance, and create **links with Protection and WASH**.

WEAKNESSES

- More than 200,000 individuals across Rakhine, Kachin and Northern Shan states **continue to live in situations of protracted displacement**. As of 2016, the Cluster continued its advocacy for durable solutions.

- In Kachin/Northern Shan, **the Cluster was activated 18 months after** the conflict-related displacement. Delayed activation of clusters may lead local organizations to provide a **sectorial response without the necessary technical guidance and coordination**.

- The compromised solution reached on the final design and size of the long-houses implemented by the government **fell short of the international standard** of 3.5m^2 per person.

- The Cluster has been active for four years, while needs have remained almost the same since 2013, which has **not allowed for constructive discussion on possible exit strategies or handover**. Clusters are, by definition, time-bound and needs-based coordination mechanisms. Handover of coordination responsibilities, or deactivation where needs cease to exist, should be discussed early on[10].

- Lack of durable solutions four years into the Cluster response, led to a **constant and costly cycle of repair and maintenance**. This was due to the decision of the Cluster in 2013 to explicitly focus on the provision of temporary shelters, with a life-span of two years, to avoid contributing to permanent encampment of the affected populations.

[10] IASC Reference Module for Cluster Coordination, http://bit.ly/2oseRYT.

LEARNINGS

- **Early deployment** of Cluster coordination team, **adequate staffing** of key Cluster roles (Coordinator, Information Manager and Technical Support) **and access to the Cluster lead agency's** existing institutional and human resources are essential for setting up a functioning national Cluster.
- **Coordination mechanisms should be as close to operational partners and beneficiaries as possible**, to allow for adequate data collection, gap analysis, community engagement and operational response, as well as to encourage ownership, adequate exit strategies and sustainability.
- **Pre-existing arrangements and close cooperation between Cluster lead agencies at the global level** can ensure that coordination mechanisms are not duplicated, information is shared openly and that teams operate within a clear mandate and towards the same strategic objective.
- **Coordination teams arriving late** in the response **should engage partners cautiously and prove the added value** of coordination (including humanitarian standards, Build Back Safer approaches, and technical guidelines).

CASE STUDY

MYANMAR 2014-2016 / CONFLICT

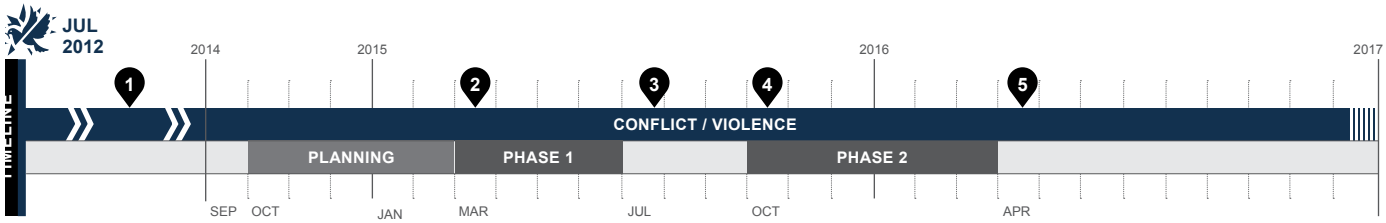
KEYWORDS: Individual housing, Cash assistance, Advocacy, Community participation, Protection

CRISIS	**Inter-communal violence, Rakhine, 2012.**
TOTAL PEOPLE AFFECTED	**145,000** displaced due to 2012 violence (119,560 as of Nov 2016).
PROJECT LOCATIONS	**Rakhine State, Myanmar** (Townships of Mrauk-U, Kyauktaw and Minbya, Rathedaung and Pauktaw).
BENEFICIARIES	**25,000 individuals** (approx.).
PROJECT OUTPUTS	**4,737 beneficiary-led houses.**
SHELTER SIZE[1]	**Min. 16.7 m²** (4.6m x 3.7m basic design).
SHELTER DENSITY	**Min. 3.4 m²/person** (average 5 members per family).
PROJECT COST PER SHELTER	**USD 1,000** (Labour cost = USD 160; Materials, Logistics, Transport, etc. = USD 840).
OCCUPANCY RATE	**100%** (estimated).

PROJECT SUMMARY

This was a beneficiary-led, cash-based, project that allowed families displaced due to inter-communal violence to vacate their temporary shelter and rebuild their houses. The project enabled the construction of 4,737 houses for a marginalized group in a highly volatile environment, where some stakeholders were keen to use a contractor-driven approach. In fact, the more discreet owner-driven methodology, used in this project, proved highly effective.

[1] Note: families were free to increase the size or modify the house design according to their needs.



1. Jan 2013: **Activation of Shelter Cluster.**
2. Mar 2015: **Rakhine Government begins owner-driven housing construction with own funding** (Phase 1).
3. Jul 2015: **Handover of Phase 1 completed**.
4. Oct 2015: **Rakhine Government, with funding support from Shelter Cluster partners, continued with further individual housing construction** (Phase 2).
5. Apr 2016: **Handover of Phase 2 completed**.

STRENGTHS

+ Use of existing local markets.
+ Considerable donor interest and support.
+ Critical leadership of the government.
+ Active participation of community leaders and concerned families.
+ Continuity of cluster agency and coordinators over time.
+ Affordable and quick implementation.

WEAKNESSES

- Some IDPs could not return to their place of origin.
- Landowners were not properly compensated.
- Lack of adequate and timely WASH components in Phase 1.

During attacks, villages were burnt (Rathedaung Township, Rakhine State).

In response to the displacement due to the violence, makeshift emergency shelters were set up (Sin Thet Maw, Pauktaw Township).

IDPs used old shelter materials to support the initial settlement back in their place of origin, before rebuilding their houses.

Construction materials were supplied by the government to rebuild the houses of IDPs affected by the violence (Thi Kyar IDP Camp, Mrauk-U Township).

SITUATION BEFORE THE CONFLICT

Rakhine State is the least developed state in Myanmar, characterized by high population density and malnutrition rates, low-income levels, poverty and weak infrastructure. Conditions are worsened by two cyclone seasons, with associated flash flooding and landslides, during the rainy season. There is a long-standing history of discrimination of the Muslim population in Rakhine State, with the two main ethnic groups in conflict with each other: the Rakhine (Buddhist) and those who call themselves "Rohingya" (Muslims), who lack any citizenship and hence are stateless.

SITUATION AFTER THE START OF THE CONFLICT

Inter-community violence in parts of Rakhine State commenced in early June 2012, and flared once more in October 2012, resulting in the deaths of 167 people and injuries to 223 people. 10,100 buildings, including homes, churches and public buildings were damaged or destroyed and approximately 145,000 people were displaced (95% Muslim; 5% Rakhine). This generated two distinct IDP caseloads: those displaced from urban areas and those from rural areas[2].

In 2015, approximately 25,000 people in rural locations were able to vacate their temporary shelter, assisted through this project. 60% reconstructed in their place of origin and 40% in new locations. This resulted in the number of camps (or camp-like settings) decreasing from 67 to 36. However, at the time of writing, almost 120,000 IDPs still resided in camps.

NATIONAL SHELTER STRATEGY

The goal of the Shelter/NFI/CCCM Cluster in Myanmar was to provide people affected by violence and conflict with safe, dignified and appropriate living conditions, as well as access to essential services, while seeking durable solutions[3]. In early 2015, after 18 months without being able to move beyond temporary solutions, the Cluster (strongly supported by the international community) advocated heavily with the Government of Myanmar, especially the Rakhine State Government (RSG). The aim was to convince the RSG to enact three possible options that supported individual housing solutions, as opposed to camps:

1) Repair and maintenance of existing temporary shelters (eight room long houses) in the IDP camps;

2) Upgrading of existing temporary shelters in the IDP camps;

3) Individual housing solutions for IDP families to return to or near their place of origin or voluntary relocation to new site. This solution was selected and houses implemented in five townships.

LOCATIONS AND BENEFICIARIES

The Shelter/CCCM Cluster and Protection Sector strongly advocated for the RSG to allow crisis-affected people to return to their place of origin or relocate to new sites. This project specifically targeted those who could return or voluntarily relocate. Through numerous field visits and meetings, consultation and research were conducted with communities and authorities, to ensure a deep and wide understanding of the situation. The government selected suitable locations for the project with help from the Cluster lead agency, based primarily on safety and security and well-being of the beneficiaries.

PROJECT IMPLEMENTATION

The concept and planning process started in the last quarter of 2014 and, once the project reached a momentum, advocacy and technical support to the government were scaled up. **This beneficiary-led housing project was implemented by the RSG** through the General Administration Department (GAD) of each concerned District or Township, village, community leaders (construction committee) and the IDP families themselves. The GAD authorities gave beneficiaries an initial cash lump sum through the community leaders. This ranged from 30% to 50% of a total of USD 1,000, depending on the township, and was intended to purchase construction materials. Skilled workers from the construction committee then helped families construct their houses. When houses were 60% to 80% complete, the GAD authorities gave the remaining amount for the final completion of construction.

This beneficiary-led approach differed significantly from other contractor-built houses that were implemented by the RSG and humanitarian agencies in Rakhine State. The scheme was for the stateless and extremely marginalized Muslims in Rakhine State. Any effort to support them was hugely challenging, not least being permitted to rebuild their houses, so this novel low-key approach proved highly appropriate. One of the striking outputs was the speed that houses were constructed at. Over 3,000 houses were built in a six-month period, i.e. an average of 16 houses per day, seven days a week. Had contractors been used, particularly in many of these remote rural locations, outputs in terms of cost, speed and quality would not have been comparable.

[2] For more information on the Shelter Cluster's mass temporary shelter response in 2013 see case study A.16 in *Shelter Projects 2013-2014*.
[3] More information can be found on the website, www.shelternficccmmyanmar.org.

The relocation/return programme supported people to rebuild durable houses, through a beneficiary-led approach (township of Mrauk-U).

Contractor-driven approaches were tried and later rejected by IDPs and the Shelter Cluster (Nidin IDP Camp, Kyauk taw Township).

COORDINATION

The fact that the same agency led the Shelter/CCCM Cluster and the Protection Sector helped to deliver a consistency of messaging and clarity of the aims and objectives to the RSG. Throughout the process, the lead agency sought to consult and update regularly all relevant actors – including potential beneficiaries and all relevant quarters of the international community (at national or subnational level).

DRR AND PROTECTION

In the same year, Myanmar also suffered unseasonal levels of rain, cyclones and landslides. Documents used in the flood response were also beneficial to this programme[4]. Throughout the project, the Cluster promoted the eight key messages to build back safer, which were translated into Myanmar language and distributed in hard copy[5].

Protection actors often visited project locations and discussed with the communities and local authorities, to gain a very intimate knowledge of each situation. The initial idea of using an owner-driven construction approach actually came from these discussions with the displaced communities, where they could voice how they wished to address their housing needs.

[4] See case study A.1 and the webpage of the 2015 floods response: http://bit.ly/2kWavnU.
[5] See the Shelter Standards and Guidelines library of the Cluster: http://bit.ly/2kZ3zWa.

MAIN CHALLENGES

In addition to implementation challenges, the working environment posed a significant risk. There were security issues, such as attacks on UN and INGO premises and residences in March 2014, which resulted in a mass evacuation from Rakhine State for a number of weeks, plus a highly tense situation between communities. This required a very conflict-sensitive approach. One of the key reactions by the Shelter Cluster was to revert to the original suggestion that beneficiaries would receive a material package rather than cash, to reduce protection concerns. It was feared that the cash assistance to Muslims could be used to pay traffickers to leave Rakhine State through illegal and highly dangerous means[6]. Despite this, the RSG continued favouring cash as a modality, since it allowed Rakhine traders to benefit from Muslims using the cash, which allowed a mutually beneficial economic exchange. This paved the way for a wider acceptance of cash assistance, which risk-adverse actors, including the clusters, were initially less willing to try.

MATERIALS

The cash grants were used to purchase the shelter materials, which included timber posts, concrete blocks, wooden planks, bamboos, iron sheets, nails and labour charges (skilled and unskilled). Most of the materials were sourced by the construction committee from local suppliers who were accredited by the Township GAD. This was vital for the displaced to access the required materials, given their limited freedom of movement, as opposed to a contractor-based approach, where contractors would supply all the materials and labour requirements, and would then be paid through progress billing.

WIDER IMPACTS OF THE PROJECT

For the first time since the 2012 violence, some real progress towards durable shelter solutions was made, while until that point the situation for these displaced families had been totally static. Where the global average for internal displacement stands at around 17 years, thanks to this project **20% of the total IDP population in Myanmar ended their displacement within three years,** either by returning home or finding a new, safer, location to live. The number of camps and camp-like settings also reduced significantly.

More widely, this showed that despite the enormously challenging context, **progress was possible to find solutions for a highly marginalized population.**

[6] See, for instance, the Rakhine boat crisis of 2015, http://on.cfr.org/1HfDFni.

STRENGTHS, WEAKNESSES AND LESSONS LEARNED

STRENGTHS

+ The project relied on existing local markets for all materials needed, which supported local economies and **allowed the programme to remain low-key**, which was beneficial due to the sensitivity of the context. This was made possible by the local government, who ensured that displaced Muslims had access to purchase materials.

+ The Cluster maintained considerable donor interest and support for this initiative, and was coherent in preventing inappropriate construction in risk areas, after the initial caseload was assisted. While there were some delays, due in part to the rainy season and the transition to being funded by the international community, lack of funds did not inhibit implementation.

+ Critical participation and cooperation of the government at state, district, township and village level with the Shelter Cluster, beneficiaries and crucially potential spoilers of the initiative, which included other ethnic groups who might have resented the assistance to Muslims. The involvement and leadership of the government was crucial, mainly due to their authority, leadership and knowledge of the local situation.

+ Active participation of the community leaders and concerned families in taking responsibility for constructing their own houses, resulting in often swift and high-quality construction, often with far better results than contractor-built houses.

+ Continuity of same lead agency and cluster coordinators for over three years meant highly effective and focused relationships between national and subnational levels.

+ Affordable and quick implementation. The typical individual owner-driven house could be completed in three to four weeks, costing between a half and a third than contractor-built houses in the same time frame.

WEAKNESSES

- Some IDPs could not return to their place of origin and had to be settled in new locations, due to security and safety concerns.

- Landowners for relocation sites were not properly compensated by the government, which in turn may lead to resentment. The RSG has enormous authority and power to enact policies, regardless of the limited funding.

- Lack of adequate and timely water and sanitation components. The RSG-funded programme did not include WASH facilities, in a state where hygiene and sanitation levels were extremely low. Toilets were subsequently provided, and were included in the internationally funded element of the programme.

PROPOSED FAMILY SHELTER MATERIALS PACKAGE FOR IDPS[7]

Materials	Unit	Quantity
Timber posts: 4”x4”, 14ft and 10ft length	pcs	3+6
Girder: 5”x2”, 17ft length	pcs	4
Floor deck beam: 4”x2”, 16ft length	pcs	4
Floor joist: 3”x2”, 17ft length	pcs	16
Floor plank: 6”x1”, 30ft length	pcs	30
Tie Beam and Post Plate: 4”x2”, 16ft and 17ft length	pcs	2+2
Rafter: 4”x2”, 22ft length	set	5
Purlin: 3”x2”, 23ft length	pcs	10
Roof Stud: 3”x2”, 8.5ft length	pcs	16
Eave Board : 6”x1”	rft	90
Roof truss, 3”x2”	set	5
Ridge piece: 5”x2”, 17ft length	pcs	1
Wooden Stairs: Stringer (6”x2”, 4ft), Tread (5”x2”, 3ft)	pcs	2+6
Roofing: 30G C.G.I Sheets, 7’x2’-2”	pcs	51
Ridge Covering: 30G GI plain Sheets, 3’x23’	rft	23
Walling: Single Coarse Bamboo Mat	sqft	536
Walling: Beading, 3”x0.5”	rft	280
Door frames and window frames	pcs	2+6
Mild Steel twisted plates for crossing points of rafters and purlins, of rafters and post plates	pcs	40
Roof nails	kg	6.5
Assorted size common wire nails	kg	19.6
Bolt-nut (5/8”, 5” length) and Tower bolt	pcs	18+20
Handles, Hinges and Hooks	pcs	18+32+20
Ready-made Concrete Footing (1.5’x1.5’x2’) with Mild Steel Plate (2’x0.25”x2”)	pcs	9
Brick pad for stairs landing in front and back	brick	80
Sand	cft	0.2
Stone	cft	0.35
Cement	bag	3

[7] Although this was a cash-based project, the Cluster recommended these materials for a 16’x15’ individual house.

LEARNINGS

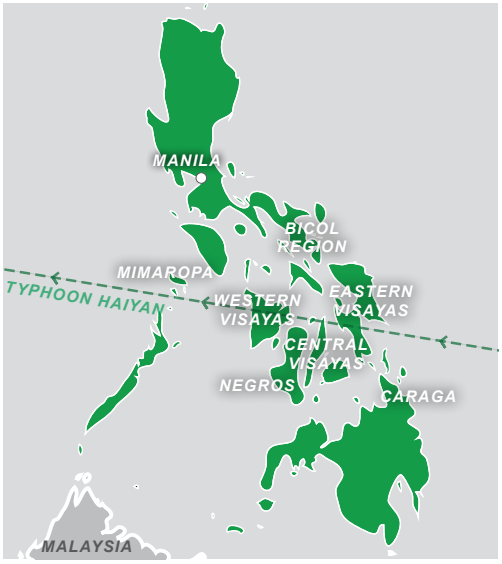
- **The risks associated with the intervention were understood** and progress was made in this regard. In fact, a backlash against the Muslim communities receiving assistance was feared. 1) It could spark further destruction of newly built houses; and 2) the funds could be used for Muslims to pay traffickers and leave the state by boat, instead of building houses.
- **Need for active and continuous advocacy for peaceful co-existence** between the different and potentially conflictual communities.
- **Tools and approaches used in other responses can be adopted** to the benefit of other programmes (see the Build Back Safer messaging taken from the flood response in 2015).
- **Proactive coordination with all the various concerned government departments was critical** to ensure that the project was properly organized and functioned as planned.

OVERVIEW

PHILIPPINES 2013 / TYPHOON HAIYAN

CRISIS	**Typhoon Haiyan (Yolanda), 8 November 2013.**
TOTAL HOUSES DAMAGED[1]	**1,012,790 houses (518,878 partially damaged and 493,912 totally destroyed).**
TOTAL PEOPLE AFFECTED[2]	**3,424,593 households** (16,078,181 persons).
RESPONSE OUTPUTS[3] National Housing Authority (NHA)	**29,661** houses as of October 2016 (206,488 planned).
Department of Social Welfare and Development (DSWD)	**966,341** cash transfers and material vouchers distributed.
Humanitarian organizations	**551,993** households assisted with emergency shelter. **497,479** NFI packages distributed. **344,853** households assisted with incremental solutions.

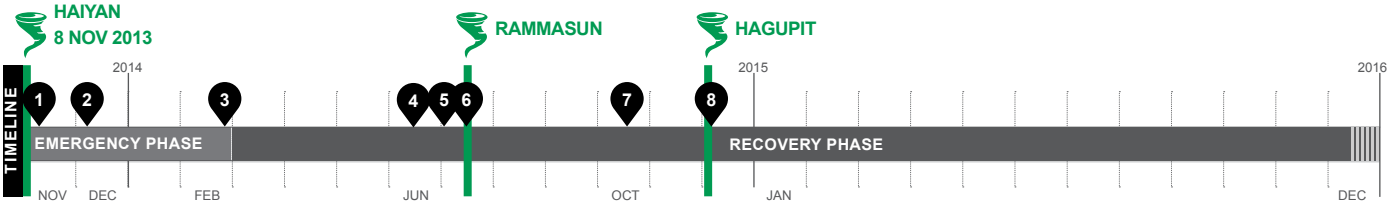
[1] Philippines Shelter Cluster, late 2014, Analysis of Shelter Recovery, http://bit.ly/2kZgHvA.
[2] National Disaster Risk Reduction and Management Council (NDRRMC), Update 17 April 2014, http://bit.ly/1B6MMI1.
[3] Sources for these figures are the documents used as references throughout this overview.



Map highlighting the path of typhoon Haiyan and the most affected regions, including: Eastern Visayas: Biliran, Leyte, Southern Leyte, Samar, Northern Samar, Eastern Samar. Central Visayas: Cebu, Bohol. Negros: Negros Occidental, Negros Oriental. Western Visayas: Aklan, Capiz, Iloilo, Antique, Guimaras. Mimaropa: Palawan, Occidental Mindoro, Oriental Mindoro, Romblon. Bicol Region: Masbate, Sorsogon. Caraga: Dinagar Islands, Surigao del Norte, Camiguin.

SUMMARY OF THE RESPONSE

Super Typhoon Haiyan (Yolanda) made landfall on 8 November 2013 and was one of the largest typhoons ever recorded. While the main government response consisted of subsidies for housing reconstruction or repair, humanitarian agencies used a range of approaches which included cash- or voucher-based interventions, but also training and construction of transitional, core or permanent shelters. Particular issues in this response included the lack of support for secure tenure, the lifespan of transitional shelter solutions and the poor quality control, particularly in regards to coco-lumber.

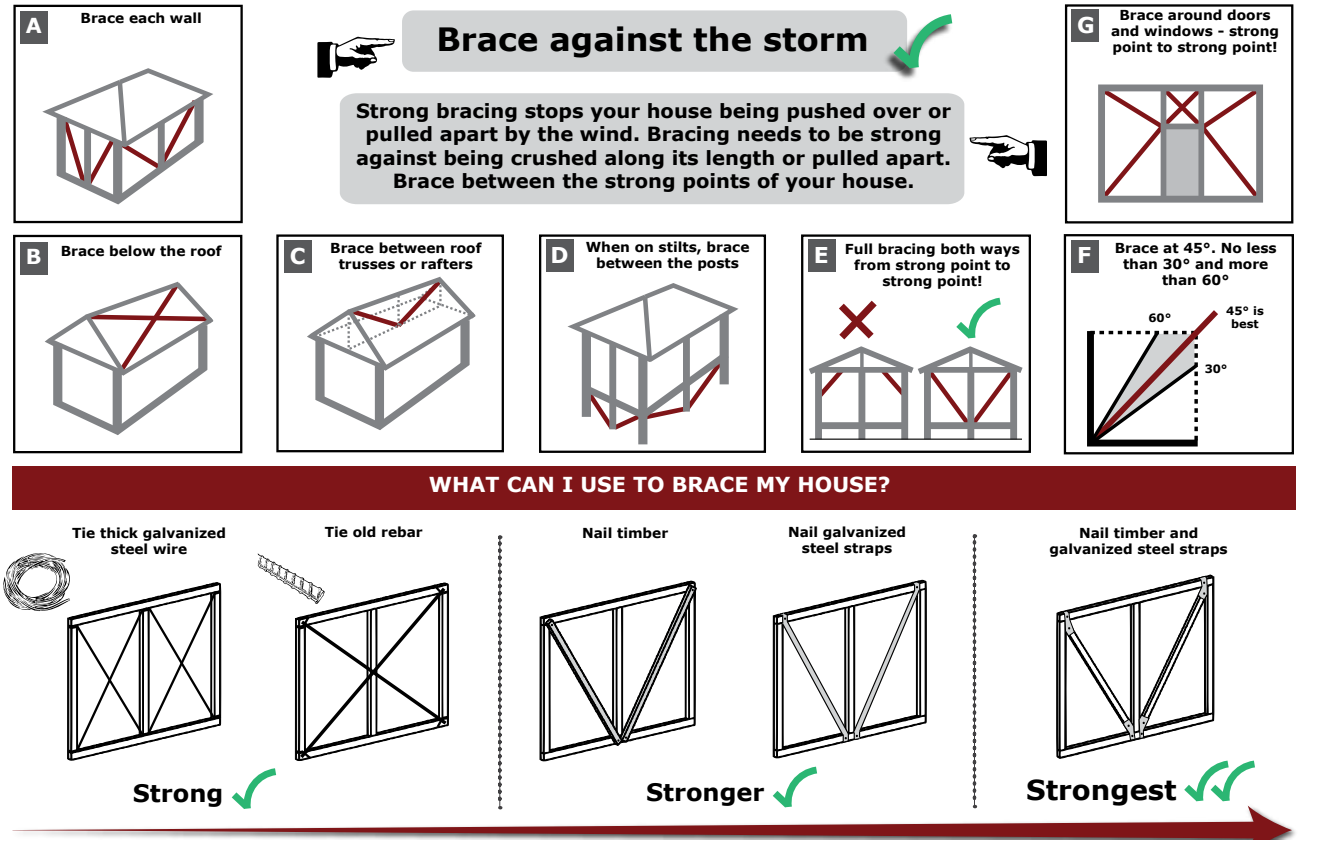


1. 11 Nov 2013: **State of Calamity is declared by the Government of the Philippines. Shelter Cluster is activated.**
2. 6 Dec 2013: **Office of the Presidential Assistant for Rehabilitation and Recovery (OPARR) is established.**
3. Feb 2014: **Emergency shelter assistance reaches 500,000 households.**
4. Jun 2014: **Recovery Shelter Guidelines are distributed by the Shelter Cluster.**
5. 4 Jul 2014: **The government declares the humanitarian phase over and coordination is officially transferred to OPARR clusters.**
6. 15 Jul 2014: **Typhoon Rammasun (Glenda) hits the Eastern Visayas.**
7. Oct 2014: **Shelter Cluster is de-activated with nearly 350,000 households receiving incremental shelter assistance from humanitarian organizations.**
8. 3 Dec 2014: **Typhoon Hagupit (Ruby) hits the Visayas.**

For projects in response to Typhoon Haiyan, see:

In Shelter Projects 2013-2014:
A.24, on shelter kits and WASH.
A.25, on cash and vouchers for materials, plus training.

In this edition:
A.9, a multiphase shelter and WASH programme.
A.10, on core shelters with latrines.
A.11, on a large scale programme on recovery shelter kits with reused coco-lumber.
A.12, on emergency and recovery shelter kits within a larger community-driven programme.
A.13, on a multisectoral, community-led resilience programme using shelter as an entry point.



Poster of one of the 8 Key Messages developed for the Haiyan response (Source: Philippines Shelter Cluster and DSWD).

INTRODUCTION

Overview A.23 in *Shelter Projects 2013-2014* should be referred to for information on pre-disaster conditions, the effects of the typhoon, and emergency and early recovery shelter interventions. This edition of *Shelter Projects* includes projects undertaken in response to Typhoon Haiyan, though the majority were completed or were due to be completed shortly, and describe recovery or multiphase shelter interventions.

RECOVERY INTERVENTIONS

In consultation with shelter partners, the Shelter Cluster began work in early 2014 to categorize shelter interventions being implemented by organizations and provide guidance on best practices. The subsequent Recovery Shelter Guidelines[4] were widely distributed by the Cluster beginning in June 2014 and included guidance on supporting households using a range of shelter approaches, from temporary to permanent solutions. There was a particular focus on the inclusion of build back safer outreach and training.

Many humanitarian agencies focused on the following:

- **Repair and retrofit** for damaged but not destroyed houses or retrofit for houses built post-disaster but that did not incorporate build back safer measures.
- **Permanent houses** that include at least one bedroom, one living space, and dedicated WASH and cooking areas.
- **Core shelters** that provide households with the core of their future house; one safe room or the frame of a permanent house.
- **Temporary or transitional shelter**.
- **Training** of carpenters and other skilled construction workers.
- **Build Back Safer awareness** workshops.
- Provision of **technical assistance.**

[4] Philippines Shelter Cluster (PSC), 06 Nov 2014, http://bit.ly/2lAG9ux.

The 8 build back safer key messages[5], a comprehensive set of shelter technical guidelines, was used extensively throughout the recovery phase. This Disaster Risk Reduction Information Education and Communication (IEC) material represented one of the most important outputs for other responses (including in Nepal and Ecuador[6]), and has so far been reused in a number of other responses in the Philippines and the broader Asia-Pacific region[7].

[5] PSC, 8 Build Back Safer Key Messages, http://bit.ly/2lANU3F.
[6] See A.3 and A.39, overviews of the Nepal and Ecuador earthquakes responses respectively.
[7] See A.14 and A.15, overviews of the responses to Cyclone Pam in Vanuatu and Cyclone Winston in Fiji.

Many people rapidly started to build shelters after Typhoon Haiyan (here in Tacloban, December 2013).

Multiple programme options were encouraged in response to Typhoon Haiyan, one of them being the construction of transitional or core shelters.

CLUSTER TARGETS AND RESPONSE

From the onset of the response, the Cluster strategy was to provide 1) emergency shelter assistance, 2) support for shelter self-recovery, 3) transitional/core shelters, and 4) support to families living in collective centres.

In its strategic framework for transition[8], the Cluster committed to provide:

- "Immediate life-saving **emergency shelter** in the form of tarpaulins/plastic sheets (and fixings) and tents with supporting NFI solutions" to 300,000 households; and
- "Support for household **self-recovery** through incremental housing solutions using consultative, participatory processes" to 500,000 households.

The target for emergency shelter was met – even exceeded – within the first 100 days of the response, with an estimated 500,000 households receiving emergency shelter assistance and 470,000 households receiving NFI packages. As of August 2014, cluster partners expected to support 344,853 households with repair/retrofit and new construction shelter assistance[9], reaching only 70% of the initial target of incremental housing solutions. While there is limited data on the final number of households assisted by humanitarian organizations after the deactivation of the Cluster at the end of 2014, documentation from organizations suggest that final projections were met within the first three years of recovery.

GOVERNMENT RESPONSE

Government assistance under the "Emergency Shelter Assistance" (ESA) programme consisted of PHP 30,000 (or approx. USD 600) for totally damaged houses and PHP 10,000 (or approx. USD 200) for partially damaged houses. As of August 2016, disbursement to 966,341 households had been undertaken[10] and was still ongoing. Although disbursement of the government funds did not start until late 2014[11], more than a year after Typhoon Haiyan made landfall, this was still earlier than many recovery shelter programmes commenced and there were reports of beneficiaries withdrawing from agency programmes so that they remained eligible for the ESA funds.

[8] PSC, 03 March 2014, Strategic Operational Framework for Transition Post-Yolanda, http://bit.ly/2l6JFfy.
[9] PSC, late 2014, Analysis of Shelter Recovery.
[10] DSWD, 04 Nov 2016, Where did the Emergency Shelter Assistance (ESA) funds for "Yolanda" survivors go?, http://bit.ly/2lAPS3T.
[11] DSWD, 24 November 2014, Guidelines for the Implementation of the Emergency Shelter Assistance (ESA) Project [...], Memorandum Circular 24.

In some projects, materials were treated to improve the durability of the shelters.

SITUATION IN 2016

The National Housing Authority (NHA) and Social Housing Finance Corporation (SHFC) continued to undertake significant resettlement construction projects in the regions affected by Haiyan. NHA alone had plans to construct 205,128 houses on relocation sites, however as of November 2016 only 29,661 of these were completed[12]. Construction was slowed down due to regulatory issues, longer-than-expected planning, and difficulty acquiring land. Further, the lack of access to services, such as electricity and water, hindered households' transition to newly completed housing units.

The Philippines continues to suffer significant typhoon damage, although no typhoons have occurred which have caused damage to the scale of Typhoon Haiyan in recent years. Since the Haiyan response, the government of the Philippines has been wary to call for international assistance, fearing that there would be a large influx of international agencies. This has hampered responses to small typhoons since then. At the close of 2016, there was a low likelihood of international assistance being called for, even in significant disasters, and this will severely hamper agencies' ability to respond to disasters. Nevertheless, there were signs that the government has streamlined its ability to more rapidly deliver Emergency Shelter Assistance cash support.

[12] National Economic and Development Authority, 2016, "Yolanda Updates October 2016", http://bit.ly/2knL7pm.

LESSONS LEARNED FROM THE HAIYAN RESPONSE

SUPPORTING SELF-RECOVERY

In comparison to other disasters, **recovery following Haiyan progressed rapidly** and many households started to take initial steps toward self-recovery within days. A number of organizations used **cash transfers, shelter repair kits, and technical training to address this rapid pace of recovery,** however many others remained focused on the delivery of products (e.g. transitional or core shelters). The use of cash for work and cash transfer schemes were particularly effective in supporting the rapid pace of reconstruction being pushed by households. These cash-based approaches injected funds into local economies that stimulated recovery, supporting early livelihood restoration. These programmatic efforts highlighted the ability of shelter partners to support the evolving response landscape, as their effectiveness relied on shifting from reactive response to anticipating needs.

HOUSING, LAND AND PROPERTY ISSUES

Despite these successes, there was largely a **missed opportunity for organizations to support Housing, Land, and Property (HLP) rights.** Extensive guidelines on HLP were developed by the Shelter Cluster during the first six months[13], but few organizations incorporated this guidance into programming. Most notable was the principle that shelter response should be free from discrimination and ensure rights of the most vulnerable. Many organizations required secure land tenure from households as a requisite for shelter assistance, resulting in the exclusion of marginalized and vulnerable populations within communities. **The role of HLP, in particular land security of informal settlers, should be more fully integrated into future shelter interventions** in the Philippines and other contexts where land has been identified as an ongoing challenge.

TRANSITIONAL SHELTERS' LIFESPAN

As with past disasters in the Philippines, temporary or transitional shelters were built by a number of agencies. However, **it is not believed that many of the households will progress to more permanent housing within the design life of these shelters** (typically less than five years). Although not officially reported, it is known that some "transitional" shelters in the Philippines have failed in subsequent typhoons and many were still in use a number of years after they were built. This has particularly been the case for transitional shelters which used coconut lumber for the main structural elements of the shelter, such as corner posts.

COCO-LUMBER AND QUALITY CONTROL

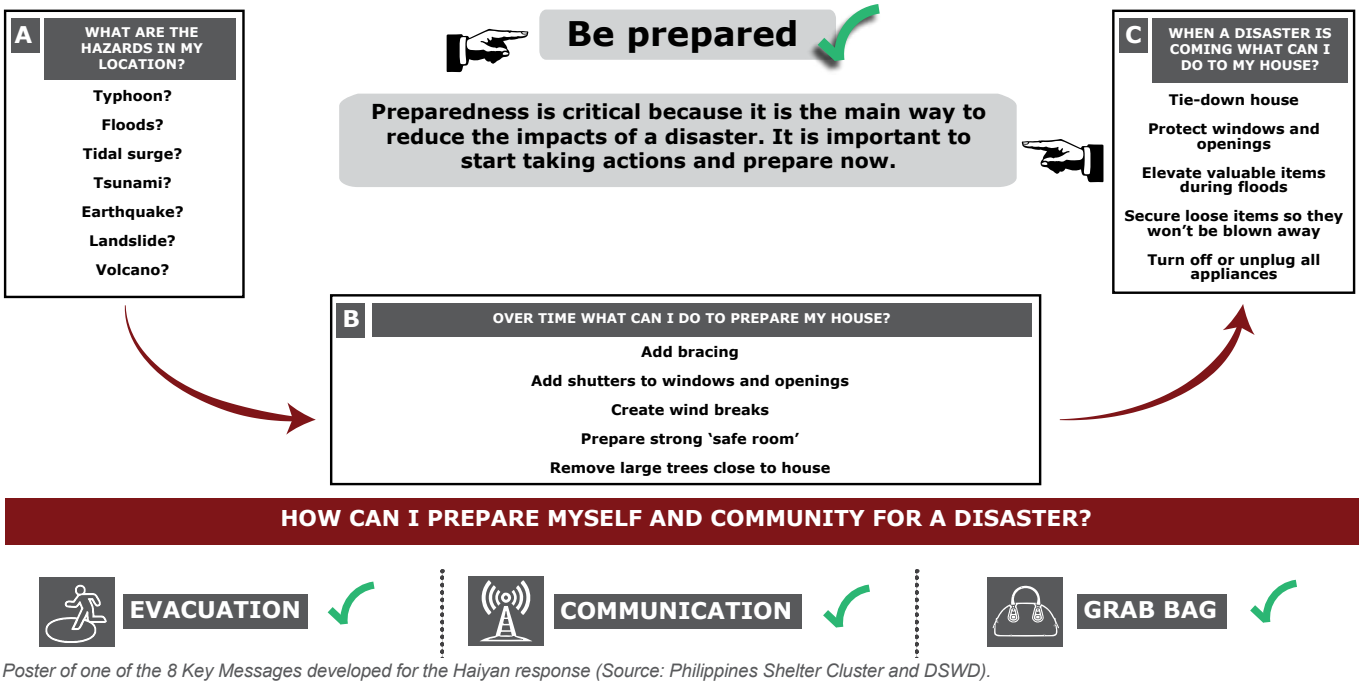
Most shelter programmes relied on coconut lumber as the predominant building material during recovery, drawing from the large number of trees downed in the typhoon. Many households noted that the quality of lumber produced and distributed during recovery was of mixed quality. Despite distribution of technical guidance on selecting appropriate cuts of coconut lumber by the Cluster, **robust quality control was difficult for many organizations.** Degradation of poor quality lumber was prevalent in shelters, occurring as soon as one year after construction. In future responses, technical guidance should seek to develop more robust measures for shelter partners to implement quality control measures.

INSTITUTIONAL PARTNERSHIPS AND COORDINATION

In addition to technical lessons, there were also gaps in institutional partnerships within the shelter sector. In December 2013, the President created the Office of the Presidential Assistant for Rehabilitation and Recovery (OPARR) to act as the "overall manager and coordinator of rehabilitation, recovery, and reconstruction efforts"[14]. Under this office, five clusters were established to manage recovery, including infrastructure, resettlement, social services, livelihood, and cluster support. Despite similar objectives, **the international clusters and the government office functioned largely in parallel, with limited collaboration.** A number of shelter partners noted that earlier, and more integrated, coordination with local governments was needed.

[13] PSC, March 2014, HLP Guidance Note on Relocation for Shelter Partners, http://bit.ly/2kC7FUr.

[14] National Economic and Development Authority. 01 August 2014, Yolanda Comprehensive Rehabilitation and Recovery Plan, http://bit.ly/1Rvzwia.



Poster of one of the 8 Key Messages developed for the Haiyan response (Source: Philippines Shelter Cluster and DSWD).

CASE STUDY

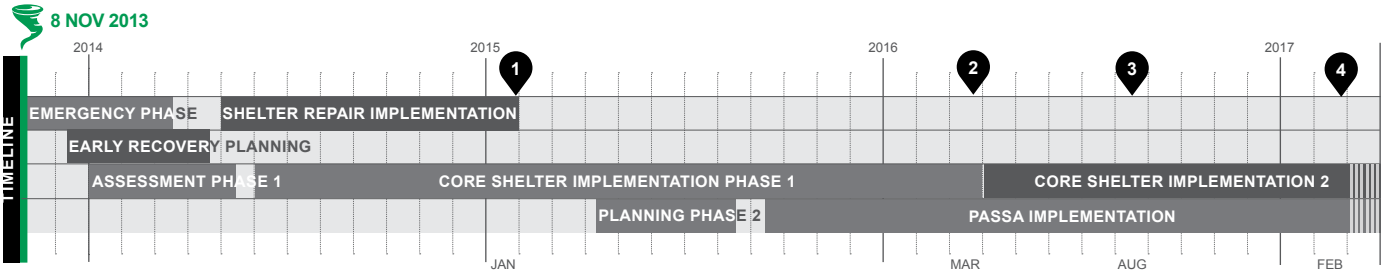
PHILIPPINES 2013-2017 / TYPHOON

KEYWORDS: Multiphase, Core shelters, Sanitation, Training, Community participation

CRISIS	**Typhoon Haiyan (Yolanda), 8 November 2013.**
TOTAL HOUSES DAMAGED	**518,878** partially damaged **493,912** totally destroyed
TOTAL PEOPLE AFFECTED	**3,424,593** households (16,078,181 persons).
PROJECT LOCATIONS	**Selected communities in Leyte island.**
BENEFICIARIES	**4,302** households (17,200 people).
PROJECT OUTPUTS As of Feb 2017	**2,007 Core Shelters** (target: 2,280). **2,019 Shelter Repair Assistance**. **2,280 Household Toilets** with septic tank (target: 3,030).
OTHER OUTPUTS	Over 200 local carpenters and masons trained, 26 communities (more than 3,000 households) reached with community workshops on safe shelter practices, over 10,500 coconut trees planted.
SHELTER SIZE	**22m²** (expanded from previous programmes, based on community consultations).
SHELTER DENSITY	**4.4-5.5m² per person** (the average family size in Leyte is 4.1, according to a government census).
MATERIALS COST	**USD 1,972-2,101** per core shelter with toilet (USD 1,207 for materials, USD 381-510 for toilet, USD 384 for labour). **USD 337** per household for Shelter Repair Assistance (USD 121 for materials, USD 256 cash grant).
PROJECT COST	**USD 2,240** per core shelter with toilet. // **USD 397** per household for Shelter Repair Assistance.
OCCUPANCY RATE	**99.4%** of shelters occupied at the time of post-construction monitoring.

PROJECT SUMMARY

This multiyear project included an emergency phase, followed by transitional and recovery phases. In the first phase, CGI sheets and cash grants were provided for shelter repair, and core shelters were constructed with latrines. In the second phase, a participatory approach was used to strengthen community resilience and safer construction practices, within an integrated programme, which provided opportunities for people to take ownership on cross-cutting issues.



1. Jan 2015: **2,019 Shelter Repairs with technical assistance and dissemination of Safe Shelter Awareness messages completed.**
2. Mar 2016: **Phase 1 target of 1,400 core shelters completed. 275 identified individual households assisted with relocation in host families.**
3. Aug 2016: **20 communities reached with PASSA and Shelter Phase 2 - community workshops on Safe Shelter Awareness.**
4. Feb 2017: **2,007 core shelters and 2,280 toilets completed in total. Project is still ongoing.**

STRENGTHS

+ Skills enhancement and engagement of local work-force.
+ Culturally appropriate design solution.
+ Cost effective design and implementation.
+ Community involvement in decision-making and construction.
+ Promotion of self-help approaches for long-term resilience.
+ Local procurement and prefabrication workshop set-up.

WEAKNESSES

- Long organizational procurement and logistical processes.
- High need of coco-lumber for the design, and use of untreated lumber.
- Lack of sufficient competent local staff.
- Lack of flexibility of the design.
- Septic tanks were only a partially safe sanitation solution.

SITUATION BEFORE THE TYPHOON

For an overview of the situation before and after the disaster, and the national shelter response, see overview A.23 in Shelter Projects 2013-2014 and overview A.8 in this edition.

The project targeted coastal areas comprising households who were dependent on farming and fishing. The settlements evolved in the last hundred years from informal groups of houses and farms that expanded as clusters and villages around paddy fields, plantations and along coastlines, replacing the tropical forest. The socio-economic status of the population was generally weak, with a large portion being either tenant farmers or daily workers with lower income, living in semi-permanent houses with limited access to basic facilities, often settling in no-build zones. Unsafe construction practices, using light materials and lack of technical knowledge on safer construction, made the community more vulnerable against typhoons.

SITUATION AFTER THE TYPHOON

More than 80% of buildings, houses and vegetation in the area were flattened by the typhoon. Immediately after the disaster, most inhabitants were temporarily displaced, but soon returned to their original dwelling sites and started constructing makeshift shelters. The key concern in terms of shelter was to overcome insecure construction practices that were dominant in the region, mainly due to lack of knowledge and the weak socio-economic status of the population.

BENEFICIARY SELECTION

The project area was selected based on regional and municipal level coordination between local governments and shelter actors. The priority was to reach severely affected communities with limited access to external assistance.

Based on commonly agreed selection criteria between cluster partners, the team collected an initial list from the Local Government Units. To avoid disparities, “recovery committees” were established at community level, to verify the information based on the selection criteria, followed by household visits and validation. The team needed to be aware of community dynamics and required technical capacity to evaluate structural damage and categorize its level. Thanks to an early recognition of these limitations and challenges, the assessment was interrupted to train the team first, before reforming the recovery committees.

IMPLEMENTATION PHASE 1

The project had three main objectives, strategically staged in two phases. The first phase focused on a) immediate Shelter Repair Assistance and b) Recovery support through Core Shelter reconstruction, while the second adopted a broader approach towards improving community resilience.

EMERGENCY: SHELTER REPAIR ASSISTANCE

Immediately after the disaster, the need to quickly repair partially damaged houses was very high. The Shelter Repair Assistance supported affected families with cash grants and distribution of CGI sheets. This phase was completed in four batches over nine months.

TRANSITION: CORE SHELTERS AND SANITATION

The Core Shelter construction was **executed in several batches to allow certain learning and development,** and minimize risks. Each Core Shelter included a household toilet. Since the project area was mostly on a high water table,

Core shelters and latrines were built to a set design, which was presented at community meetings to explain its features and receive feedback.

with water points randomly installed around the settlement and congested dwellings, **finding an appropriate sanitation solution was a sensitive topic;** the team studied various design options and adopted a two-chamber septic tank design, adjusting the elevation depending on specific site conditions and ground water level.

During the planning stage, the project team conducted **community consultation workshops** to configure a feasible strategy. There was a wide agreement amongst the affected population that an owner-driven approach would put more stress on vulnerable target groups, and would also cause implementation challenges with regards to market supply and quality assurance. It was decided that the beneficiaries would join the construction team and the organization would manage the material delivery, technical support and overall monitoring.

Secure land tenure, site safety and adequacy were the prerequisites for construction. Beneficiaries without land were supported for relocation to willing host families, or smaller group resettlements in communal plots identified by the local stakeholders.

Due to various delays and a slight overestimation of implementation capacity, **the construction extended long into the late recovery phase.** Therefore, a significant part of the shelters were built when most beneficiaries had already recovered. Thus, instead of being an entry-point for further improvements by the beneficiaries (as intended by the Core Shelter concept), the shelters often ended up substituting previous self-help efforts, though with a higher quality.

INVOLVEMENT OF AFFECTED PEOPLE AND CARPENTERS

In the beginning, the organization found it difficult to actively involve the affected people, as they were in a distressed state. However, as the project progressed, it managed to build strong cooperation with the community by means of participatory activities and focus group discussions.

For the Core Shelter construction, the project recruited local carpenters and provided on-the-job training. Since very few skilled carpenters and masons were available in the community, **the pilot phase focused on training and skills enhancement.** Each team consisted of two skilled carpenters and two unskilled workers, supported by one beneficiary or representative. A trained monitoring team conducted several interactive sessions at community level to impart knowledge on safer construction, identify problems and make improvements on the construction details and process. 35 carpenter teams and 25 mason teams were trained over a period of time, both on-the-job and through formal trainings by an official institute.

Core shelters were built in several batches by construction teams that included the beneficiaries. Material supply and monitoring were managed by the organization.

IMPLEMENTATION PHASE 2: RECOVERY

The second phase used the PASSA approach[1] in order to more actively involve communities and strengthen their knowledge, attitude and practices. Beneficiaries actively participated in focus group discussions and PASSA interactive sessions, which contributed to develop a sense of ownership, captured learnings and resulted in small improvements during the implementation. This phase emphasized disability inclusion, environmental regeneration, site risk mapping and mitigation, backyard gardens and facilitation of formal training for skilled carpenters and masons. Moreover, **post-construction monitoring and face-to-face sessions** with beneficiaries were conducted, followed by community walks to facilitate discussion around good and bad practices. **Community workshops** were also organized on various integrated topics such as roof tie downs, safe shelter extensions, construction of improved cooking stoves, wall upgrading and mitigation of fire risks.

COORDINATION

Considering the scale of the disaster and the difficulties faced by the government to coordinate with several agencies, **coordination at Shelter Cluster level played a very vital role** for this project, through the production of technical messaging and data, as well as for decision-making, identifying gaps in the assistance and optimizing organizational resources.

However, the coordination also had some weaknesses. On one hand, the **focus on reconstruction came relatively late,** as relief operations were a priority. After the deactivation of the Cluster, the partners still needed provincial and national level cooperation. On the other hand, **the lack of a clear government policy on the complementing shelter assistance** and selection criteria led to disparities at the local level. More than

[1] Participatory Approach to Safe Shelter Awareness, a participatory method of Disaster Risk Reduction related to shelter safety and facilitated by volunteers, which guides community groups through several activities: http://bit.ly/2lqQBUA. See also case study A.13 (Haiti) in *Shelter Projects 2011-2012*.

In the second phase, the project used a community-led approach to analyse different hazards and their impact on the communities (PASSA approach).

250 of the originally assessed beneficiaries opted out from this project to profit from the government's cash assistance. However, the project managed to expand to other communities.

SHELTER DESIGN AND DRR

The wooden core shelter design had been previously implemented by several partners after past disasters in the country, with 18m² covered space. During the initial consultation, the design received high cultural acceptance by the community. Subsequently, certain **improvements were made to increase the covered living space** to 22m² and to adjust the structural design for a higher wind speed as a "one size fits all" progressive core shelter. The design was developed using local materials, particularly coco-lumber.

The project was designed with **Disaster Risk Reduction as an integrated crosscutting theme.** The design concept of the elevated core shelter and toilet aimed at mitigating the risk of flooding, and its structural design was made to withstand 200km/h winds. During the first phase, both the Shelter Repair Assistance and Core Shelter interventions were accompanied by safe shelter awareness inputs, through knowledge-sharing sessions with the communities. However, the PASSA approach was only effectively adopted in the second phase.

PREFABRICATION WORKSHOP APPROACH

For the construction of the core shelters, certain components were prefabricated to ensure the quality of construction and to standardize the design. The workshop also provided support for evaluating various small improvisations in design and technical solutions. This set-up was new in the area, but was quickly adopted. As the construction progressed, the project downsized prefabrication and most construction was executed directly in the field, by skilled local carpenters. However, for quality purposes, the fabrication of key components like structural footing and wall panels continued to be done in the workshop.

LATRINE DESIGN

An innovative latrine design was introduced through this project, which if properly constructed improves the effluent quality significantly and thus helps reducing groundwater pollution. This is especially a problem in dense rural settlements that still rely on shallow hand-pumps as their primary source of drinking water. In fact, this goal was only partially achieved, due to limits in quality of labour, materials and monitoring of construction quality below ground.

MAINTENANCE AND TERMITE PROTECTION

“Care and maintenance” were discussed in various focus groups. The project included the use of a treatment (solignum) in the lower exposed portion of the structure, to enhance termite protection and prevent decay; a concrete footing, to increase the distance of the wooden post from the soil; and a galvanized iron sheet above the concrete, to protect the edge of the wooden post.

MATERIALS

The design of the core shelter used **both natural and industrial materials available in the local market.** The natural materials included coco-lumber, bamboo, sand and gravel, which were sourced through licenced suppliers that operate under the Department of Environment and Natural Resources. The shelter also used woven bamboo to produce wall panels, which was sourced from the neighbouring island, where bamboo is planted in large scale.

Some of the core shelters included ramps to improve accessibility.

Coco-lumber was available in large quantities soon after the disaster, because plenty of trees were uprooted during the Typhoon[2]. Moreover, Leyte Island is identified as a hub for the supply of coco-lumber by the Philippine Coconut Authority. Although the use of coco-lumber was encouraged, due to limited local capacity less than 30% of the fallen trees were recovered for construction before rotting. Because of the high demand of coco-lumber in reconstruction, **prices rapidly increased** in the local market (up to 111% in two years), also due to the taxations imposed by the authorities on extraction and transport. As a result, the project experienced several supply challenges. This was mainly due to the lack of any obligation by the agencies to control the market price. The idea to support the local suppliers was discarded once it was clear that they could not compete with the external large suppliers, who ended up dominating the market.

To address the issue of environmental impact, **the project collaborated with the Coconut Authority to support mass coconut plantation** linked to livelihoods activities.

[2] See case study A.11 for an example of a large scale response utilizing the fallen coconut trees.

Aerial view of one of the areas where the project was implemented. The shelters with red roofs were built by the organization, while other structures were self-built.

STRENGTHS, WEAKNESSES AND LESSONS LEARNED

Safer building practices were promoted, such as strapping of roof structures, bracing and proper detailing of the foundations (raised and made of reinforced concrete).

STRENGTHS

+ Skills enhancement and engagement of local construction work force. This was a slow process that required very close monitoring and regular feedback sessions. Though very resource- and time-intensive, this paid off by the level of quality and standards reached, and the monitoring effort that were significantly reduced.

+ Culturally appropriate design solution, which was widely accepted and occupants reported they felt safer in it.

+ Cost effective design and implementation. Although the time frame was extended slightly, increasing the overhead costs, the savings generated by the cost-effective project execution managed to increase the targeted number of beneficiaries, without requesting any cost extension.

+ Involvement of community in decision-making and construction processes, which helped the organization to build a strong relation with the community at an early stage. During phase II, the project was highly participative and effective in increasing community knowledge on Shelter and Settlement Safety and thus building community resilience.

+ Promotion of self-help approaches for longer term community resilience. Focus group discussions identified issues around shelter and settlement by mapping key factors that lead to the risk of disaster. The discussions also encouraged community groups to develop action plans for mitigating those risks. This was allowed by the extended time frame of the project, which made possible follow-up visits and linkages with integrated sectors.

+ Local procurement released the burden from the project logistical chain and optimized resources.

+ The prefabrication workshop contributed to the quality of the construction and supported the carpenters and the workforce in the field to maintain standards and effectiveness.

WEAKNESSES

- Long organizational procurement and logistical processes caused delays.

- High need of coco-lumber for the design, as well as use of untreated coco-lumber for construction, **and lack of appropriate substitute procurement measures.** The wooden Core Shelter design was based on the assumption that a large quantity of trees were available, though large quantities of fallen logs got rotten and additional felling and supply of untreated lumber continued. The project could have generated livelihoods and liaised with the government to establish a coordinated management of coco-lumber for reconstruction.

- The programme faced a constant shortage of competent local personnel, and in particular of soft skills needed to perform effective communication. This was partially due to limited organizational support and internal HR policies that restricted hiring of staff with the skills required.

- The "one size fits all" solution came with certain limitations and inflexibility to adapt to the context and also to react to the changing market situation with alternative solutions. While the shelters offer a significantly higher safety against typical typhoons, its flexibility and overall perceived utility-value was somewhat limited by the elevated design and other related features common in the region. A concern was also that the woven-bamboo wall panels do not offer sufficient protection against water during heavy rains. These factors have resulted in some shelters being less used.

- Septic tanks were only a partially safe sanitation solution. Although the improved design was identified as the most suitable solution, emptying septic tanks and an environmentally friendly sludge disposal and management are often expensive services and require active commitment of local governments. After three to five years, the effluent quality will deteriorate quickly and pose a pollution risk to the groundwater. The coverage of desludging services was still very low and the high costs posed a constant challenge.

LEARNINGS

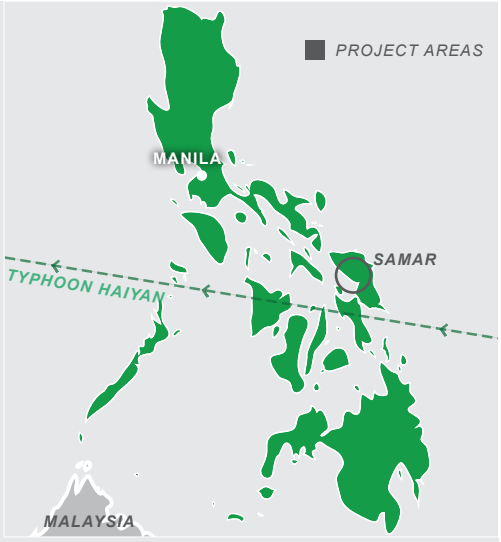
- **Heavy top-down decision-making for a construction project ends up with compromised corners.** Decision-making should be consultative and flexible to complement technical recommendations. The transfer of knowledge and learnings from one project to the next is crucial.
- **Collaborative rather than competitive approach.** At the onset of the project, the focus lay more on achieving the targets indicated in the project log-frame, and thus overlooked quality indicators. A sense of competition was developed across sectors and agencies, which was not necessarily healthy.
- **Interest and motivation are important factors to be considered while identifying the project team.** The project configured the need for capacity-building but did not succeed in engaging motivated and suitable project staff for specific tasks. As a result, at a certain point the project team felt over-burdened.
- **Timeliness in delivering assistance is critical in addressing the needs and ensuring effectiveness.** The shelter repair assistance could have been rolled out significantly faster and better if it had been already planned and prepared during the emergency phase. However, the actual market supply during the first months of the recovery might require a switch to more direct material provision rather than cash.

CASE STUDY

PHILIPPINES 2013-2015 / TYPHOON

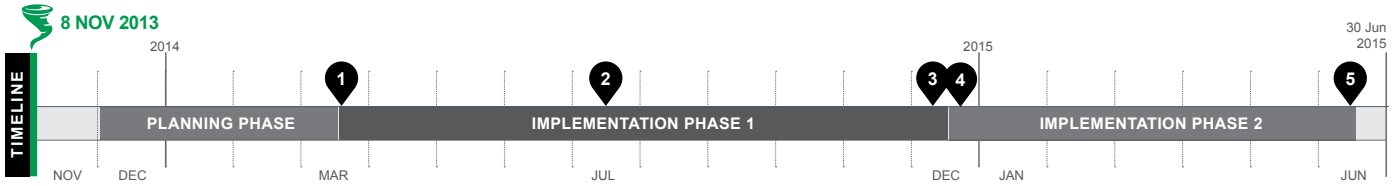
KEYWORDS: Core housing, NFI distribution, Training, Disaster Risk Reduction, Community participation

CRISIS	**Typhoon Haiyan (Yolanda), 8 November 2013.**
TOTAL HOUSES DAMAGED	**518,878** partially damaged **493,912** totally destroyed 21,005 houses damaged and 26,515 destroyed in the project areas.
TOTAL PEOPLE AFFECTED	**3,424,593** households (16,078,181 persons).
PROJECT LOCATIONS	**10 municipalities in Samar.**
BENEFICIARIES	**22,310** individuals.
PROJECT OUTPUTS	**4,462 core shelters** built, with latrine. **1,071 carpenters** trained.
SHELTER SIZE	**18m²**
SHELTER DENSITY	**3.6m² per person** (average household size of 5).
MATERIALS COST	**USD 1,086** per shelter (+10% when trees had to be purchased). **USD 1,596** per shelter (with septic tank).
PROJECT COST	**USD 2,424** per shelter.



PROJECT SUMMARY

The organization built 4,462 "core shelters" to a standard design with accompanying sanitation in 18 months, using local labour and a highly systematized approach. The project also included a significant training component. The case study highlights detailed learnings related to construction management for an agency-led construction project, working with the community and local authorities.



1 Mar 2014: **Pilot construction of demo-houses.**

2 Jul 2014: **Extension of the project to the west side of the island.**

3 Dec 2014: **Completion of the 4,462 shelters.**

4 Dec 2014: **Launch of sanitation phase: construction of toilets starts.**

5 Jun 2015: **Completion of construction of all the latrines.**

STRENGTHS

+ Speed of the response.
+ Previous knowledge of the area and the communities.
+ Strong logistical capacity.
+ Cooperation with local partners.
+ High standard of quality of materials and solutions adopted.
+ Strong accountability to the affected communities.

WEAKNESSES

- MoUs with municipalities should have been signed earlier.
- Assessment and data collection teams needed more training.
- Poor post-implementation monitoring to assess long-term impacts.
- The sanitation component should have been included from the start.

CONTEXT

For an overview of the situation before and after the disaster, and the national shelter response, see overview A.23 in Shelter Projects 2013-2014 and overview A.8 in this edition.

The organization had established an office in Tacloban in 2008 and had focused on Samar with its partner organization, working with conflict-affected communities.

The region was one of the poorest in the country, largely dependent on agriculture and fisheries. Eastern Samar is ranked the third poorest province in the country, with fishermen and farmers being the poorest groups.

SITUATION AFTER THE TYPHOON

According to official figures, in the 10 municipalities targeted by the project, over 40,000 houses were damaged, of which more than half were totally destroyed. The most heavily affected houses were those of lower quality, with a damage pattern reflecting the poverty map in Samar. The typhoon damaged timber structures much more than concrete ones – with many communities being registered with 100% damage.

The organization established two field offices in Samar within one month of the typhoon.

In the aftermath of the typhoon, affected people built makeshift shelters.

THE ROLE OF COORDINATION

The organization was not a member of the Shelter Cluster, but did coordinate with other agencies working in the same locations. The organization also used and respected principles and technical standards that had been set by the government and the Cluster.

The agency assessed the different programme options proposed by the Cluster and decided to build core houses with a training component, as this was in line with its general approach to improve resilience of the typhoon affected people.

COMMUNITY ENGAGEMENT

At the outset of the project at each location, meetings were held with the authorities and a meeting was held with all the community members to **explain selection criteria and beneficiary roles and responsibilities**, to ensure that the processes were clear and those most in need were not left out. In the meeting, beneficiary declarations and land agreements were explained and collected.

During the inception community meetings, the **responsibilities of the barangay were explained** as part of the programme to avoid local politics impacting on the implementation.

A hotline was set up for beneficiaries to ask questions and a volunteer would take care of treating each case individually. This allowed great transparency with the beneficiaries as well as to better focus or adjust the programme when needed.

SELECTION OF BENEFICIARIES

Geographical selection was needs-driven, based on access and damage. Harder-to-reach areas were prioritized, as the organization had more logistical capacity than other agencies, those communities tended to have lower income levels and more houses using local materials, which showed higher levels of damage. The agency therefore chose to work in remote locations where many other organizations would not engage.

Household selection was conducted in the following steps – with all data being entered into a database, containing beneficiary and barangay data.

1. The list of totally damaged houses was collected from the local authorities (both barangay captains and municipal sources).
2. Each household was then verified by a house to house visit conducted by volunteers of the local partner.
3. Using agreed criteria, lists of eligible and non-eligible households were established, with pictures and data from the verification visit. Lists of cases to be reconfirmed due to absence of or incomplete data were also prepared, and a second verification exercise was conducted. In some cases, a structural review of the house by an engineer was conducted to determine if it was partially or totally damaged.
4. A community meeting was organized with all validated households to explain the reason for non-selection. In case of disagreement or doubt, cases were discussed and revisited when necessary. These meetings proved the most important stage of beneficiary validation.
5. Officials signed a final beneficiary list.
6. The final lists were shared with the municipality and MoUs were signed with the barangays to confirm commitments and mutual responsibilities.

The project had a strong focus on safer construction techniques.

In the most remote areas where access was difficult, but a decision to intervene was taken due the high vulnerability, combining assessment with beneficiary validation process saved time. For remote and low-populated barangays, a decision to assist all people was made, even if the number of beneficiaries was small.

Taking time with a rigorous yet time-consuming selection process, enabled smooth implementation and a very low rate of complaints later on.

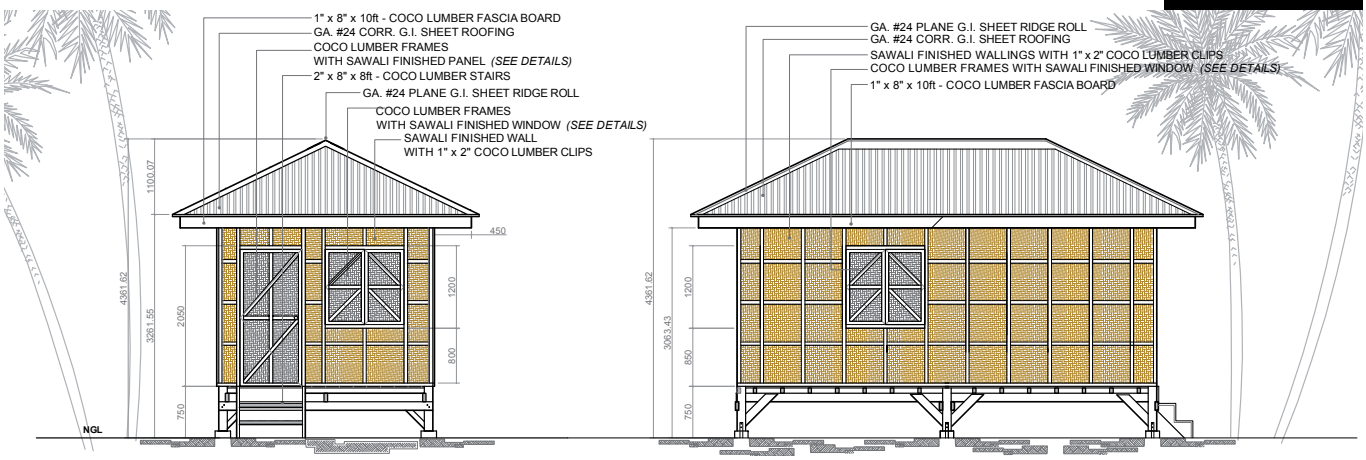
SHELTER DESIGN

The shelter model was based on the original model used in the response to Typhoon Bopha and consultations were made with local communities in urban and rural areas. Two samples were initially built next to the organization's offices, for training and display purposes. Afterwards, the first houses built in each barangay were used as models involving carpenters from the community. Upgrades were made to improve hurricane resistance, such as hurricane straps, an additional truss, alignment of windows, use of galvanized nails and better CGI sheets.

BENEFICIARY ORIENTATION

Orientations were conducted with selected communities and beneficiaries. It proved to be important for barangay officials to be present as they were responsible for resolving issues in the community related to land ownership. In most of the cases, landowners allowed beneficiaries to build a house on their land and to stay for at least five years for free or for a small renting fee. In other cases, the barangay captain intervened and found a relocation site.

The donation certificate stated that the beneficiary remains



The project built core shelters according to a set design and with a highly systematized approach.

the owner of the materials even after they have left the land. Agreements were in the local language, read out during the orientations and followed by a session for questions and answers.

CHAINSAW OPERATORS AND TIMBER QUALITY

Wood was requested from the beneficiaries as contribution. This worked for 82% of the cases. When this was not possible, it was mainly due to specific vulnerabilities (1%) or physical unavailability of trees, particularly in areas far from coconut plantations (17%).

Local labour was used as much as possible. Chainsaw operators from other regions might be involved only as a temporary solution in the early stage of the programme. After some negative experiences, purchase orders were given out to the same chainsaw operator only if the previous order had already been completed. Wherever possible, **the best chainsaw operators were retained** to train the new ones. In hindsight, project staff should have been better trained on technical quality control of timber.

Beneficiaries had the responsibility to sign for receipt of the timber and to replace anything missing.

It was found that **middle managers in the programme created more challenges than convenience.** Chainsaw operators and carpenters had a tendency to form groups in order to survive financially, yet working through a middle manager did not allow skilled labourers to be directly contracted and accountable for their work. The one who received the purchase order should have effectively done the work, especially for quality control purposes.

MATERIALS SOURCING AND PREFABRICATION

Materials were sourced as follows:

- **Local procurement** from project areas: wood and aggregates.
- **National procurement:** cement, iron bars, tie wire, hinges, post straps, *amakan* walling (traditional woven bamboo).
- **International procurement:** CGI sheets, flat iron sheets, hurricane straps, galvanized nails.

A central workshop was established to pre-cut and bend roof ridges and footing bars. Twisted umbrella nails with rubber seal increased construction efficiency and neater finishes, compared to the application of seal paste on every roof nail.

MATERIALS KITS

Overall, logistical challenges of the 500kg kits of materials were significant, given the massive area with complicated delivery needs. As a result, **a flexible approach was established:**

- For easily accessible areas, start small and plan for continuous supply.
- For areas difficult to access, deliver in bulk and plan for storage. In instances like island or far upland, delivery needs to be direct and in almost full quantity. Sufficient time needed to be given for hauling of materials from delivery at the last reachable point, and cash was required to pay for the “last mile” of transport, as part of livelihoods programming. Additional buffer stocks were required and smaller numbers of kits should have been pre-positioned in advance of anticipated poor weather.

Involving barangay councils in material distributions proved to be important for community mobilization and security reasons.

TRAINING OF CARPENTERS AND COMMUNITIES

Initially, the team came with technical plans, drawn by computer and in units not used locally. Craftsmen could therefore not interpret them, so they needed to be re-formatted into a simpler booklet.

Attendance in the training course was an obligatory step for carpenters to be contracted. The best carpenters were retained for ongoing work in the project. During the programme, a total of 1,071 carpenters were trained. At the same time, the whole community learned about good construction practices. The largest long-term impact of the project was in the training for affected people that it enabled.

CONSTRUCTION OF SHELTERS

The preparatory steps (selection of beneficiaries, delivery of materials, cutting of wood, procurement of local aggregates, training of carpenters) took much longer than the actual house construction, which was about four to five days.

It proved better to distribute orders to carpenters at the beginning of the week, to avoid work during weekends, when monitoring teams (one monitor per barangay) were not present. The agency found best results when they selected carpenters, rather than letting beneficiaries choose their carpenter.

More systematic approaches should have been conducted for safety. Contracted carpenters were not always insured and systematic insurance was not in place.

POST-IMPLEMENTATION REVIEW

Shortly after the implementation of the project, another typhoon hit the affected area. In a review of the houses, it was found that only four had failed, three of which due to the use of young coco-lumber and one due to a land-slide.

STRENGTHS, WEAKNESSES AND LESSONS LEARNED

STRENGTHS

+ Rapidity of the response. Early decision to engage in shelter after the typhoon hit the area and very quick activation of the programme before the end of the emergency phase.

+ Previous knowledge of the area and of the communities affected. The organization was present in the area before the emergency for its protection and assistance activities and remained after the response.

+ Logistical capacity. The mobilization of resources from the organization was very fast also thanks to the existing logistical set-up in the country with an additional deployed logistics team.

+ Cooperation with local partners. The national partner organization has an extensive coverage of all parts of the country.

+ High standard of quality. Within the framework set by the government guidelines (including adaptation to the environment and sustainability), all solutions adopted and materials provided through this project were of high quality.

+ Strong accountability. The beneficiary feedback system (hotline) allowed the beneficiaries to raise concerns and the programme to be adjusted where needed.

TECHNICAL SOLUTIONS	
Foundations	Six concrete foundations are used to support each of the six individual columns. With 1:2(cat) mix of concrete and steel reinforcement, the foundation is strong enough to support the structure above the expected load even if using heavier good-lumber in the construction. Foundation is also shaped in STEP (reverse T) type to increase uplift resistance.
Truss	The trusses for the roof are designed to create a hipped roof shape with two original full trusses, six half trusses covering the roof ends, and an additional middle truss.
Floor	The floor is made from coco-lumber boards providing better and steady floor supported by three long and 14 short floor joists.
Wall	Made from the *amakan* sheet clipped with wall studs from the inside and wall clips from the outside in 600mm grid creating a grid-like finish on the outside.
Openings	The shelter design provides three windows and one door for opening and access. Supported by double hinges at 2mm thickness the durability of the opening is guaranteed to last.
Bracing	Diagonal bracing was placed in wall. One bracing is also placed in the roof structure connecting all the trusses into single structure. Although it is advised to use longer bracing in full wall short diagonal bracing was used to allow full modification of the opening across the wall and flexibility of further extensions.

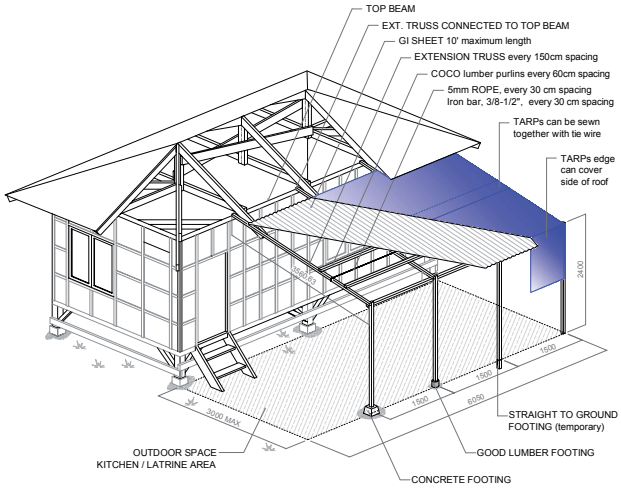
WEAKNESSES

- MoUs with municipalities should have been signed early in the process to facilitate the next steps in full transparency.

- More effort should have gone into **training the field teams working in assessment and data collection,** to ensure consistency.

- Although there was a significant training component, there was **little or no consistent follow up on the impacts of the training** in terms of safer construction outcomes in the broader community. **More attention should have been given to post-implementation monitoring,** to assess short and long-term impacts.

- The sanitation (and hygiene promotion) component should have been included in the project from the outset, instead of having to conduct a secondary follow up to install sanitation. This would have simplified the operations.



Local carpenters didn't understand technical drawings, so concepts had to be explained through simpler and more intuitive ways, and a booklet was produced.

LEARNINGS

- **A full set of recommendations from the project were learnt and compiled** in a single document for future use by the agency. Overall, the project was deemed to have been positive by the agency and a model for future interventions in similar contexts. The various templates and manuals produced were of particular interest to the agency.
- **Starting small through pilot projects and then scaling up** can be a successful approach.
- **A combination of high quality hardware and software** components is essential for project success.

The project used locally available materials (e.g. the amakan sheet, left) and safe construction techniques, including bracing, strong trusses and roof strapping.

CASE STUDY

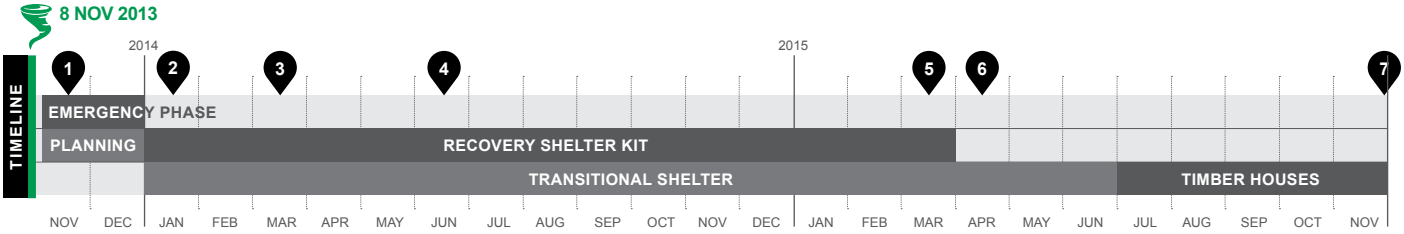
PHILIPPINES 2013-2015 / TYPHOON

KEYWORDS: Emergency shelter, Transitional shelter, Procurement and logistics, Local materials, Training

CRISIS	**Typhoon Haiyan (Yolanda), 8 November 2013.**
TOTAL HOUSES DAMAGED	**518,878** partially damaged. **493,912** totally destroyed. 21,005 houses damaged and 26,515 destroyed in the project areas.
TOTAL PEOPLE AFFECTED	**3,424,593** households (16,078,181 persons).
PROJECT LOCATIONS	**Guiuan, Roxas, Ormoc, Tacloban.**
BENEFICIARIES	**64,113** households.
PROJECT OUTPUTS	**52,096 NFI Kits** **33,994 Emergency Shelter and NFI kits** **58,062 Recovery Shelter kits** **3,500 Transitional Shelters** **72,956 Individuals trained** in DRR (51% women) **640 Timber Houses** built in Leyte
SHELTER SIZE	**18m²** for recovery shelter kits (minimum, variable, size) **23-24.7m²** for transitional shelters.
SHELTER DENSITY	**3.5m² per person** (for Recovery Shelter Kits). **5m² per person** (for Transitional Shelters). (based on five-person-average household size)
MATERIALS COST	**USD 300** for Recovery Shelter Kits. **USD 1,190-1,860** for Transitional Shelters.
PROJECT COST	**USD 385** for Recovery Shelter Kits. **USD 1,960** for Transitional Shelters.

PROJECT SUMMARY

This was a large-scale programme, using a "Debris to Shelter" approach, to support typhoon affected households to repair or rebuild their damaged or destroyed homes. Almost 20 million board-feet of lumber were salvaged, corresponding to an estimated number of almost one million trees. Through 97 vendors in all affected areas, lumber was provided for more than 62,000 shelter interventions. Disaster Risk Reduction and Build Back Safer trainings were given to local carpenters and shelter beneficiaries, promoting safer construction against future disasters.



1. Nov 2013: **First distribution of Emergency Shelter and NFI kits.**
2. Jan 2014: **First Recovery Shelter Kit distributions and Disaster Risk Reduction training.**
3. Mar 2014: **First transitional shelters installed.**
4. Jun 2014: **All four field offices implementing transitional shelters, including in relocation sites in Tacloban.**
5. Mar 2015: **End of Recovery Shelter Kit distributions.**
6. Apr 2015: **Closure of two offices (Ormoc and Roxas).**
7. Dec 2015: **Completion and handover of Timber Houses.**

STRENGTHS

+ Speed of the response.
+ Flexible procurement and implementation methodologies.
+ Local market approach, supporting livelihoods.
+ Removal of fallen or damaged trees helped clear the land.
+ Build Back Safer messaging targeted a range of stakeholders.

WEAKNESSES

- Choice of coco-lumber was not always appropriate.
- DDR training prioritized measures to strengthen roofs.
- Difficult to forecast eventual reductions in coco-lumber availability.
- Some field offices were less adept at establishing partnerships.
- Under-calculation of needs for logistics, procurement and finance systems.

The project used a flexible approach to reuse fallen coconut trees to set up a large-scale shelter response. Most of the milling was done by licensed chainsaw operators, directly where the coco-lumber was sourced.

In a few cases, transitional shelters were built in resettlement sites, such as this one in Tacloban, rather than on people's original plots.

For an overview of the situation before and after the disaster, and the national shelter response, see overview A.23 in Shelter Projects 2013-2014 and overview A.8 in this edition.

THE USE OF COCO-LUMBER BEFORE HAIYAN

In the Philippines, coco-lumber (wood from coconut trees) is a recognized traditional construction material, although with fewer uses than hardwoods. Since 2011 (Tropical Storm Sendong response), coco-lumber has been recommended by Shelter Clusters in the country. Since 2012 (Typhoon Bopha response), there has been a clear policy from the Government of Philippines Coconut Authority (PCA) on the collection and use of fallen or damaged coconut trees for post-disaster shelter, as well as a clear pathway for permission to do so, including the use of licensed chainsaws and chainsaw operators, and a visual grading system for the selection of the lumber. Moreover, the implementing organization had already been using coco-lumber for shelter before its Haiyan response.

SITUATION AFTER THE TYPHOON

Approximately 33 million coconut trees were fallen, or had been damaged beyond productivity by the typhoon, with an estimated 13 million trees[1] which might be accessible and usable. Replanting was not possible until fallen trees were removed and there were concerns that if they were left on the ground for too long, the rot would promote damage or insect infestation to the remaining healthy trees in the area.

PROJECT OVERVIEW

A number of different shelter interventions were chosen. In the first weeks, the organization distributed over 86,000 Emergency Shelter Kits (plastic sheeting, fixings and tools) and NFI kits, however the main part of the programme centred on two different shelter types: Recovery Shelter Kits and complete Transitional Shelters, both reusing the available coco-lumber.

RECOVERY SHELTER KIT

The Recovery Shelter Kit was an upgrade from the Emergency Shelter Kit, replacing the plastic sheeting with corrugated galvanized iron sheets, roofing nails and the coco-lumber. Technical trainings and cash grants were added, but continuing to include the construction hand tools and some of the other fixings. The main target of this shelter type was the large number of families whose homes had been damaged significantly, but could still be repaired. These households already had land available – in most cases their customary plot.

TRANSITIONAL SHELTERS

The transitional shelters were built in smaller numbers and were targeting two groups of people: those whose houses had been completely destroyed and those whose previous homes had been in the coastal No Build Zones, and therefore had to relocate.

In some cases, these shelters were constructed individually, on plots identified by the beneficiary and in negotiation with the owner of the land and the local barangay[2] chief. In a small number of cases, shelters were installed in groups, on larger plots of land identified by the local municipal authorities, but then evaluated for their suitability by the project staff from the organization and other partners (with activities in the same location).

Designs for the transitional shelters were adapted by each office, but were generally based upon those in previous responses. The predicted lifespan of the coco-lumber was 3-5 years.

COMMUNITY PARTICIPATION

Local barangays were engaged and consulted during the beneficiary-selection process, and also through the Build Back Safer information campaigns which accompanied the distributions.

The communities were mobilized by the local leaders to support and participate in the assistance process, either during the distribution of the kits or in the construction of the transitional shelters. In the absence of a warehouse, the materials for the construction of the shelters were handed over to the families. All of the carpenters and their assistants came from the local communities and participated in cash for work schemes, which were a valuable source of income.

Through the establishment of a hotline and the dissemination of the respective phone number, beneficiaries provided feedback and issued complaints regarding the assistance received.

COORDINATION

The Coco-lumber Technical Working Group of the Cluster provided clear guidance on the permission pathway and technical issues for the collection and use of coco-lumber for shelter, as agreed nationally with the PCA. More generally, the Cluster

[1] This quantity was enough for more than 1 million Recovery Shelter Kits (at an estimate of 20 board-feet of lumber per tree, and approximately 220 board-feet of lumber needed per kit – the amount necessary to provide safe support for 12 CGI sheets for roofing repairs).

[2] Neighbourhood administrative units.

Transitional shelters were used as a basis to recover. Families would personalize the shelters and add small stores and other temporary structures outside the shelters, which served as places for livelihood activities.

strategy of prioritizing recovery in a varied and incremental approach, provided a clear framework for the organization's own palette of shelter options.

Coordination had a less obvious positive impact upon the provision of WASH support to complement the shelter activities. At the subnational level, it was not always possible for the organization to find partners who could provide latrines for those with transitional shelters, for instance, despite the fact that the local WASH Cluster was approached in several cases.

Beyond cluster coordination, the organization developed important relationships with the local municipalities and barangays, with the PCA at both the national and local offices, and with the Department of Social Welfare and Development.

DISASTER RISK REDUCTION

Due to the frequency of natural hazards in the country, the organization adopted a DRR approach, and the training which was given to its technical workers and to beneficiaries was focused around the 8 Key Messages, developed by the Shelter Cluster[3]. Post-programme interviews showed that beneficiaries used more DRR measures for their roofs than for the walls or foundations. This was due to the higher costs of materials for the latter and the practical challenges of "punching into" an existing foundation, as well as the fact that most houses had the largest damage in their roofing.

MAIN CHALLENGES

The greatest challenge was to scale up the "Debris to Shelter" approach, whilst remaining efficient, and to respect commitments made to the various beneficiary communities, once the supply of materials became harder, or more time-consuming. Ensuring that the local vendors could respond to the demand of this programme was also a key issue. **The flexibility to scale up the operation in five sub-offices**, use different kits, and to re-assess the methods of the lumber preparation, was key to addressing these challenges.

In order to implement the projects, the organization had to **establish and recruit over 200 staff** for four new field offices, as well as to maintain the necessary **balance between flexibility and rapid-decision-making** at the field level, **with needs for both support and accountability** from the national office, wherein the project was managed.

[3] Philippines Shelter Cluster, 8 BBS Key Messages, http://bit.ly/2lANU3F.

COCO-LUMBER SUPPLY

In the first weeks of the response, the organization sought to persuade beneficiary communities to **provide fallen coconut trees free of charge,** whilst the organization would then take responsibility for processing them. However, by February 2014, it became apparent that many other shelter actors were already paying locals for the fallen trees and that this would help kick-start the local economy. **The organization thus started to pay** for the lumber, from that point onwards.

As the local vendors and lumber producers did not have the capacity to respond to the demand yet, the organization **worked with other humanitarian actors,** who took on the responsibility of hauling and milling the coco-lumber. However, in less than two months, these partnerships also came to a halt and the local market started to show signs of recovery, driving the organization to **use direct procurement.**

Implementing at a **large scale, through small-scale suppliers** (often without formal business documentation), initially proved a challenge for the organization's procurement department, who had experience with more formal tendering processes, often at a national or international level. **A system was established based on the "pakyaw"** Philippine customary supply-chain methods, whereby payment for the lumber would be made to one representative of a group of smaller suppliers. This reduced the number of individual payments, and accordingly the amount of paperwork to process, as well as consolidated the lumber deliveries in the field.

After the first months, **the fallen or damaged trees near vehicle roads had already been taken and competition had increased** from other shelter actors and the private sector. Although there was still large availability, these issues created delays in delivery and an upwards pressure upon the price. In some cases, in order to meet deadlines, some of the procurement was done through larger commercial suppliers. **The field offices had their own warehouses** to aid the integration of this national and international large-bulk supply chain, with the local, myriad, supply chains for the coco-lumber.

PROCESSING OF THE COCO-LUMBER

For the Recovery Shelter Kits, the coco-lumber was milled in only one dimension (2"x3"), to speed up the milling. The transitional shelters required a wider range of lumber dimensions, amongst a range of industry standard sizes. **Much of the milling of the lumber into its final dimensions was done using chainsaws.** The organization relied primarily upon specialized "scalers", recognized by the PCA, to grade lumber from different parts of the coconut trees, according to density and strength. However, this **grading was done visually and was not aided by any machine.**

The organization used a variety of processing approaches:

- Initially, the lumber was **processed in the locations where it was sourced.**
- After March 2014, when fallen coconut trees were no longer available near roadsides, suppliers were paid to bring the trunks to a **central milling site.**
- Later, **suppliers were contracted** to undertake all of the collection, preparation, milling and delivering to site of the lumber.

Overall, this project was innovative in its "Debris to Shelter" approach, as well as its scale-up using multiple sources, solutions, and flexible approaches to supply and milling.

STRENGTHS, WEAKNESSES AND LESSONS LEARNED

STRENGTHS

+ The organization acted quickly to establish four field offices, each with the flexibility and authority needed.

+ Flexible procurement and implementation methodologies were created, so that the local coco-lumber, collected by small-scale suppliers in irregular quantities, could become one of the main materials for a large-scale programme.

+ Local market approaches were adopted with many local suppliers, giving **livelihoods support** to a wide range of communities.

+ The removal of the fallen or damaged trees was also a massive and necessary boost to the farmers and cooperatives seeking to clear the land, in order to replant new coconut trees, as quickly as possible.

+ Disaster Risk Reduction and Build Back Safer messaging was provided for a wide range of actors in the reconstruction process: beneficiaries, local carpenters and contractors.

Materials in the Recovery Shelter Kit	Units	Quantity
Framing kit, coco-lumber, 2"x3"	Board feet[4]	230
CGI sheets (roofing)	pcs	12
Ridge rolls (roofing)	pcs	3
CW nail #2 (fixing kit)	kg	1.5
CW nail #3 (fixing kit)	kg	1.5
Umbrella nails (fixing kit)	kg	3
GI wire #16 (fixing kit)	kg	2
Nylon rope, diameter 10mm (fixing kit)	m	30
Claw hammer, 13" (tool kit)	pcs	1
Combination plier, 8" (took kit)	pcs	1
Aviation snips, 10" (tool kit)	pcs	1
Crow bar, 18" (tool kit)	pcs	1
Handsaw, 20" (tool kit)	pcs	1
PVC pail, 12L (tool kit)	pcs	1
Shovel pointed #2 (tool kit)	pcs	1
Elasto-seal (tool kit)	pcs	1

[4] The board foot is a specialized unit of measure for the volume of lumber, and it equals 1ft x 1ft x 1in.

Local people cut fallen coconut trees into planks with chainsaws (Guiuan).

WEAKNESSES

- The choice of coco-lumber, with its shorter lifespan, was not always appropriate for the shelters with a lifespan of longer than five years.

- Disaster Risk Reduction trainings tended to prioritize only measures for strengthening roofs, rather than giving equal emphasis to all parts of a house.

- It was difficult to forecast eventual reductions in the availability of the coco-lumber, leading to delays in delivery in the later months of the programme.

- Some field offices were less adept at establishing partnerships, leading to a **lack of WASH support** for some shelter beneficiaries.

- Under-calculation of the needs for logistics, procurement and finance systems and staff, during the programme scale-up, meant that these support departments were often playing catch-up after the field implementation teams.

LEARNINGS

- **Flexibility is the key to scaling up solutions** to meet needs, after large-scale natural disasters.
- **Talking in terms of wider livelihood impacts can go a long way** during engagement with a range of different national and local authorities, as well as with the beneficiary communities themselves.
- **Assisting the affected communities and local authorities in their recovery,** working in partnership, enabled the organization to effectively deliver the assistance in a timely manner.
- **There was a significant gap in documentation and knowledge management,** although the organization had extensive experience in disaster response prior to Haiyan, including in the shelter sector. Based on this experience, **the organization developed detailed Standard Operating Procedures to guide future shelter programmes.**
- **Adding small quantities of other, thicker, dimensions to the kit,** (e.g. 2"x4" or even 2"x6") might be appropriate for future versions. In fact, some beneficiaries have re-used lumber from the kit for other purposes, including the bracing of walls or the construction of toilet superstructures.

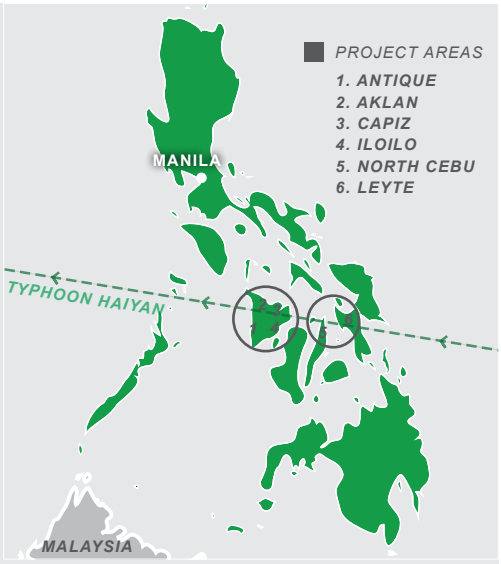
The project distributed timber from fallen trees for various shelter interventions.

CASE STUDY

PHILIPPINES 2013-2015 / TYPHOON

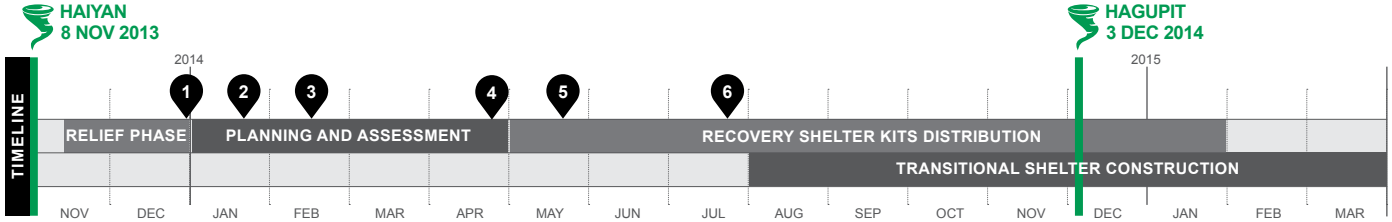
KEYWORDS: Emergency shelter, NFIs, Transitional shelter, Multisectoral, Training, Community participation

CRISIS	**Typhoon Haiyan (Yolanda), 8 November 2013.**
TOTAL HOUSES DAMAGED	**518,878** partially damaged **493,912** totally destroyed
TOTAL PEOPLE AFFECTED	**3,424,593** households (16,078,181 persons).
PROJECT LOCATIONS	566 barangays in 48 municipalities in 6 provinces in Central, Eastern and Western Visayas: **Leyte, North Cebu, Iloilo, Aklan, Antique and Capiz.**
BENEFICIARIES	**19,550** households (Relief phase). **16,585** households (Recovery phase, shelter support, plus 13,450 individuals with awareness and training in shelter and Build Back Safer).
PROJECT OUTPUTS	**19,550 shelter relief kits** (tarps + ropes), 6,313 kitchen sets, 47,875 NFI kits (blankets, mosquito nets, mats). **15,700 shelter recovery kits** and materials for latrine construction. **885 transitional shelters** built with latrines. **160 workshops** on Build Back Safer and 450 carpenters trained and received tools.
SHELTER SIZE	**19.4m²** (size of the transitional shelter).
SHELTER DENSITY	**3.9m² per person** (Based on national average household size of 5).
MATERIALS COST	**USD 400** per household for the shelter recovery and tool kit. **USD 3,500** per household for the transitional shelter (excl. latrine, incl. labour).
PROJECT COST	**USD 460** per household, for the relief phase.



PROJECT SUMMARY

The shelter programme spanned from relief to recovery within an inter-sectoral response. It assisted people across a wide geographical area, with activities such as: material distribution (shelter relief items, NFI kits and shelter recovery materials), transitional shelter and latrine construction, community awareness raising, technical assistance and certified training for carpenters.



1. 31 Dec 2013: **Shelter relief items distribution completed.**
2. Jan 2014: **Shelter recovery strategy developed, market assessments and decision on direct procurement.**
3. Feb 2014: **Shelter kit defined.**
4. Apr 2014: **Beneficiary selection process and Build Back Safer trainings completed.**
5. May 2014: **Temporary shelter design completed**
6. Jul 2014: **Carpenter training completed.**

STRENGTHS

+ High participation and accountability to affected populations.
+ Build Back Safer trainings were well received.
+ Construction trainings to carpenters enhanced their skills and income opportunities.
+ Effective management of beneficiary data.
+ Particular attention and response to vulnerabilities.

WEAKNESSES

- Limited coverage.
- The recovery capacity of communities could have been strengthened.
- Only 50% of beneficiaries actually used the materials received for repairs after four months from the distribution (source: PDM).
- Recruitment difficulties delayed implementation.
- The integrated approach was not implemented very effectively.

SITUATION AFTER THE TYPHOON

For an overview of the situation before and after the disaster, and the national shelter response, see overview A.23 in Shelter Projects 2013-2014 and overview A.8 in this edition.

At first, typhoon-affected families settlement options were classified as follows: (1) remaining in damaged homes; (2) host families; (3) evacuation centres; and (4) formal or informal camps. In an initial displacement survey, close to 90% of evacuees reported their willingness to return home if provided with assistance, demonstrating that resource provision for self-reconstruction could be a quick way of decongesting displacement sites and accelerating recovery. Notably, many families had no legal land title or right to reside where they lived.

Shelter was a priority need both in the relief and recovery phase, followed by livelihoods and food, as shown in a baseline survey conducted by the organization. Particularly, 77% of surveyed households reported that receiving materials for repairs was their preferred solution to shelter needs, followed by daily labour opportunities (19%), longer-term employment (16%) and land tenure security (9%) amongst others.

PROJECT PHASES AND COMPONENTS

Using shelter as an entry point for a wider inter-sectoral approach, this programme covered both the emergency relief phase (mainly with distribution of shelter and NFI kits) and the recovery phase, where the response focused on two major outcomes: shelter – delivered mainly through distributions and technical assistance – and livelihoods, through certified trainings[1]. These further tied into the integrated approach of the response, where target communities benefited from trainings and multisectoral interventions in areas such as WASH, Health and Education.

COORDINATION

The organization was actively involved in inter-agency assessments[2]. The Liaison Officers and Sector Specialists continued to represent the organization at the national, provincial and municipal coordination meetings, wherein sharing of technical information and 4W data[3] facilitated decisions on the nature of responses and operational areas.

TARGETING OF LOCATIONS

Municipalities and barangays (villages) were selected based on organizational tools[4], which used the following formula:

Need = extent of damage x intensity of damage x pre-typhoon vulnerability.

The tools relied upon publically available data, allowing the response team to gain a clear picture of the areas in need and how resources should be allocated. After shortlisting the locations, consultations were held with local authorities due to their local knowledge, as well as using data from the Cluster on other organizations' activities, to avoid duplication of efforts.

[1] Trainings were certified by the Technical Education and Skills Development Authority, http://www.tesda.gov.ph/.
[2] Namely, the Multi Cluster Initial Rapid Assessment (http://bit.ly/2lXnXvv) and Children's MIRA (http://uni.cf/2kB9mFC).
[3] The 4W is an information management tool capturing What activities are implemented, by Whom, Where and When during a humanitarian response.
[4] The Overview of Affected Municipalities (OAM) and the Barangay Prioritisation Tool (BPaT).


The project prefabricated trusses and built transitional shelters.

BENEFICIARY SELECTION

Selection criteria were developed in consultation with community leaders and members and validated by the organization. A participatory and inclusive approach in the selection was adopted to reduce tensions and not to exacerbate existing problems amongst community members, as not all affected households within a barangay could be assisted.

Priority was given to the following groups: the elderly, women, people living with disabilities, female- and child-headed households, internally displaced people and those with totally damaged houses, along with additional vulnerability criteria.

Once compiled, the barangay committees displayed the beneficiary lists for community evaluation and addressed the feedback through several rounds of consultation, to ensure that all were largely satisfied with the process.

PROJECT IMPLEMENTATION AND TEAM STRUCTURE

The operational area was divided into zones where similar activities were implemented, and the same organizational structure was used in each area. The relief-phase blanket distribution was directly handled by the Supply Chain Management and Accountability teams. Then, during the recovery phase, a sector expert (Reconstruction Manager) coordinated three international construction specialists (designated to each zone), who were managing hardware sectoral interventions (shelter/WASH/infrastructure). Each zone had a team of engineers and architects who, based on experience, were assigned responsibility as municipal focal points or technical officers. Each zone had a minimum of six personnel in the shelter team, all reporting to the construction specialist.

Overall, approximately 25 engineers were working in the implementation team for the beneficiary selection process, material distribution, transitional shelter construction and technical assistance phases. Throughout the recovery phase, the sector technical team (both in the field and headquarters) were supported by the Supply Chain Management and Accountability teams. Engineering Design and structural calculations for the transitional shelters were carried out by professional volunteers, deployed by an engineering non-profit organization.

LAST MILE MOBILE SOLUTIONS

The organization adopted an innovative digital technology for the registration and tracking of all beneficiary data for distributions, which provided real-time tracking, remote data collection and management, significantly reducing registration times and inefficiencies, along with systematizing reporting processes[5]. This technology was used to issue a barcoded ID card for each head of household and was adopted for all distributions. The organization had in-house expertise with the system, so it was easier to roll out, build capacity and get the required equipment.

[5] For more information, visit http://bit.ly/1TzqD8K.

LAND OWNERSHIP

The majority of beneficiaries had lived in the same location for many years, in some cases across generations, based on informal agreements. Thus, consultation was held with community members, barangay leaders and beneficiaries, to ensure there would not be threat of eviction. Many landowners expressed no problems with beneficiaries rebuilding in the same location, as long as the structures were not permanent. **Barangay leaders undertook the responsibility** of resolving issues and negotiating on behalf of the beneficiaries, should any land issues arise. **MoUs were also signed with the municipalities, barangays and beneficiaries,** indicating the leaders' responsibilities and that should a beneficiary relocate, they would disassemble the structure and reuse the materials elsewhere. As a result, during the implementation period, minimal complaints were received on land issues.

INVOLVEMENT OF AFFECTED PEOPLE

Affected people were engaged from the assessment up to the evaluation stage. They identified their top priorities and ways of addressing them through participatory workshops. The beneficiary selection and feedback mechanism allowed the whole community to engage with the project processes. Storage spaces for the materials during distribution and construction was provided by the barangay, and the community as a whole was responsible for the safety of the materials. Beneficiaries monitored the progress of construction of their own transitional shelters, ensuring any contracted labour completed the work to standard. Barangay members were allocated the responsibility of monitoring the overall self-reconstruction progress across the villages, for those using the shelter kits.

DISASTER RISK REDUCTION COMPONENTS

Most of the affected population resided in geographical locations which are prone to natural hazards, such as river banks, the coastal belt and areas subject to flooding. As a result, **DRR and climate change adaptation was a focus throughout the response** and local authorities and relevant partners were actively engaged. The Build Back Safer training and messaging were made available at the barangay halls for further reference to all community members, not only direct beneficiaries. The design of the temporary shelter was developed in close consultation with community members, and **pilot shelters were first constructed** directly by the organization, to show best practices and serve as a model to be replicated. Specific guidance was also provided on **land selection and site planning,** to encourage people living in unsafe areas to be informed on how to identify and negotiate for safer locations.

The Build Back Safer principles that were most commonly adopted by the beneficiaries during the repairs were: construction of a simple-shaped shelter (77%), identification of a safe location (71%), use of strong joints (62%), bracing (60%) and good roofing (53%).

Additionally, **a local-level advocacy approach** was used to increase dialogue between ordinary citizens and relevant government entities which provide services to the public, aiming to improve the implementation of national DRR policy at the municipal level.

MAIN CHALLENGES ENCOUNTERED

LOGISTICS AND QUALITY CONTROL. The logistics team was stretched due to the widely spread operational areas and the extent of the shelter response, as well as that of the other sectors' activities. In addition, materials' quality control required extensive commitment and resources. It was initially difficult to find staff with appropriate skill sets to meet these challenges.

SUPPLY CHAIN MANAGEMENT. The slow recovery of local businesses, the high demand of construction materials and climatic conditions affecting the transport route, all impacted the overall delivery of the programme. In addition, a shortage in supply of good coco-lumber and bamboo strips further affected the programme.

AVAILABILITY OF RESOURCES. Although the programme was designed in close consultation with community leaders and beneficiaries, **not all families managed to rebuild their damaged homes** with the assistance provided, mainly because they lacked necessary materials. For those who were unable to build by themselves, **the main challenge was to find the resources** required to hire skilled labour or to purchase additional material. This was mainly due to a lack of alternative funding options, particularly because of the delay of the government's cash assistance, which was originally anticipated to complement the shelter initiative.

CLIMATIC HAZARDS. In December 2014, Typhoon Hagupit made landfall just north of Leyte, followed by series of others storms. **Vital roadways were blocked by landslides, road slips, or washed-away bridges.** The damage to infrastructure, coupled with the staff being deployed to other emergency responses, caused resources to be stretched and generated delays in this programme.

WIDER IMPACTS OF THE PROJECT

In the later stages of the response, the barangay disaster management committee and the trained carpenters were provided further Build Back Safer training, so that they could continue to deliver similar trainings in their communities and monitor the building of houses and structures. **These trainings served as a replicable approach** that could be used in other communities.

Safety measures for construction workers were emphasized throughout the programme, and all staff with access to beneficiaries were briefed on **Child Protection and Prevention of Sexual Exploitation and Abuse** protocols. Community briefings on **contractual obligations** of contractors and workers and **site protection measures** (such as site demarcation to avoid children wandering around the construction) were also carried out, so that there would be a base for community monitoring and mutual accountability. Although new in the communities, it was agreed that this approach would be adopted for future construction activities.

The project included distributions (North Cebu, left) and built model structures for Build Back Safer trainings delivered to communities (right).

STRENGTHS, WEAKNESSES AND LESSONS LEARNED

STRENGTHS

+ High community participation and accountability to affected populations. The exhaustive community consultation ensured that **all voices were heard and responded to.** The feedback received was also used to **refine interventions and take corrective actions** when needed, regarding scheduling of activities, quality of materials and workmanship.

+ The Build Back Safer trainings were well received by all sections of the community, who participated actively and were interested to learn more. Further, carpenters from the community were involved in developing the model structures and trainings, which gave them an opportunity to demonstrate their newly acquired knowledge and skills.

+ Construction trainings provided to carpenters substantially enhanced their skills and their income generation opportunities, as they were certified by a government authority.

+ Effective management of beneficiary data from registration to delivery, monitoring and timely reporting, thanks to the use of the digital Last Mile Mobile Solutions technology, which allowed a streamlined multisectoral response.

+ Particular attention and response to vulnerabilities. For example, latrines were constructed in such a way that privacy and security were guaranteed for all users: no gaps in the lower portion of the walls, provision of locks and within close proximity to individual shelters. During distributions, vulnerable persons, such as the elderly and women with nursing children, were the first to receive provisions.

Items in the shelter recovery kit	Unit	Quantity
Tools 20" or 22" Handsaw, Claw hammer, Tape measure (3m), Shovel, Machete, Hoe or Pick Mattock, Crow bar, Tin snips, Chisel.	pcs	1 each
Gloves	pair	2
Shelter materials 10ft length, 4mm Corrugated Galvanized Iron sheets; 10ft length, 4mm CGI ridge roll, 18" wide; 4", 3" and 2" common wire nails; Umbrella nails, twisted shank; 4"x4"x12" Coco-lumber; 2"x4"x12" Coco-lumber; 1/2"x4'x8' marine plywood.	sheets pcs kg kg pcs pcs sheets	12 2 3 + 2 + 3 2.5 4 12 6

WEAKNESSES

- Limited coverage. As the response targeted only totally damaged houses, entire populations were not reached. On one hand, the needs of the most vulnerable in the selected barangays were largely met, despite limited resources. On the other, **there was the potential for a wider impact** in the communities if the organization had advocated through the cluster for other agencies to support the families who were not reached by this programme.

- The communities' existing capacities were not well identified early on and incorporated into the programme. There were regional variations in the rate of recovery, demonstrating the absorptive and adaptive capacity of different communities and revealing the need for contextual interventions. **This transformative capacity could have been strengthened** through increased collaboration with community members or advocacy with local government and NGOs. This was confirmed in the monitoring and evaluation phases, wherein barangays with community mobilizers had a higher percentage of houses repaired or rebuilt.

- Despite the target beneficiaries having totally damaged houses, **post-distribution monitoring found that only 50% of them had actually used the materials received** to carry out repairs on their homes (four months after the distribution), while the rest mainly stockpiled the materials. Additionally, the majority of materials for latrine construction (for those where works were pending or on-going) were stockpiled or used for shelter repair, whilst a number of beneficiaries who sold latrine materials, used the proceeds to buy additional materials for shelter repair. The organization assumed that the government's emergency cash assistance would facilitate material purchases and payment of labour, though this did not happen in a timely manner. **Increased advocacy with the government (through the cluster) on the complementarity** of responses would have helped.

- The integrated approach was not implemented very effectively, requiring multiple assessments, beneficiary lists and numerous rounds of distributions and community meetings, due to the limited understanding of how to operationalize such approach to meet shelter, livelihood and food security needs. Ultimately, it was not clear how the multisector intervention contributed to overall recovery.

LEARNINGS

- To ensure a timely shelter response, **adequate planning** for the pre-positioning of goods and contracts, **streamlining procurement and administrative processes, and improving distribution systems** must be undertaken, particularly in contexts where disasters are likely to happen cyclically.
- **It is important to allow sufficient time for the roll out of shelter activities,** so that continued technical assistance can be provided to households and **closer integration of shelter and WASH interventions** ensured. Operations could have been more effective if distribution, technical assistance, monitoring and site planning were carried out as a single unit.
- **Managing expectations.** While trying to achieve programmatic objectives, engagement and communication with households who were not selected for support was necessary.
- Cash-based and livelihood programming can enable income generation, which can then be invested in asset building. In this case, **better complementarity of the livelihood programme with the shelter component** would have facilitated the reconstruction efforts.
- In terms of community level cohesion, it was noted that **capitalizing on the "bayaninhan" system of community support and cooperation** was vital to the effectiveness of the programme.

CASE STUDY

PHILIPPINES 2013-2015 / TYPHOON

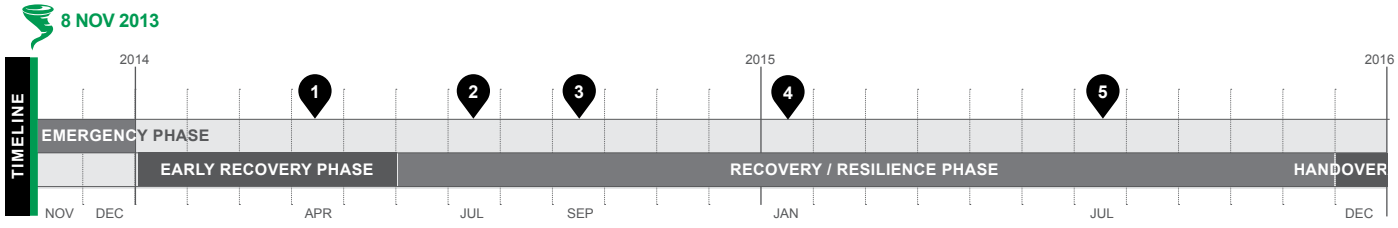
KEYWORDS: Multisectoral, Resilience building, Core houses, Community participation

CRISIS	**Typhoon Haiyan (Yolanda), 8 November 2013.**
TOTAL HOUSES DAMAGED	**518,878** partially damaged **493,912** totally destroyed
TOTAL PEOPLE AFFECTED	**3,424,593** households (16,078,181 persons).
PROJECT LOCATIONS	11 barangays spread across two distinct regions: **Guiuan (Eastern Samar) and Coron (Palawan).**
BENEFICIARIES	**3,197** households (16,209 people).
PROJECT OUTPUTS	**1,028 houses** (668 new houses and 360 repair). **505** individuals trained in hazard-proof construction. **744** houses with improved sanitation.

OTHER OUTPUTS	**41 community managed projects,** which included: an estimated 100,000+ paid labour days for implementing community projects; 49 livelihood groups capacitated; 20 livelihood projects funded; 72 water interventions constructed; 6,000km² cultivated for vegetable production; 42 community registered organizations continuing beyond programme life.
SHELTER SIZE	**11.5-23m²** (sizes varied as beneficiaries could choose from different designs).
SHELTER DENSITY	**Average of 4m² per person** (Based on national average household size of 5 and average shelter size of 20m². Yet size/densities were ultimately determined by community needs based on direct consultation).
MATERIALS COST	**USD 2,250** per household on average, including a latrine (Most families also contributed salvaged materials or other resources to expand upon the basic core shelter design).
PROJECT COST	**USD 2,550** per household on average.

PROJECT SUMMARY

This community-led resilient recovery programme supported remote indigenous communities on sectors including shelter, infrastructure, livelihoods, WASH and Disaster Risk Reduction. The projects adopted an integrated approach, taking shelter as an entry point for area-based programming and then expanding to a broader programme of community resilience-building. The different offices were given flexibility on implementation within a common principle of maximizing communities' agency. Communities were allowed to manage their own funds, planning and implementation of the activities.



1 Apr 2014: **Households assessments begin**

2 Jul 2014: **First Infrastructure and Housing Projects start**

3 Sep 2014: **First houses completed**

4 Jan 2015: **Livelihood Projects start**

5 Jul 2015: **Water Projects start**

STRENGTHS

+ Adaptable and contextual programme.
+ Communities and households were given full control.
+ Capacity-building and technical advice supported the owner-driven approach.
+ Recovery programming successfully transitioned into development issues.
+ Early projects that served the whole community won their trust.

WEAKNESSES

- The development of new methodologies was not adequately documented.
- Alignment of programmes in distant areas proved challenging.
- Engagement with the local government was difficult.
- Recruitment difficulties delayed implementation.
- The scope of the programme could have been expanded to cover more communities.

Shelters were constructed as a way to build community resilience.

Household mapping exercises were done with communities.

CONTEXT

For an overview of the situation before and after the disaster, and the national shelter response, see overview A.23 in Shelter Projects 2013-2014 and overview A.8 in this edition.

The communities targeted by this programme spread across distinct geographic regions of the country, encompassing a variety of contexts, including regions affected by recurrent extreme weather, marginalized indigenous communities and remote small island communities. All were known to be impacted by climate-induced hazards.

SITUATION AFTER THE TYPHOON

Needs varied by region. The town of Coron was not severely affected, so supply lines were established rapidly and those who could afford them purchased basic items in town. Two months after the disaster, the market was almost back to normal.

The organization conducted a Multisector Initial Rapid Assessment in Coron immediately after the typhoon, determining that 18% of houses were destroyed and 23% were severely damaged. In another early assessment, community members indicated that they were not familiar with resilient construction techniques (due to the significantly less frequent occurrence of typhoons in the western regions). In addition, they were observed to suffer from a number of small-island development issues, ranging from poor access to education, to water shortages and coastal livelihoods threatened by climate change.

Most affected were the coastal fishing communities, whose means and sources of income had been destroyed or damaged to a large extent. Also the physical damage to houses, schools and other communal facilities was greater in coastal communities, which were already in vulnerable positions before the typhoon.

RESILIENT RECOVERY APPROACH

The programme followed a “resilient recovery approach”, using and strengthening available capacities in the communities as much as possible. This focuses on organizing the communities around the common goal of resilience building, beyond strengthening their physical environment (e.g. shelter and infrastructure) and including livelihood groups, new knowledge and increased social capital and organizational capacity.

The approach allows for local people to exchange knowledge and encourages the community to analyse why buildings collapse and how to make them stronger. Ultimately, it encourages programme design to take place together with its “clients”, in order to properly meet their needs – involving communities in meaningful decision-making, engineering shelters together with local builders and not forcing a “one size fits all” design.

LOCATIONS AND BENEFICIARY SELECTION

The geographic regions were chosen strategically, to cover a broad sweep of contexts and to eventually pull in different sources of funding. Within those regions, early assessments helped target a combination of hard-hit and inherently vulnerable communities. **Within each community, the whole population was then targeted** for the integrated resilience approach, with projects such as health centres, water systems, sea walls, etc.

Detailed social and technical assessment determined which portion of the population was more or less affected by the typhoon and, specifically in regard to the shelter programme, those who qualified for housing assistance (destroyed or severely damaged home). Within these, **the final selection was made by applying vulnerability criteria** (defined by community groups during workshops) and voting. This process varied for each community. Broadly, facilitators aimed for the establishment of criteria by the community (e.g. elderly, single headed household, etc.) and then summed the voted scores for each potential beneficiary. However, in some cases, decisions were taken outside of this rigid framework. **Transparency meetings were established** to follow up on selection appeals, among other activities. Contentious selections did occasionally arise, usually due to pre-existing social conflicts within communities. In these cases, inclusive community meetings usually provided the best forum to resolve differences and reach consensus.

PROJECT IMPLEMENTATION

After initial distributions of emergency NFIs through local partners, the organization **focused on developing the resilient recovery programme** for a two year recovery phase, building on Disaster Risk Reduction (DRR) methodologies.

Shelter and community infrastructure needs were identified through early assessment and begun in the first year. This was then broadened out into **integrated programming including Livelihood, WASH, DRR and Health.**

Livelihood programming in particular became very important in addressing the impacts on the fishing communities and building towards longer-term economic resilience – both directly (e.g. Market Hub, Seaweed Cooperative, Rice/Fish/Fuel Resellers) and indirectly (e.g. community labour and logistics for all construction projects, local procurement of materials, boat landings to enhance trade). These projects were all implemented alongside existing activities, during the second year.

The organization was determined to **use a participatory approach**, granting communities agency and sense of ownership over the project outputs. Therefore, **the entire**

Examples of the houses built through the programme. Each household was free to adopt a different design, and manage the construction directly.

programme was designed to be delivered through conditional cash transfers, with community and households taking an active role in managing the projects, while being **supported by capacity-building and technical guidance from the organization.**

In early risk assessments, communities were facilitated to analyse their own risk, develop their own risk-proofing strategies, write their own project proposals and submit them to the organization for review and approval. For some elements of programming, such as infrastructure, communities were even given decision-making power over their total budget, deciding themselves which projects to invest in based on their value for money and impact towards resilience-building.

HOUSING PROJECTS

For the housing project, **a variety of contextual methodologies were trialled** in each different area. In the harder-hit eastern part of the Philippines, the projects focused more on meeting shelter needs, including the implementation of a repairs programme, while in the western areas the lesser urgency allowed for greater diversification of programming and funds.

In one project area, architects from the organization sat with each family and customized each house design based on the beneficiaries' preferences. In another, several housing types were designed based on community consultation, and the beneficiaries could choose from them. All house designs were drawn by a combination of architects and engineers, making sure to **adhere to local vernacular design, while meeting technical standards**. In particular, wind resistance required different standards between the East and West of the country, based on building codes and variance in typhoon wind speed.

Additionally, some areas employed a **cluster-based management of housing projects:** entire groups of families would progress through the cash tranches together, while in other areas beneficiary families were treated separately. This variety was experimental, but ultimately helped to contextualize the project for each area.

Once the projects begun, **communities and households would handle an unprecedented level of responsibility,** managing all the project funds, handling material procurement, record keeping, organizing logistics, hiring and paying their own labour force and managing construction. **A strict upholding of the cash tranche conditions** ensured that beneficiaries would follow the technical guidelines of the organization's engineers and build according to their typhoon resilient standards and designs. In the case of deviation from these conditions, or misuse of the funds, individual projects (or in some cases housing clusters) would have their tranche payments suspended. However, this turned out to be very rare (less than 5% of cases) and successful resolutions were always found.

Additionally, **a master-builder programme (practical training and on-site mentoring) was established,** to support the housing projects through to completion. Experienced local carpenters and masons were trained and contracted to manage housing clusters.

COMMUNITY ENGAGEMENT

To make all this possible, the organization had to support the communities with a **rigorous set of capacity-building workshops**, including on financial literacy, bookkeeping, management, construction and leadership. The organization put significant resources into hiring many community organizers and technical staff, as well as partnering with a local community-development organization to capacitate the staff.

Additionally, **a Transparency Strategy established tools and mechanisms to manage feedback and complaints**

within the community and resolve issues internally, while maintaining accountability. Features included regular **community meetings**, an anonymous **suggestion box** for dealing with potentially contentious issues, and **notice boards** to expand communication of messages (and in some cases even construction receipts) beyond those who attended meetings. When issues arose, they would first be dealt with at community level, and under certain circumstances escalated up, eventually to the organization's regional level, for external judgement. Only a few dozen cases ever reached this level, and supplementary facilitation was provided to avoid potential conflict.

Each project had community-assigned management teams with respective responsibilities, usually including a project manager, construction site foreman and treasurer. Roles were identified based on advice from the engineers and available funds within each project. Later in the programme, some large community infrastructure projects even experimented with **establishing community auditing teams.** This was particularly well received and led to less management problems and smoother running of the projects.

RACIAL DIVISION CHALLENGES

In Coron, indigenous leaders initially refused to work with the migrant communities. In the end, dialogue workshops and suspension of the programme worked to resolve differences and allow access to the whole population. However, this required the organization to adopt a more interventionist approach than usual. This reflects the conflict that sometimes arises between participatory approaches and organizational control.

KEY MESSAGES AND DESIGN SOLUTIONS

Building on the Shelter Cluster 8 Key Messages[1], **design details and safe building location were emphasized and demonstrated** through the construction features and site location of each house, rather than through a single prescriptive design, aiming towards replication by the larger community. In partnership with an international construction NGO, **these features were codified and made obligatory through a checklist** that was distributed to beneficiaries[2]. Compliance was checked through inspection by the primary organization's engineers and linked directly to cash tranche releases.

Following vernacular construction practices, all shelters were designed to be **core houses that could be expanded over time.** Supported by the livelihood components of the project, in time beneficiaries could raise the resources necessary to extend the structure, as is traditionally performed. While it is hard to control the quality of future extensions, the core house itself was designed to resist in the case of another typhoon, leaving each family with a hub from which to build back from.

While a better understanding of resilient building details was established, **the replication of such details outside of the programme was seen to be limited,** in light of the economic circumstances of each family. For example, while some people could afford extra nails to strengthen important connections, few were willing to invest in the relatively expensive bolts.

Community meetings included sessions on how to write project proposals.

MATERIALS SOURCING AND TRANSPORT

Being set in areas where markets were still functioning, **the projects granted responsibility to beneficiaries to procure locally,** according to pre-agreed specifications (included in the agreement between the beneficiary and the organization) **and transport their own materials to site**. By outsourcing the procurement and logistics burden, the beneficiary communities were given more choice and agency over the project and its implementation. This worked especially well in Coron where, spread across remote islands, community management of logistics utilized **local knowledge of the waters and transport routes,** making great savings in costs and efficiencies in the process.

The only point of concern was the **rare occurrence of illegal timber use from local forests.** Because of the superior quality compared to local timber markets, some beneficiaries were occasionally tempted to cut down forest timber, also to save on costs. In the end, this risk was mitigated by coordination with the government forestry department and local administration. The organization played its role by the fast and transparent suspension of projects where such cases arose, and warning against the practice of illegal procurement.

WIDER IMPACTS OF THE PROJECT

Improvements were made in community organization and project management, safety of houses, new and rebuilt community infrastructure, increased knowledge, income diversification and the re-establishment of local businesses. **The involvement of affected people in the programme ultimately enabled the communities to be safer and more resilient to typhoons than before.** The approach also helped communities organize preparedness plans supported by the Local Government Unit, national policies, laws and financing arrangements.

With the appropriate adjustments, and largely based on experiences from this programme, **the organization's Resilient Recovery Approach was used again**, most notably in Nepal after the earthquake of 2015.

[1] See overview A.8 and find the 8 Key Messages online at http://bit.ly/2lANU3F.
[2] Some of the contextually new features introduced to local communities included bolts on major connections (e.g. columns to trusses), bracing and cross bracing in the walls and roof, minimum numbers of nails for each connection, poured concrete pad foundations (as opposed to the less durable timber post foundation used locally), connecting the timber column dry footing to the foundations to withstand wind uplift forces, nailed blocking to fasten purlins to joists, and timber treatment for termite protection.

STRENGTHS, WEAKNESSES AND LESSONS LEARNED

STRENGTHS

+ Adaptable and contextual programme that remained relevant in a changing environment, allowed by a flexible funding.

+ Communities and households were given full control over implementation funds and took on much of the responsibilities, allowing them to truly lead and take ownership of the project.

+ The focus on capacity-building and technical advice supported the owner-driven, community-managed, approach to become a success.

+ Recovery programming successfully transitioned into development issues and became the basis for long term community development programming.

+ Winning the communities' trust with early projects that served all, smoothed the way for participation and cooperation later on.

WEAKNESSES

- Time and resources to properly document the development of new methodologies **were not adequately allocated.**

- Alignment of programmes on different sides of the country proved challenging in some areas. Because ultimately the programmes developed quite differently, some systems and structures designed for one context could not be easily adopted for the other.

- Engagement with the local government was difficult, due to their limited capacity and the organization's community-focused, bottom-up, approach.

- Recruitment difficulties early on, specifically in relation to specialized roles such as engineers, delayed critical paths to implementation.

- In hindsight, the scope of the programme could have been expanded to cover more communities without compromising on quality. In balancing the quality vs. scale dilemma, smaller scale interventions were chosen, to maximize impact in the selected communities.

LEARNINGS

- **Conditional cash transfers can be an effective tool** for strengthening the owner-driven approach in shelter construction, while retaining quality control for the organization.
- **Communities can be capacitated to take on more responsibilities in shelter implementation.** Areas such as logistics and procurement can be managed by the beneficiaries, if training is provided and markets are functioning.
- In supporting self-recovery, **shelter programming should be used as a platform to promote broader learning** about resilient construction techniques and look beyond traditional shelter outputs.
- **Resilience Programmes require "smart baselines"** in order to evaluate beyond the programmatic outputs. Baselines should include elements of social assessment and aim to reflect knowledge, attitudes and behavioural change.
- Elements of typhoon-resilient house design will not be replicated if the materials go beyond the usual budget of homeowners (e.g. bolts vs. nails). **Sometimes, weaker (yet cheaper) alternatives should be used, in order to aspire towards replicability** and ultimately engender behavioural change.

The programme led to a variety of community-wide infrastructure projects and communal facilities, led by the communities themselves.

NOTES

This booklet is a compilation of case studies of humanitarian shelter responses in the ASEAN region, compiled across the six past editions of the interagency publication *Shelter Projects*.

The projects described in the case studies and overviews contained in this booklet represent responses to conflict, natural disasters and complex crises, implemented by national and international organizations, as well as host governments, and demonstrating some of the implementation and response options available.

The publication is intended to support learning by highlighting the strengths, weaknesses and some of the lessons that can be learned from different projects, which try to maximize emergency funds to safeguard the health, security and dignity of affected people, whilst – wherever possible – supporting longer-term shelter needs and sustainable recovery.

The target audience is humanitarian managers and shelter programme staff from local, national and international organizations at all levels of experience. *Shelter Projects* is also a useful resource for advocacy purposes, showcasing the work done by the sector, as well as for research and capacity-building activities.

All case studies and overviews contained in this booklet, as well as from all editions of *Shelter Projects*, can be found online at:

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