SHELTER PROJECTS

RCRC edition

CASE STUDIES OF HUMANITARIAN SHELTER AND SETTLEMENT RESPONSES CARRIED OUT BY RED CROSS RED CRESCENT NATIONAL SOCIETIES
2008-2023

IFRC

Shelter Projects Red Cross Red Crescent Edition

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© Corrie Butler / IFRC. Nigerian Red Cross volunteers and staff help Abdalla Erewua in building his new home in 2021.

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© Emeline Decoray, The project focussed on building safer roofs.
© Sanjay Mukherjee. Core shelters and latrines were built to a set design, which was presented at community meetings to explain its features and receive feedback.
© Xavier Génot / IFRC. Malagasy Red Cross Society, Madagascar, 2022. Awareness session on improvement of traditional house construction, part of conditional cash for shelter program in response to the tropical cyclone Batsirai impact. This way to transmit knowledge and Building Back Safer key message was one of the dissemination vehicle used to sensitise households in the enhancement of the repairing of their damaged house, within communities with high level of illiteracy.

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FOREWORD

Spanning over a period of 15 years (2008-2023), this flagship publication has become a significant milestone for the humanitarian sector and stakeholders involved in implementing shelter programs. Originally a collaborative effort between IFRC, UNHRC, and UN-HABITAT, Shelter Projects evolved into a Global Shelter Cluster initiative with the primary goal of documenting and sharing lessons from past responses to enhance current and future practices.

In a world where global humanitarian shelter needs far surpass the capacities and resources of agencies to support those in need, it is evident that we must learn from the past to respond more effectively in the future. This special edition focuses on the projects implemented by the Red Cross Red Crescent (RCRC) network. It contains 33 case studies that vary greatly in scale, cost, duration, response phase, and project design, while all addressing the life-saving needs of displaced and non-displaced populations affected by crises and disasters.

Each case study has been written by shelter practitioners and managers of the RCRC and has undergone thorough review through a collaborative and consultative process, with academic support from Oxford Brookes University. Every year, a Shelter Projects Steering Committee, composed of IFRC and international shelter experts from various humanitarian organizations and institutions, leads the effort to identify, select, analyze, and distill the strengths and weaknesses of each project.

Shelter Projects is grounded in the understanding that the primary responders to all crises are the affected people themselves. While the case studies are written from the perspective of agencies aiming to assist, we hope that readers of this publication will recognize the central and active role of the people whom the projects seek to assist.

This RCRC edition aims to showcase the broad range of shelter and settlements programs that have been carried out worldwide, including earthquake responses in Haiti, Nepal, Chile, and Italy; hurricane and typhoon recovery in the Philippines, Bahamas, and Vietnam; and returnees assistance in post-conflict Iraq. Each project testifies to the wide spectrum of approaches to shelter assistance that have been implemented. As readers delve into these case studies, they will observe the inherent synergies between the physical reconstruction of homes and livelihoods, skills development, community empowerment, risk reduction, cash and markets, climate adaptation, and urban settlements planning. Furthermore, they will reflect on the lasting impacts of these projects years after their completion.

The intention of this edition is to provide RCRC program managers, operations coordinators, and shelter specialists with valuable insights as they develop strategies to respond to crises and disasters that affect homes and communities. By reviewing past endeavors conducted within the same country or similar contexts, they can benefit from lessons learned and build upon existing knowledge.

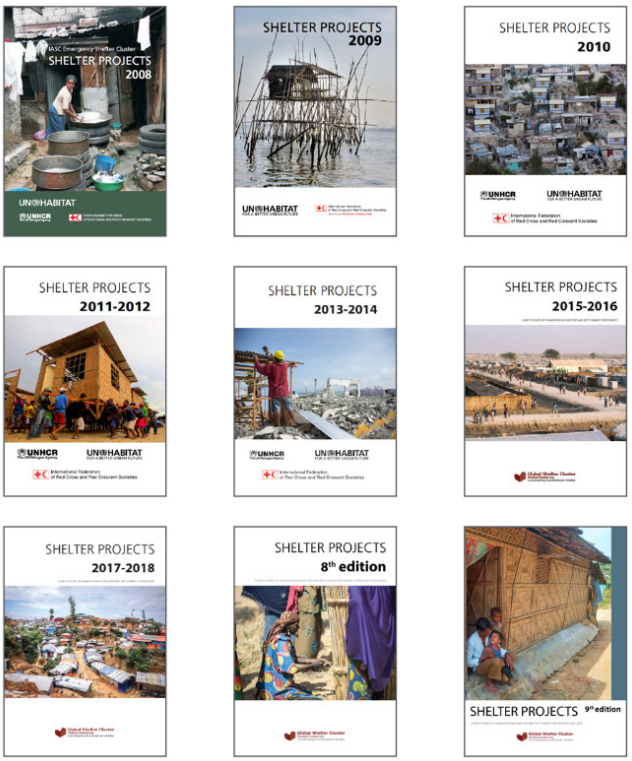
The nine bi-annual editions of Shelter Projects have served as tools for global advocacy, addressing issues such as cash in shelter programming and providing evidence for government strategies. They have been instrumental in discussions with civil protection agencies and local municipal authorities, aiding preparedness and response efforts. These publications have also been used with private sector organizations to elucidate the concept of shelter as a process rather than a product. Furthermore, they have played a significant role in humanitarian training programs and have been utilized as core references in university courses and as a basis for further research.

Available in both online and printed formats, this publication has garnered a growing audience of RCRC staff involved in humanitarian shelter programming. It caters to individuals working in host and partner National Societies, as well as response and recovery staff operating locally or internationally, in both developed and developing countries. The aim of this edition is to equip them with solid evidence and an expanding body of knowledge specific to their own countries and contexts.

While Shelter Projects can be read as a standalone document, and individual case studies can be explored in isolation, it is intended to complement other publications initiated or supported by IFRC, such as the Sphere Handbook and the State of Humanitarian Shelter and Settlements Report of the Global Shelter Cluster.

We strongly encourage all RCRC staff and shelter colleagues to widely share this publication and contribute their own project case studies for future editions. By doing so, the RCRC network can continue to learn, avoid causing harm, and help improve the lives of some of the world's most vulnerable people.

Ela Serdaroglu



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- Philippines Red Cross
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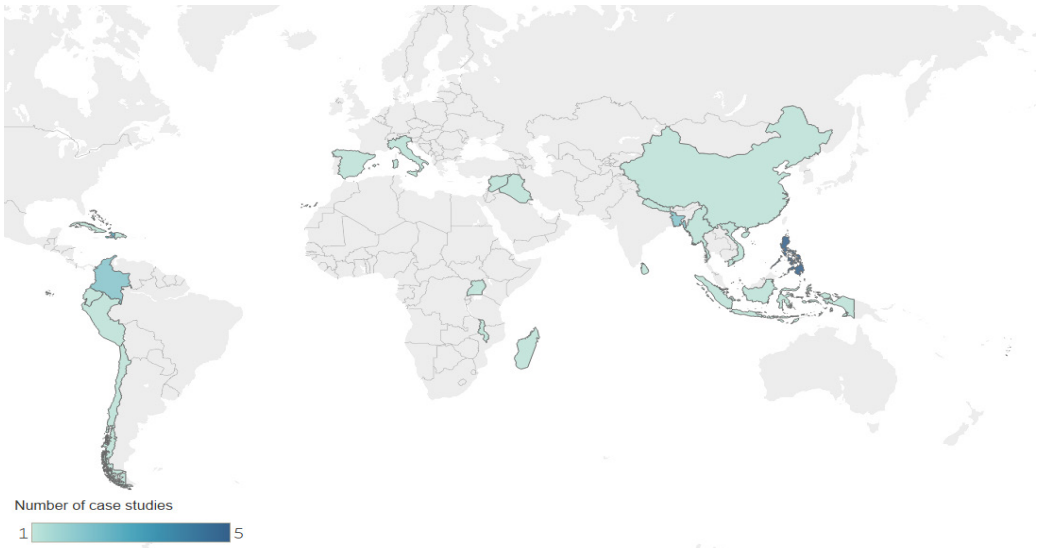
- Grenada Red Cross Society
- Malawi Red Cross Society
- Haitian Red Cross
- Nepal Red Cross Society
- Cuban Red Cross
- Colombian Red Cross
- Dominican Republic Red Cross
- Spanish Red Cross
- Ecuadorian Red Cross
- Syrian Arab Red Crescent
- German Red Cross
- Luxembourg Red Cross
- British Red Cross
- Tonga Red Cross Society
- Bahamas Red Cross
- French Red Cross
- Australian Red Cross

ACRONYMS

- **AGD** Age, Gender and Diversity
- **AAP** Accountability to Affected Populations
- **ABA** Area Based Approach
- **BBS** Build Back Safer
- **CBI** Cash-Based Interventions
- **CCFS** Conditional Cash for Shelter
- **CFW** Cash-for-Work
- **CCCM** Camp Coordination & Camp Management
- **CMRU** Municipal Urban Resilience Cells
- **DMU** Disaster Management Unit
- **DRR** Disaster Risk Reduction
- **EVI** Extremely Vulnerable Individuals
- **GBV** Gender-Based Violence
- **HLP** Housing, Land and Property
- **HRP** Humanitarian Response Plan
- **IDP** Internally Displaced Person
- **IEC** Information, Education, & Communication
- **IM** Information Management
- **INGO** International Non-Governmental Organization
- **IP** Implementing Partner
- **MoU** Memorandum of Understanding
- **M&E** Monitoring and Evaluation
- **NFI** Non-Food Item(s)
- **NGO** Non-Governmental Organization
- **PDM** Post-Distribution Monitoring
- **SAG** Strategic Advisory Group
- **SOP** Standard Operating Procedures
- **TPM** Third Party Monitoring
- **UN** United Nations
- **WASH** Water, Sanitation and Hygiene

INDEX OF CASE STUDIES/OVERVIEWS BY COUNTRY PUBLISHED IN SHELTER PROJECTS (2008-2022)



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INTRODUCTION

ABOUT THIS BOOK

This Shelter Projects RCRC Special Edition contains 33 case studies of both humanitarian and recovery shelter responses, written by practitioners who have been involved in each of these.

It also includes two case studies related to the coordination of shelter response and housing reconstruction, written by the coordination teams themselves. These case studies and overviews are completed by an opinion piece on the development of standard specifications of the humanitarian tarpaulin.

The case studies in this book deal with projects implemented by many different Red Cross Red Crescent National Societies, the IFRC and ICRC. In order to allow strengths and weaknesses of projects to be openly shared, the case studies are not directly attributed to single members yet acknowledged in the dedicated section.

Since projects are implemented in diverse and challenging conditions, case studies illustrate both good practices and shortcomings. From each one, there are lessons that can be learned, and aspects that may be repeated or avoided. These are highlighted at the end of each case study. The objective of this publication has always been to encourage the learning process, advocate for following good practices and avoid "re-inventing the wheel".

CASE STUDY SELECTION

The case studies were selected using the following criteria:

- The shelter project was a) wholly completed or, if not, b) solid learning elements could be gained from the project implementation. The oldest project is of 2006 and most recent 2022.
- Given the scale of shelter needs every year, case studies must have had large-scale impacts. The projects should have a benchmark of assisting at least 500 families. Discontinued trials, pilot projects or design concepts were not included.
- Most of the project must be implemented within the first year following a natural disaster, or over longer time frames for recovery processes. For conflict, chronic emergencies and return processes, longer time scales were considered.
- Accurate project information is available from staff or individuals involved in the implementation. In most cases, content is provided directly by project field staff and programme managers.
- The case studies illustrate a diversity of approaches to meet shelter and settlements needs, as providing shelter is more than simply designing architecturally impressive structures or constructing individual houses. For instance, some case study focus on legal support to protect people with insecure tenure status during the response to an earthquake or flood.
- After a pre-selection based on the above criteria, each case study was further peer-reviewed by members of the Shelter Projects Working Group. The review enabled an additional level of critical analysis of the strengths and weakness of each project, as well as pointed out what lessons to highlight and what aspects to expand upon, ultimately increasing the overall quality of each case study.

NOTE ON TERMINOLOGY

There has been much debate around terminology used in the shelter sector. In particular, there have been issues in different definitions used for different phases of assistance. For example, the terms "emergency shelter", "transitional shelter", "temporary shelter", "semi-permanent shelter" and "incremental shelter" have all been used to define both the types of shelter and the processes used. In this book we use the terms used in-country, which may vary.

Contribute at www.shelterprojects.org

Case studies

© Xavier Genot

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 organisa-

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

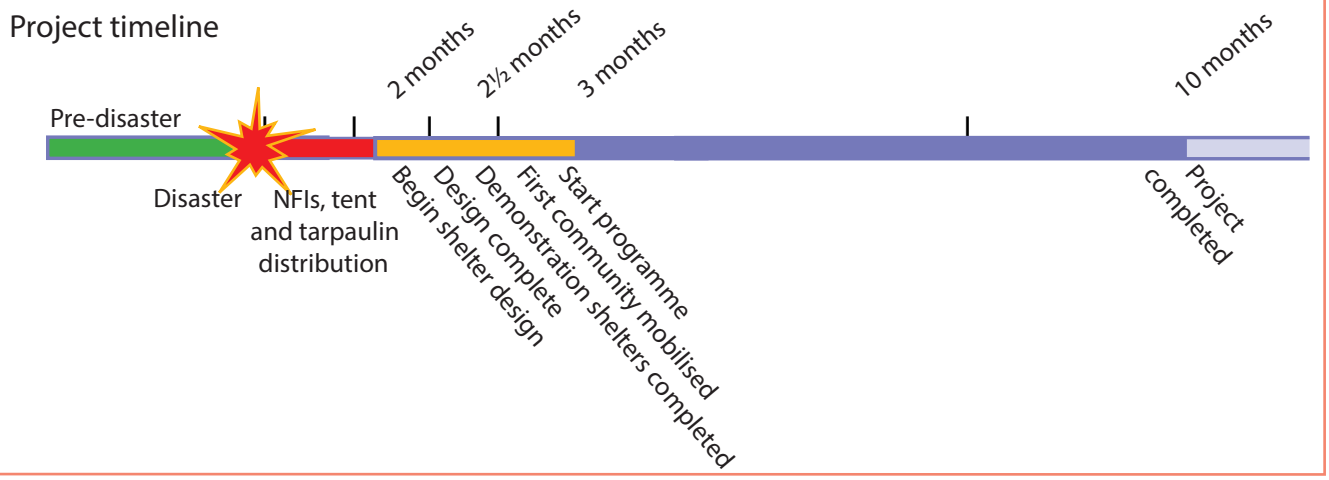
Occupancy rate on handover:
- 100% (according to an independent student survey)

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

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

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

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

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

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

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

× 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.

× 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.

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

× 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

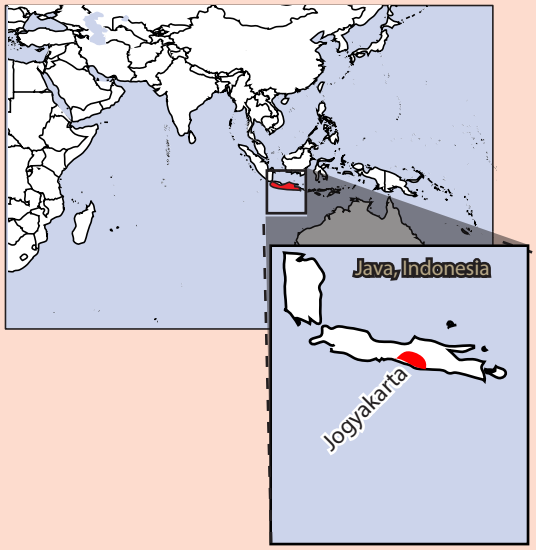
Case study: Emergency and transitional shelter

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



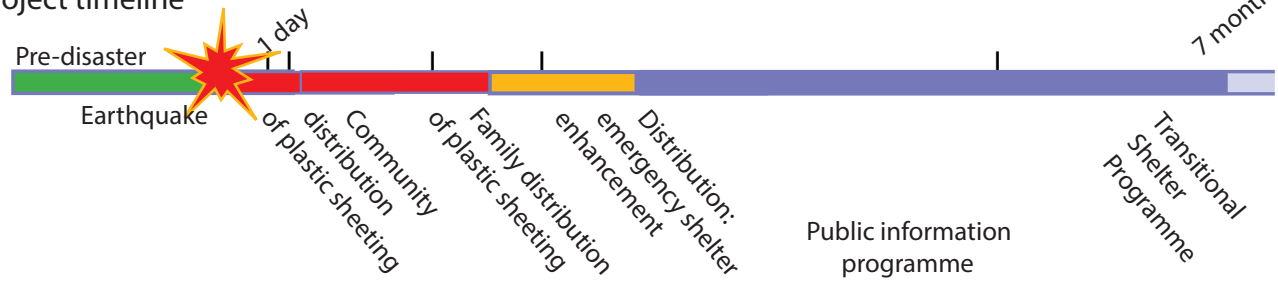
Occupancy rate on handover:
- External evaluation shows close to 100% usage and correct targeting

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

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

✓ As early capacity was limited, a partial distribution programme across a large affected region followed by a 100% distribution infill program worked very well.

✓ The delivery speed of broad-based tarpaulin distribution effectively avoided the creation of IDP camps.

✓ By communities' request, distributions were delivered to the community level as opposed to individuals, with communities taking responsibility for internal distribution.

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

✓ Procurement of locally manufactured woven bamboo wall sheet was far more successful than conventional tender-based procurement methods.

✓ Running the entire programme through local partners worked extremely well.

× The shelter enhancement programme could possibly have been improved by providing flooring and wall framing material (not just wall cladding and sleeping mats).

× Ongoing support and expansion of successful transitional shelter projects would have been desirable and useful.

× 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 affected community;providing minimalist but strategic and incremental inputs into the communities' natural path from inadequate to adequate 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.

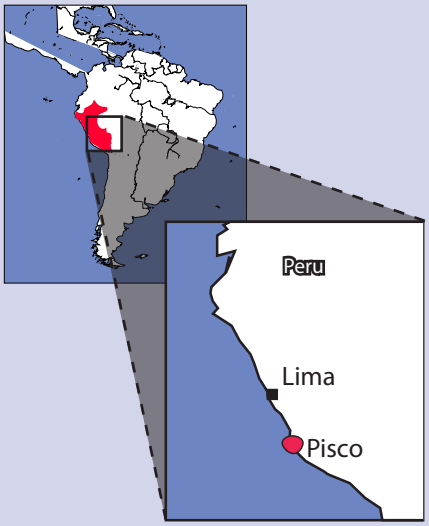
C.2 Peru - 2007- Earthquake

Overview of the response

Summary

On 15 August 2007 there were two major earthquakes separated by nearly one minute. This was followed by a threemetre tsunami that caused some damage along the coastline. The earthquake killed nearly 600 people and injured more than 1,800. Some 48,000 houses were destroyed and a further 45,000 were rendered uninhabitable. In total, 140,000 households were affected. The majority of the affected population lived in towns.

The three case studies included here are responses by non-governmental organisations. One rapidly distributed construction materials using existing community structures, one built shelters providing some cash for work on the shelters and one used contractors to build shelters with the shelter owners. All of these projects worked with those who already had land.



Earthquake location

The area that was most affected is situated in a desert area with high temperature variations and little or no rainfall. In the more mountainous areas that were affected, cold is a severe problem.

Access was significantly easier in the towns in the coastal area, and responses were correspondingly swifter and larger. Much of the response in the first weeks was from people within the country itself.

Response

The major focus of most responses was to support people to build on their own land. This left gaps for the landless who did not qualify for many assistance programmes. Some programmes provided shelter materials for those without land that could be later transported as land became available.

The shelter responses included:

- distribution of blankets, plastic sheeting, cooksets and other shelter items;
- distribution of tents (one organisation purchased over 13,000 tents);
- support for the construction of standard shelters through cash for work, training and carpenters; and
- support with rubble clearance, in coordination with the local authorities.

Government response

The government of Peru based their response on a plan developed by the Colombian government. Actions were divided into four stages (emergency, transition, reconstruction, termination), each with its own set-up and responsibilities. After eight months, the transition stage gave way to the reconstruction stage.

Fifteen days after the earthquake, the Central Peruvian Government created a reconstruction agency called FORSUR, which had a mandate to rebuild houses and infrastructure.

Five months after the earthquake, the Peruvian Ministry of Housing began distributing bonds for approximately US$ 2,000 to affected families who had land titles to their properties. These bonds were to help people purchase materials to rebuild homes. Families without land titles did not have access to this state programme.

Rubble

By January 2008, only one quarter of the rubble (nearly 2.1 million cubic metres of the total 7.8 million cubic metres) had been removed. Rubble removal did not advance as quickly in rural regions further inland.

Some programmes supported people to build lightweight shelters so that landless people could benefit from assistance programmes.

Some people with no other options found short-term shelter immediately after the earthquake in tents and camps.

C.3 Peru - 2007 - Earthquake

Case study: Community mobilisation

Project type:
- Community mobilisation
- Flexible package of shelter construction materials
- Self-build
- Training manual distributed

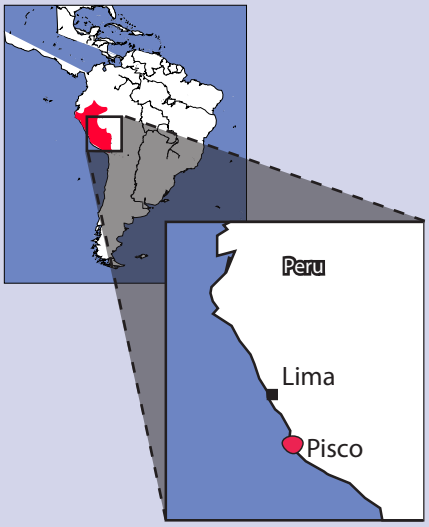
Disaster:
- Peru earthquake, 15 August 2007

No. of houses damaged:
- Over 48,000 houses destroyed; 45,000 uninhabitable

Project target population:
- 726 families
- Just under 1% of the earthquake-affected population

Occupancy rate on handover:
- Very high

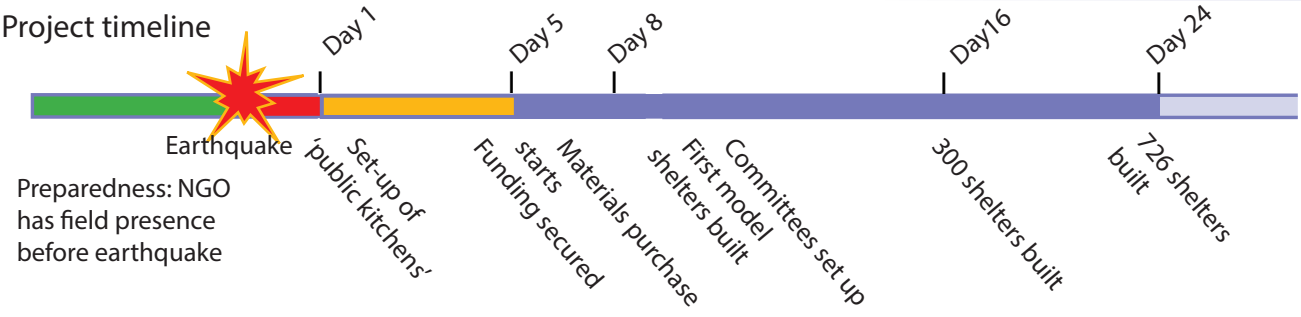
Shelter size
- Materials distributed to create 9m² of covered space per family (to be supplemented by reclaimed materials)



Summary

Following the earthquake of 15 August 2007 near Pisco (Peru) a local NGO set up 40 neighbourhood 'public kitchens'. These became a means to mobilise communities to distribute reusable construction materials for those most in need. Materials were selected that would have a longer lifetime than just the emergency phase. Technical support was provided in the form of a manual that had been written before the earthquake, and a carpenter who provided technical support where it was most needed. The speed of the response was possible due to the presence of the implementing NGO on the ground prior to the emergency.

Project timeline



Strengths and weaknesses

✓ Very quick response appropriate to the context allowed people to soon return to income-generating activities.

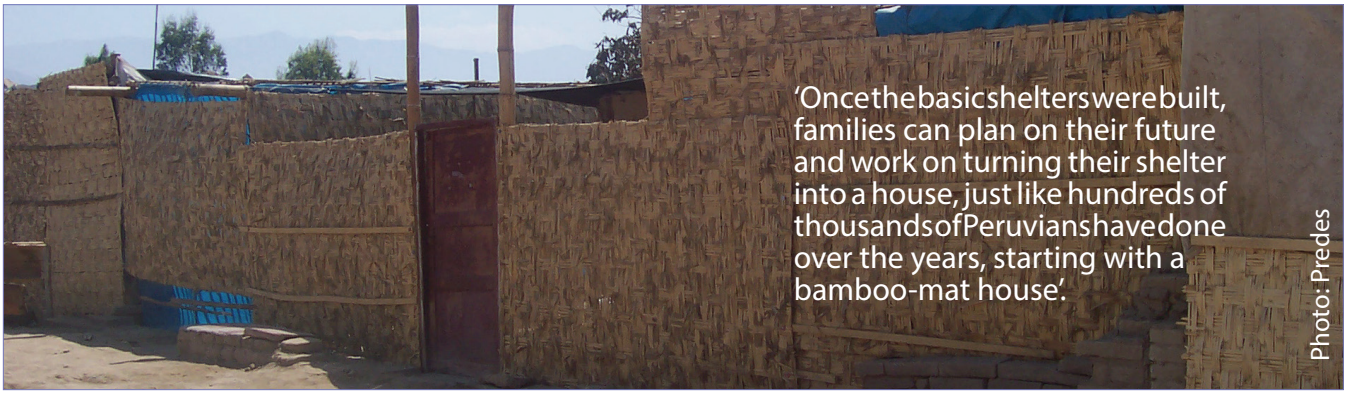
✓ By creating more solid shelters, there was greater safety against burglars than would have been provided by lighter-weight shelters.

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

✓ Using community structures that were not initially designed to manage a shelter project can lead to a fast and effective response (Note: Collective feeding centres may not be advisable in all circumstances.)

× Bulk local purchase of materials can lead to them becoming scare and cause price rises. The project stopped when mats became scarce in the market.

× Technical support provided to families was limited.



Selection of beneficiaries

A public kitchen was the basis of the project management. In the first stage it had 40 groups, each with a designated responsible person. Most of the groups were led by women. They became the centre of all project activities and organised frequent assemblies to discuss all aspects of the project and take decisions. The whole project was conducted in close coordination with the municipality.

Within days of the earthquake, the NGO was able to present the project ideas to the communities via the 'kitchen group'. Most opted into the project, while some decided to wait for better offers. Some of those who opted out were still waiting for support eight months later.

The beneficiaries were chosen based on a list of criteria, including: loss of shelter, family situation, vulnerability, poverty, residency in the area, and willingness to build the structure.

Every selection was to be approved by the assembly of the kitchen group, which was something like a 'block committee'.

Technical solutions

In the coastal regions of Peru there is a long tradition of constructing semi-permanent shelters using bamboo. In the past, immigrants to Lima and other cities have established themselves with simple structures, leading to the step-by-step construction of a formal house.

While the bamboo mats are not considered a formal construction material, the climate allows people to live in such structures. Many of the disaster-affected people had lived in structures made from bamboo at some time in their lives.

The project was based on community soup kitchens as a starting point for social mobilisation.

Materials distributed

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 2.5" diameter, 3m long	11 poles
Timber for fixing the mats	7 beams
Reinforced plastic sheet	3m x 15m
Nails 2", 3" and 4"	2.2 kg
Wire	1 kg
Hinges	3 units
Lock	1 units

Implementation

Every family was responsible for the construction of their shelter. This allowed them to make adaptations dependent on available space, using materials that they had rescued.

The preselected beneficiaries were visited by the coordinators of the community kitchens together with somebody from the NGO or the municipality to check whether they complied with the following criteria:

- People had to be occupiers of a house on a plot of a land before the earthquake.
- Their plot had to be cleared of debris in order to place the shelter on it.
- One family member had received instructions on how to build and had participated in the construction of a model structure.

Beneficiaries were first given wooden poles and received the mats only when the structure was properly assembled. Materials were distributed by the block coordinators. Most families ended up digging a new latrine on their property.

Transporting the mats for a shelter to site

Logistics and materials

The wooden poles and woven bamboo mats were purchased from local production in the informal market. Plastic sheeting and hardware elements (nails, hinges, etc.) were centrally purchased.

The materials were shipped to San José, where the municipality provided the football stadium and another building as storage areas.

The trucks were unloaded by the potential beneficiaries. The implementing NGO organized and was responsible for the warehouse management.

The materials were given to the beneficiaries when they presented vouchers issued by the coordinators.

Building with these materials costs about 25% of what some other local organisations spent on their provisional shelters made of timber or low-grade galvanized sheeting. However, the local market had a limited capacity to deliver bamboo mats - an issue which, in the end, led to the ending of the project.

Family shelter built during the project

Making a basic shelter

C.4 Peru - 2007 - Earthquake

Case study: Self-build transitional shelters

Project type:
- Transitional shelter construction
- Self-build
- Rubble removal

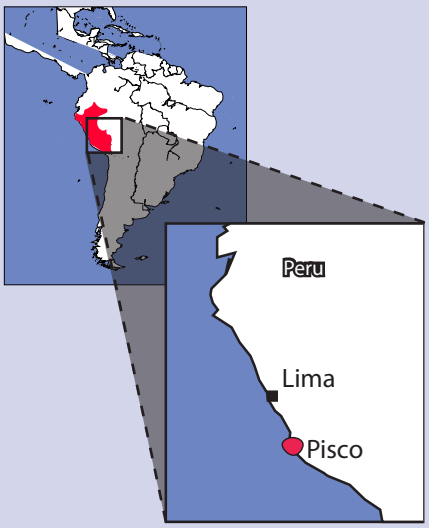
Disaster:
- Peru earthquake, 15 August 2007

No. of houses damaged:
- Over 48,000 houses destroyed; 45,000 uninhabitable

Project target population:
- 706 families (3500 people)
- Just under 1% of the earthquake-affected population

Occupancy rate on handover:
- Very high

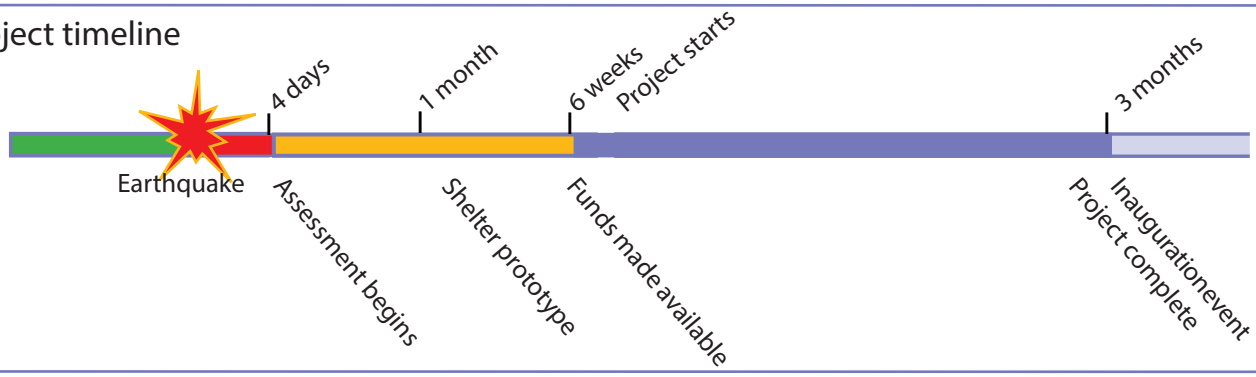
Shelter size
- 18m^2 covered space per family



Summary

An international NGO with no pre-disaster presence in the area implemented a programme to build emergency shelters made from reed mats, plastic sheeting, cement and wooden poles. The project was part of a larger programme that put particular emphasis on livelihoods for the affected population. In addition, it integrated water and sanitation interventions into the shelter programme.

Project timeline



Strengths and weaknesses

✓ The project paid special attention to the potential of shelter-related cash-for-work activities to speed up livelihoods recovery.

✓ Materials were procured through local suppliers, ensuring that cash remainied in the regional economy.

✓ Families were able to preserve materials for reconstruction and were given materials that they would be able to reuse.

✓ The project was integrated with sanitation and water supply projects.

- By directly implementing the project, significant amounts of time were required to manage the project and its logisitcs.

× It was difficult to procure the materials (woven mats and timber poles) locally. They had to be imported by suppliers from other parts of the country. The competition in the market from the demand and from organisations aiming to assist led to local price rises that affected the disaster-affected communities.

Rubble clearance

Fabricating doors

Selection of beneficiaries

Community leaders were initially requested to identify beneficiaries. These beneficiary lists were validated by the field assessment team, including interviews to validate the selection of each family. Lastly, a community meeting was held to establish who was to be included in the programme.

Most families had no formal land title, so shelters had to be easy to dismantle and remove if required.

Technical solutions

The shelter provided had an area of 18 m^2, enough to host a family of five. The shelter area was chosen based on Sphere indicators. The shelter itself consisted of a timber pole-framed structure with a soil-cement mix as flooring. Plastic sheeting covered the timber structure and woven reed mats were placed on top of the plastic sheeting to increase insulation and durability. Some shelters incorporated reclaimed materials, particularly mud blocks and doors. However, higher-value reclaimed materials, such as timber beams, were often stored by families to be used in the future construction of permanent housing.

The basic shelter design was arrived at by asking three carpenters in an affected community to build a sample shelter. Members of the community vetted the shelter design and a pilot project was then implemented. The shelter design was modified during the pilot to improve labour productivity and efficiency in the use of construction materials. It was expected that the shelter materials would be later reused in the construction of adobe houses (e.g. plastic sheeting used as a water barrier in the clay roof) or that the shelter as a whole would be reused as a kitchen.

Implementation

This shelter project was part of a programme that included shelter, cash for work, sanitation (where destroyed), small grants for businesses and transitional classrooms for schools. The cash-for-work project included debris removal (employing 100 women for two months) and payment for families who could not build for themselves. The sanitation project included the repair of destroyed latrines.

The project was implemented by a team consisting of one project manager and a team of ten final-year engineering student volunteers, each responsible for the shelters of around 65 families.

The project was conducted in close consultation with the local authorities. Before distribution of materials could take place, each family had to clear the debris from their damaged house into the street.

Making the concrete floor slab

The mayor had the responsibility of removing the debris from the streets in trucks. The programmes supported the authorities through cash for work for debris clearance.

Logistics and materials

As the project continued, the supply of timber poles and mats increasingly became a problem, as a result of large-scale purchasing by organisations and local purchasing by affected communities. This led to local price increases. All purchasing took place through local suppliers, who brought timber in from elsewhere in the country.

Timber poles proved easier to procure than sawn timber and the local population was accustomed to building with them.

Distributing cement

The materials were delivered to a central location; homeowners were responsible for transporting the materials for the shorter distances to their plots. The community was responsible for providing support to those members of the community unable to transport their materials.

Materials for one shelter

Material	Quantity
Wooden round poles 10cm x 2.5m	7
Wooden round poles 4cm x 6m	15
Plastic sheeting (m^2)	60
Woven reed mats 3m x 2m	9
Portland 1 cement 42.5kg bag	2
Construction wire	5kg
Hinges 1.5"	3
Nails 1.5"	0.5kg
Skilled labour (hours)	2.6
Unskilled labour (hours)	4

Round poles, not sawn timber, were used

Shelters under construction

C.5 Peru - 2007 - Earthquake

Case study: Prefabricated transitional shelters

Project type:
- Transitional shelter construction
- Shelter components prefabricated by contractors
- Shelters assembled by homeowners

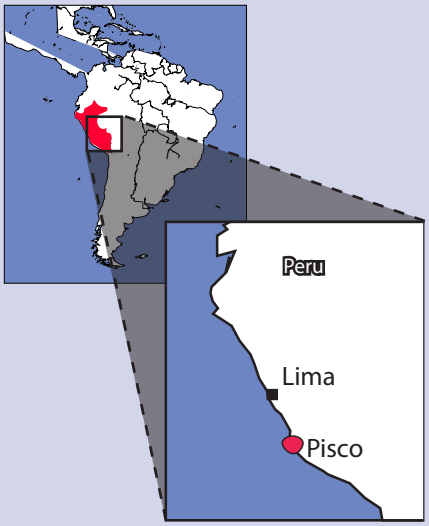
Disaster:
- Peru earthquake, 15 August 2007

No. of houses damaged:
- Over 48,000 houses destroyed; 45,000 uninhabitable

Project target population:
- 1,900 families in five selected communities
- On project completion, an additional 120 shelters were requested by the government to help house those left landless by the earthquake.

Occupancy rate on handover:
- Very high

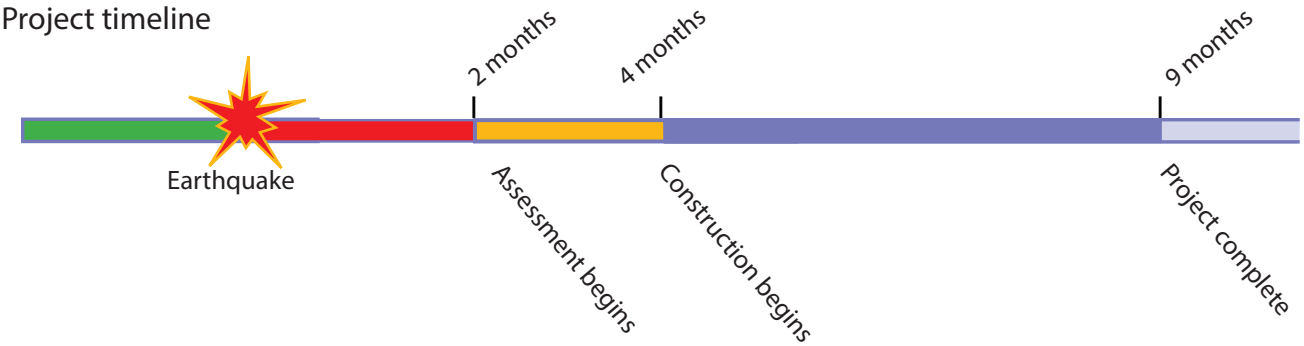
Shelter size
- Materials distributed to create 18m^2 covered space per family.



Summary

As part of a larger post-earthquake programme, an international organisation hired a contractor to provide materials, equipment, tools and skilled tradesmen for the prefabrication of 1900 shelters. The contractor was also responsible for training all volunteer labour as needed, but was not responsible for providing land. By prefabricating wall panels and window frames and cutting timber on site, the supplier was able to cut costs. Homeowners themselves assembled the shelters.

Project timeline



Strengths and weaknesses

✓ This project successfully used a contractor to build semi-permanent shelters for families, thereby passing on the challenges of procurement and logistics, as well as many of the risks of a construction project.

✓ Setting up local 'factories' to prefabricate components, reduced logistics and supply challenges, and the ensuing costs.

✓ The project was able to adapt to suggestions made for structural improvements to the shelter design, following an evaluation early on in the project.

- The construction approach required significant capacity on behalf of the contractor and constant monitoring by the humanitarian organisation. An ongoing dialogue between the humanitarian organisation and the contractor was essential.

- The project initially prepared all materials for a village before construction could begin. This was later adapted so that materials were prepared for only 20 houses at a time before construction began. This was more efficient and kept the community more motivated.

× This project took four months to begin.

Completed shelter built on the roof of a damaged house

Selection of beneficiaries

Communities were selected by analysing the gaps and noting that no other organisations were working in the areas. Families within communities were prioritised based on need and individual vulnerability.

Beneficiaries needed to prove ownership of land before qualifying for the project. The criteria were later relaxed so that those awaiting ownership certificates as the result of wills of deceased family members could qualify for the project without holding the formal land ownership certificates.

Families who were at risk and relocated from the 'no return zone' had to wait in temporary shelter on squatted allocated land for over nine months before they could be allocated land and qualify for a shelter.

Technical solutions

The shelter design was a rectangular, single-storey, 18m^2 (3m x 6m), wood-framed, shed-roofed building. The side covering was vertical, tongue-and-groove wood. Each panel was approximately 1cm thick and approximately 10cm wide. The shelter had one door and a large window on one long wall (at the front). The roof was a shed style made with lightweight, corrugated cement panels approximately 1m wide and about ½cm thick. The roof panels were long enough to run the full width of the roof. The flooring used pre-existing concrete slabs.

Each house took approximately eight hours to construct once the prefabricated materials were transported to the site. The idea was that all materials could be later reused.

All tools needed by the homeowner to build his/her shelter were supplied by the contractor and were left with the homeowner at the conclusion of the programme as a home maintenance tool kit.

Implementation

The initial contract was for 500 shelters. Costs rose 25% for subsequent shelters, due to local cost escalations.

The contractor set up a materials manufacturing 'factory' in each project area. At this site, the contractor's employees (using some local labour) cut, planed and finished the wall frame units. Only the contractor's employees used power tools.

Families were responsible for rubble removal, site cleaning and marking out the shelter location. If the old floor

The raw materials were prepared in workshops set up in the communities where shelters were to be built.

Completed shelter built on the roof of a damaged house

slab could not be reused, or there was no existing slab, the homeowner was required to pour one. In some cases homeowners made their floors after construction. Employees of the contractor and trained community members provided guidance and oversight for the mixing and pouring of concrete.

Homeowners transported the materials from the 'factory' to their home. They then installed the tongue-and-groove wall sheeting onto the six wall-framing panels. Company employees and trained community members then assembled the sided frames (two for the side walls and four for the front and back walls) with assistance from company advisors. Families nailed the structures together and added the doors and windows.

Quality Control

Supervision and quality control were done by the contractor's staff. The contractor had one engineer and one project manager (who supervised), and five skilled workers who cut the timber. The homeowners transported the prefabricated shelter materials and assembled them on site. The only carpentry skill that homeowners required was the ability to hammer a nail and follow connection directions.

Monitoring took place through a team of approximately 30 volunteers, of whom 15 were active in the field on a daily basis. Of these, five or six worked with the contractor on a daily basis and mobilised community volunteers. The rest worked in the community, helping with registration, land rights and other emerging issues.

Safety and Liability

The contractor maintained control of the cutting and assembly yard and its employees, and controlled access to hazardous places. Since the contractor owned, controlled and supervised the operation they were the main liable entity.

Each community established a safety committee that controlled access to the cutting and framing site, as well as the assembly sites. In general, community activities were provided for youth and children to keep them entertained while their families were building their shelters.

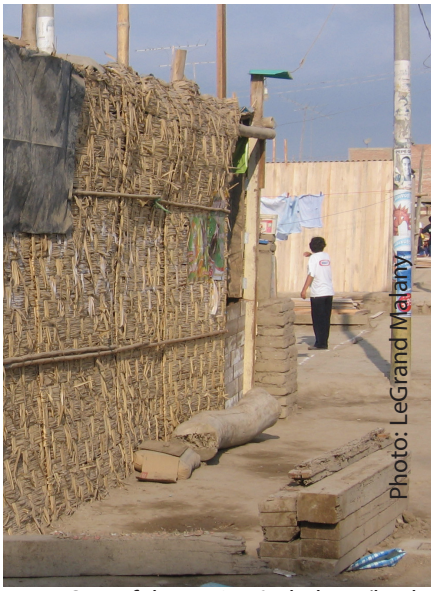
Logistics

By delivering basic raw materials (rough timber, tongue-and-groove wall sheeting and corrugated iron, cement panels, nails, etc.) to the building site, logistics requirements were reduced. Warehousing was also reduced, since non-value-added raw materials took up less space than fabricated material components. Component costs were reduced by directly employing people on site to fabricate them. These people did this work as only a part of their salary. Everything was fabricated as needed on site and according to specification. This approach also provided a 'just-in-time' inventory system, but required the hiring of additional skilled staff by the contractor.

Bill of quantities

Item	Quantity
Wood (tongue and groove) 2.48m	68
Wood (tongue and groove) 2.3m	43
Wood (tongue and groove) 42cm	10
Wood (tongue and groove) 32cm	16
Wood (tongue and groove) 1.01m	16
Wood (tongue and groove) 2.48m to 2.30m	70
Nails	1kg
Wood strips 3cm x 6cm x 3m	2
Wall plates 6cm x 6cm x 2.5m	3
Hinge, steel 2.5"	7
Corrugated roofing 3m x 1m	6 sheets
Instructional manual	1
Plastic tape 1cm x 15cm	8
Screws	3

One toolkit was distributed per group of workers.



One of the project's shelters (background) and a shelter walled with reed mats (foreground)

B.25 Uganda - 2007 - Slow onset floods

Case study: Materials and public information

Full case study

Country:
Uganda - Katakwi and Amuria districts

Disaster:
Floods

Disaster date:
Between July and mid September 2007

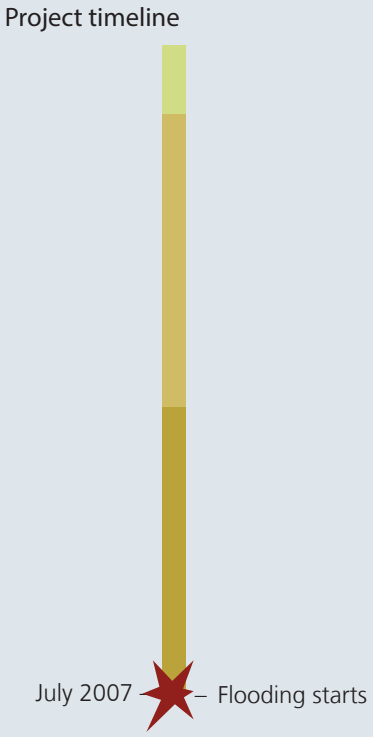
No of houses damaged:
More than 20,000 households were severely affected

No of people displaced:
58,000 people

Project target population:
100.000 families located in 96 villages

Occupancy rate on handover:
7458 shelter completed

Shelter size:
Traditional round hut 12m^2 with veranda



Summary

10,000 plastic sheets were distributed during the relief phase. These were for temporary roofing materials in the absence of grass, and were also used to prevent rain from destroying walls and moulded bricks.

To ensure that communities rebuilt more flood resistant shelters, both communal and individual tool kits were distributed. These were combined with a large scale public information program on building back safer.

As the traditional building season was three months after the floods, during the dry season, the project had components of water, sanitation and agriculture. The approach taken was to work through community mobilisation.

Strengths and Weaknesses

✓ The programme worked in many sectors including distribution, water and sanitation and health activities. The assessment included a multi-sectoral team

✓ A shelter specialist was rapidly deployed to support programmes.

✓ The emergency Items arrived within 2-3 weeks of the floods. This was possible because there was an existing emergency stockpile in Nairobi.

✓ The project used large scale public information and participation to empower communities.

✓ A simple technical solution was used, based on simple improvements to a traditional construction.

✓ Different organisations operated in different geographical areas. This helped to avoid duplication.

✓ A combination of communal kits and individual kits helped the organisation to target more families.

✓ The international organisation worked with a national partner that was strong in community mobilisation.

× The recovery process was slow due to bad weather.

× The government had already started housing programs (concrete blocks and iron sheeting) which were often too expensive for the affected population.

× There was some resistance towards earth and thatch buildings.

× The national partner organisation had a lack of experience in shelter projects.

A boy walks past a flooded house
Photo: Jacob Dall

View of a village after the floods showing the traditional circular shelters.
Photo: IFRC

Before the disaster

For 20 years, Katakwi and Amuria districts of Eastern Uganda were controlled by the Lords Resistance Army and affected by Karamajong raids from the North. Although security had improved as a result of presence of the army and police forces, many people remained afraid, preferring to sleep at night in clusters in camps rather than returning to their family plots.

The traditional local shelter design is a round mud hut with a thatched roof.

The majority of the families are engaged in farming and other small businesses. The main crops are sorghum and cassava, but the crops had not been harvested before the floods struck.

After the disaster

Heavy rains in the East of Uganda caused slow-onset floods that damaged houses in the camps and destroyed crops in the fields.

Programme overview

To reduce the impact of floods in the region, the program focused on improved prevention and preparedness. It also used local building knowledge to improve the houses.

The supported shelter programmes improved awareness on how to rebuild more safely as well as providing tools and grants.

Selection of beneficiaries

Through coordination meetings, the area was split geographically between organisations.

The shelter project focused on twenty camps and promoted community awareness, participation and technical awareness. The project combined interventions in many different sectors such as camp planning and water and sanitation.

The programme paid less attention to individual needs. It focussed instead on information sharing and the distribution of communal tools. The tools could be used for shelter, road works, agriculture, and other uses.

Implementation

- 10,000 tarpaulins and 2000 communal kits were distributed
- Technical awareness posters were distributed
- Prototypes shelters were erected with the community

The project trained sixteen members of the partner organisation to support 224 community volunteers. These volunteers were active within camps.

Affected families themselves built the shelters whilst volunteers monitored the construction.

Technical solutions

In the initial emergency phase, plastic sheeting was distributed along with other materials.

A list of necessary but lacking tools was drawn up with the community. These would be required to help families to reconstruct their traditional earth dwellings.

Information, education and communication materials such as posters were produced. These showed improved earth construction, and illustrated the following details to protect the house from flooding or termites:

- The house and foundations should be elevated.
- Foundations should be built with a large plinth beam of wattle and daub. This would need to be repaired by house owners after each small flood
- A water proof barrier should be put the foundations to protect the walls and floors which are made of adobe blocks.
- Walls made of sun dried mud blocks should be conical in shape
- Proper materials to build more resistant earth blocks should be identified. Examples are clay from termite hills, and using mud mixed with cow dung to protect against termites.
- Wood in direct contact with the earth should be trated to protect it from termites.

Material lists

The communal kit contained: a wheelbarrow, a hammer, a wood saw, a claw hammer, a machete, a hoe, an axe, a pick axe, a sharpening tool, a tape measure, a spirit level, a dumpy level and a first aid kit.

The household kit contained: a sickle, brick making moulds, damp proof membrane (polythene sheeting), anti termite treatment for wood, sisal roll, nails, a 20 litre Jerry can, a medium trowel, a window shutter, a door shutter, and wire.

House under construction with improved plinth
Photo: IFRC

Public information images on proper site planning with space between buildings
Image credit: IFRC

Images from public information posters on building a flood resistant structure: (1) elevate the plinth and put a plastic sheet under the floor (2) fold the plastic sheet over the ground level ring beam (3) build conical walls (4) thatch the roof, render the walls with mud and elevate the area around the house to protect it from flooding
Image credit: IFRC

B.2 Bangladesh - 2007 - Cyclone Sidr

Overview

Summary

Cyclone Sidr hit the south-western coast of Bangladesh during the evening of November 15th 2007. Cyclone Sidr destroyed over 450,000 houses across 30 districts, through wind damage, flooding and tidal surge. More than 50 percent of households in all of the six worst affected districts were either damaged or destroyed.

Most families built some form of shelter after four weeks with the notable exception of the most vulnerable members of the community. Families living outside the cyclone barriers had the greatest diffculties.

More than 160 local and international organisations were involved in the shelter response. Programmes included distribution of basic shelter items, shelter construction and training in safer construction.

Background

Bangladesh is one of the world's poorest and most densely populated countries. Poverty often compels families to settle in areas that are particularly disaster prone, such as coastal areas and lands newly emerged from riverbeds.

Most of the delta of South Bangladesh is cultivated wetlands. Many rivers cross the area, changing constantly and creating land insecurity. Some of the population lives in improvised or moveable shelters, mostly on land provided by the government on informally occupied land.

Since independence in 1971, the country had endured almost 200 disaster events – cyclones, storm surges, floods, tornadoes, earthquakes, droughts and other calamities – causing more than 500,000 deaths and leaving a serious impact on quality of life, livelihoods and the economy.

For simple structures, owners of the house are usually capable of doing the construction work themselves. Heavy manual labour or other assistance is required, they will solicit the help of a daily labourers, called 'krishan'. If woodwork is involved, they will hire professional carpenters.

Coping mechanisms

Four weeks after Cyclone Sidr passed, most affected people had found themselves some kind of temporary shelter.

People, whose houses were completely destroyed, built temporary shelter using scrap material that they could find. The living conditions were poor and did not provide enough shelter against rain or cold. Other people found refuge in relatives' houses.

For those, whose house was damaged, they repaired their house as much as possible, re-using the materials of their previous house. In some cases they used some new materials. The stability and general living quality of these houses was generally lower than it had been before the cyclone.

In all cases people were more vulnerable for future winds, floods or tidal surges than they had been before the cyclone. Many houses needed to be replaced urgently, or upgraded before the start of the next cyclone season.

Many affected families had expressed a clear will to continue on the land where they were previously living, even if the land was at a risk of disappearing.

The response

In the response, several approaches were made to support families to find shelter:

- general distribution of blankets and household items
- distribution of emergency shelter covering items such as tarpaulins, and tents
- shelter assistance packages including corrugated iron and tool kits
- transitional shelter programs. to construct shelters or core houses.
- Shelter training programs to improve construction quality and awareness of hazards to housing.

There were also multiple programmes distributing cash and some organisations advocating for improved access to safe land for the most vulnerable families.

Emergency shelter built by a cyclone affected family
Photo: Dave Hoggkiss

Families rapidly built emergency shelters, using materials that they could recover, that they could buy or that they received. With time many were able to improve their shelters, but the underlying vulnerability to flooding and cyclones remained
Photos: Dave Hodgkin

When families could find land and materials
they built their own shelters.
As time passed these became more permanent,
but many still would not survive another cyclone
Photos: Dave Hodgkin

B.3 Bangladesh - 2007 - Cyclone Sidr

Case study: Core shelter, repair and awareness

Full case study

Country:
Bangladesh

Disaster:
Cyclone Sidr

Disaster date:
November 15 2007

Number of houses damaged:
458,429 completely destroyed.
Thousands more damaged.

Project target population:
1,250 core shelter units.
5000 households supported with safe shelter awareness / repair.

Occupancy rate on handover:
High.

Shelter size:
15m²

Materials Cost per shelter:
Core shelters- 1600USD.
Including direct costs.
Training - 1 USD per family
Toolkit - 30 USD
Cash grant - 75USD per family

Project timeline

Summary
To meet the housing needs of 1250 cyclone affected families, a programme working in many sectors of support was conducted. Families were identified through a detailed but slow transparent validation process. Families received a house, toolkits, cash and training.

Strengths and Weaknesses

✓ Several approaches were used in the same programme.
✓ Core shelter construction project was outsourced to consultants and contractors to respond to the scale of operation, time constraints, staffing and construction quality
✓ Use of consultants for monitoring reduced the need to recruit more project staff.
✓ Methodologies developed in this programme were documented so that they could be used elsewhere.
✓ Assessments required several visits to affected houses. This made for accurate selection of families but it delayed the actual delivery of support.
✓ A cash grant program was developed, including several steps and procedures to ensure transparency and security.
× Each household was visited by several assessment teams for general survey and other sectoral technical verification (shelter, watsan, livelihood) that sometimes created confusion and gave the wrong impression to beneficiaries.
× It would have been better to include a shelter specialist in the general survey to reduce the lengthy response time.
× The cash grant distribution process was delayed due to the slow functioning of the government banking system
× Though the beneficiary selection process was intensive and accurate it took much more time than expected.
× The project provided reduced support for families for whom land could not be found.
- The amount of shelter support provided was limited by funding, targeting of communities inside 12 clusters, human resources and operational timeframes.
- Successful implementation of large scale construction projects requires good team work from bottom to the upper lever of management.
- As procurement is the key to the success of the shelter project, good collaboration between the field offices and the country level-procurement department is required.

The core shelters were built by contractors and selection of families was through a lengthy transparent process
Left shows the frame of the structure
Photos: Xavier Génot, IFRC

The disaster

Cyclone Sidr hit the south-western coast of Bangladesh during the evening of November 15th 2007. See page 43 for more on the overall response and context.

Programme overview

The shelter programme had five components. These were:

- Core shelter construction
- Training on safe shelter awareness and repair
- Distribution of a toolkit
- Distributions of cash grants
- Technical advice and support for shelter repair.

The approach adopted was to use contractors to build core shelters for the 1250 most vulnerable families. These families were additionally supported through training, cash grants and a toolkit to build core shelter extensions.

Selection of beneficiaries

The organisation visited around 70 villages in 4 districts. Following this, 33 communities were selected. Approximately 11,000 households were assessed by door-to-door visits to identify needs, and 5,000 households were identified as being in need of shelter support

A second door-to-door assessment then categorized the damage according to seven categories:

- Categories 1,2: non repairable
- Categories 3,4: severe damage
- Categories 5,6: light damage
- Category 7: no damage

1,250 families were identified as having houses that were destroyed or non-repairable. Where too many beneficiaries were eligible for core shelter, a social ranking (family and economic vulnerabilities) was used to prioritize families.

When families were landless, or if their land was in an unsafe location, the teams with the community committee representatives tried to support them to acquire new land. When land could not be identified, families did not receive shelters but did receive the toolkits, cash and the training components of the programme.

After technical verification and social ranking processes, lists were finalised. Lists were validated by community committees and then approved by a regional committee. The list was then publicly posted, and time was given for complaints.

Core shelter

The design of the core shelter was based on the wind-resistant shelter developed after the 1997 cyclone in the Chittagong area. As a result of limited land availability, the covered area was reduced to 15m².

The core shelter was built on a mud plinth to protect from flooding. It was anchored to the soil by the 8 reinforced concrete columns with 5 feet deep foundations. The structure was braced, had a six-course brick base and a steel truss roof. The roof was connected to the structure through rigid connections to the columns. Roofing tin sheets were fixed according to cyclone resistance techniques.

The height of the core shelter allowed families to extend in all directions. It was designed with a wooden ring beam two metres from the ground so that a mezzanine floor could be built for emergency use during flooding and for safe storage of goods.

The walls were made from woven bamboo mats. These were found to be cost-effective, environmentally friendly and allowed families to replace or repair them.

Sanitation needs were addressed by other parts of the programme.

Implementation

For a test case after 6 weeks, five sample shelters were built with pit latrines and one pond sand filter. They were built following community consultations and a field survey for health and livelihood program development.

As a result of the technical review of the sample shelter, there was a need to reconsider some of the materials and techniques brought to the beneficiaries. To respond to time, quality and logistic challenges, it was decided to outsource construction to a contractor.

A consultant was hired for finalisation of core shelter design and technical monitoring during the construction.

Organisation

The operation established community committees in each of the targeted villages. These were elected by the communities, and had between 11 and 16 members. It also established management structures that tied together operations in shelter, health, water and sanitation, livelihoods, disaster risk reduction, capacity building and psychosocial support.

Contractors

Following tendering, the organisation took six weeks to awarding the contract. After contract signature, the contractor had 1 month for mobilization and construction of model shelters, and penalties for late completion. An advance of 10% was paid to the contractor. A percentage was withheld from the final payment to provide liability coverage for a one year period.

To ensure a good control of work progress, technical meetings were organized for each district fortnightly. Progress reports were due every week.

Training

Training events in safe shelter awareness were interactive and took about three hours. They were conducted in sessions attended by between 20 and 25 people, led by two people and monitored by one observer. Trainings were to help families to assess their shelter vulnerability, help families to strengthen their shelters (with focus on bracing, foundations and roofing), and to present toolkit components.

Toolkits

In the beginning of 2008, 5,000 toolkits were procured. However, the distribution was delayed until March 2009. They were distributed in 3 months.

The toolkit was purchased locally. Families liked the toolkits but would have preferred to have a hand-drill included. The nails, wire and brackets could be found in the repairs and extensions that families had built.

Cash Grant

To complete the shelter support, a cash grant was distributed to each beneficiary. This was to help with extensions and repairs. Cash grants were distributed at the end of the programme as a result of significant challenges faced.

Distribution of cash grants was through the government bank, which had a wide network in targeted communities. Families had to visit the bank branches to collect the cash grant. Distribution was done under strict verification and monitoring. The transaction process of the bank was really slow and could not cope with the demand of the operation.

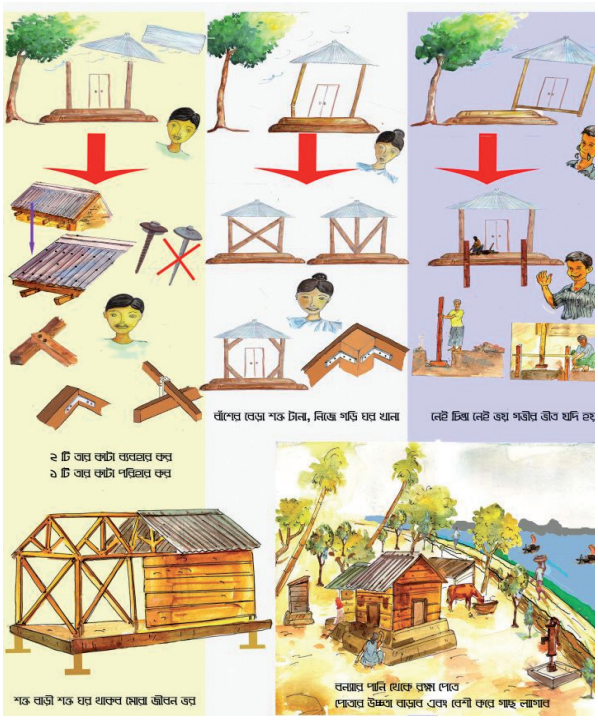
Logistics

To ensure the right thickness (0.45mm) of corrugated iron roofing sheets, the contractor had to buy 0.55mm thickness, or to import straight sheets from Japanese supplier and make them corrugated in Bangladesh. Samples were laboratory tested to validate thickness and galvanization levels.

The core shelter design kept the use of wood to a minimum. Timber quality and delays in delivery were one of the most critical parts of the project.

The purchase of timber, including certification of species, maturation and quality, were the responsibility to the project consultant.

Bamboo for the walls was procured from Chittagong, the main production area in Bangladesh. The structural bamboo grids were fixed on construction sites and precisely fixed to the structure with strong steel wires.



Top: training in safer shelter was a core component of the programme,
Below: training poster developed for the Sidr Programmes
Photo: Xavier Génot, IFRC






The programme provided support for families to upgrade their shelters. Many families were able to make improvements and extensions from the core house (top left) to the various extended structures (above)
Photos: Xavier Génot, IFRC

B.4 China, Sichuan - 2008 - Earthquake

Case study: Cash distribution

Full case study

Country:
China

Disaster:
Sichuan Earthquake

Disaster date:
12 May 2008

Number of houses damaged:
5 million estimated.

Number of people displaced:
15 million estimated initially

Project target population:
63,000 families in 1 county in Sichuan

Occupancy rate on handover:
Expected to be near 100% at project completion

Shelter size:
Cash distribution project to support families with reconstruction of 50 - 150 m^2 houses

Materials cost per shelter:
60,000 to 120,000 RMB (9,000 USD -18,000 USD)

Project cost per shelter:
3,000 to 10,000 RMB (440 USD - 1,500USD)

Project timeline

Summary

Cash grants were distributed to around 63,000 rural households who fulfilled the selection criteria in Mianzhu County, Sichuan. Each household received the equivalent of 450 USD or 1500 USD (CNY 3,000 or 10,000) to help them to reconstruct earthquake damaged homes and housing related needs. As with most other aspects of the response, the government led on construction monitoring and training.

Strengths and weaknesses

✓ Very large-scale project.
✓ Cash distributions transferred directly into homeowners' bank accounts. This is different from most earthquake reconstruction funds in China which flowed through government managed accounts.
✓ Added transparency and error checking was made feasible by developing a beneficiary database.
✓ These funds make a significant difference to families' ability to pay down their debts, complete construction or buy essential furniture and household items.
✓ The government played a strong directive role, leading much of the project scope and activities.
× There were concerns about the potential for social instability resulting from inequality between original target area and their surrounding communities.
× There were multiple delays in developing a reliable list of names. As a result, homes were mostly built before funds were distributed.
× Limited and intermittent access to beneficiaries affected the organisations ability to monitor construction and guide on the technical issues.
× Given timeframes, technical support and training was no longer necessary or relevant.
× In some communities, only 30% of the population matched the criteria. This lead to dissatisfaction of those unable to receive funds.
× There were concerns that this cash distribution will negatively impact the effectiveness of the other programs within the same area.
× While originally conceived as a way to encourage earthquake-resistant construction practices, the final shelter support programme had no control over how beneficiaries use the funds.
- Government management of the construction process and quality control greatly simplified the scope and technical aspects of the project.

Reconstructed houses in Sichuan, built within two years of the Earthquake
Photo Melisa Tan

Before the earthquake

Most of the areas affected by the earthquake are fertile farming lands. The natural resources in the area are very rich, with all-year cultivation. Forests, orchards and water are in abundance in the area. A majority of families were engaged in farming, forestry and other local industries such as coal mining, livestock farming, tourism and other small businesses. Farmers form the largest livelihood group in the area with about 78% of the families engaged in both agricultural and livestock farming. The main crops are rice, wheat, rapeseed and corn and the main livestock are pigs, chickens, ducks and rabbits. The average farmland is 330m^2 to 1000m^2 per person.

Most of the farming was managed by people over 40 years old. Most of those below 40 years work as migrant workers in larger cities. The majority of people have very little or no savings at all (average 300 to 450USD per family).

First three months

The most powerful earthquake in 30 years with a magnitude of 7.9 struck on the afternoon of 12th May 2008, killing 70,000 people and leaving 12,000 missing. Hundreds of reservoirs were damaged and over 30 quake lakes (rivers blocked by landslides) were created.

The earthquake mainly affected three provinces: Sichuan, Gansu and Shaanxi. Continuous aftershocks along with mudslides and flooding made the situation worse for affected people. County towns like Beichuan and Wenchuan were completely devastated.

An estimated 15 million people were made homeless and displaced by the earthquake, including 4 million people in the city of Chengdu. Many people sheltered in makeshift structures or tents. People moved to other towns in neighbouring counties and provinces. In remote and rural areas many people continued living in surrounding villages due to a lack of access to safer areas.

The government built hundreds of thousands of pre-fabricated cabins to house those living in centralised rural and urban locations.

Industries, agriculture (farming, forestry, livestock), mining, tourism and small businesses were severely affected. The loss per person due to the earthquake was equivalent to 15 years of their disposable income (net income) in rural areas. In the urban areas it was equivalent to 15 times their total annual income.

3 months to 1 year

The government began an ambitious reconstruction project to build about 5 million houses across the 3 provinces within 2 years. By the 1 year anniversary, reports indicate reconstruction was well ahead of this deadline. By Sept 2009, nearly 95% of houses were completed in Sichuan. The govt also announced 12 May 2010 as the deadline for all non-government organisations to complete all earthquake reconstruction projects.

In first three months the implementing organisation distributed 100,000 family tents and 300,000 quilts.

The maximum amount of support which households received is the equivalent of 1500 USD and this is equivalent to about six years' worth of pre-earthquake disposable income for the average farmer (per capita).

The government offered building subsidies (equivalent to 1500 USD) for homes and loans that were first interest-free and then low-interest. However these were substantially less than the cost of a house.

20 months later

Many families had begun moving into their completed homes. However, many families were still building their homes, and many hoped to complete by Spring 2010.

The situation was slightly different for families living in very rural remote areas such as those living in the mountains. In many instances, coupled with a lack of funds, the lack of access to these hard-to-reach areas also affected reconstruction progress.

Implementation

The government was in charge of land allocation, preselection and qualification of construction teams, monitoring of materials suppliers, and the quality of construction.

Selection of beneficiaries

The main requirement was that the cash would support towards the reconstruction of rural houses that were damaged by the earthquake.

Selection criteria were:

- families who had lost a family member in the earthquake
- families whose family member sustained permanent disabilities (handicap) from the earthquake
- families with an elderly family member (above age 60)
- families with a family member who was already seriously ill prior to the earthquake (cancer, leukemia, mentally disabled).
- all families in one particular township that had to be relocated due to new geological hazards.

Once beneficiary lists were collected and verified, posters announcing the project and the selection criteria were posted in all villages. Trainings for 1,300 people to explain the project information were started. Beneficiary name lists were also posted publicly. After posting and a period for revisions, the list was locked and funds were distributed to 63,000 homeowners' bank accounts.

B.15 Myanmar - 2008 - Cyclone

Case study: Shelter construction

Full case study

Country:
Myanmar

Disaster:
Cyclone Nargis

Disaster date:
May 2008

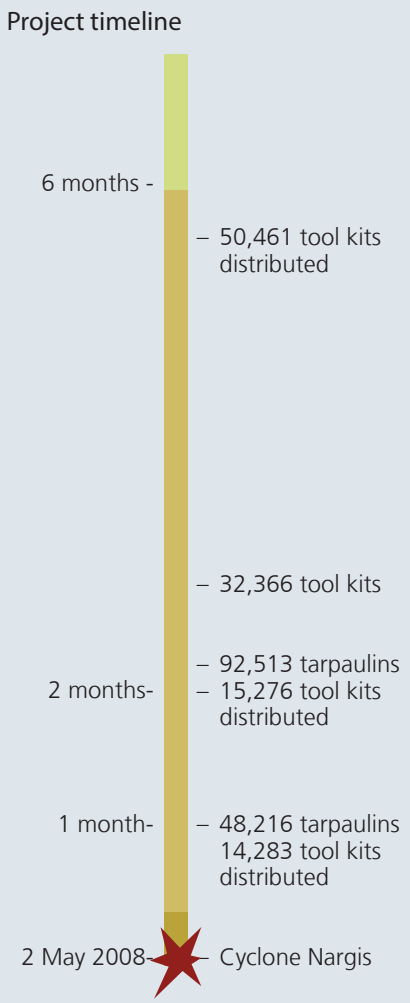
No. of houses damaged:
Over 450,000 households affected in 36 townships. Over 350,000 households seriously affected.

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.



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

B.12 Italy - 2009 - Earthquake

Overview

Summary

The earthquake of April 6th 2009 was the deadliest to hit Italy since 1980, and the first major earthquake in 300 years to hit the Abruzzo region. The town of L'Aquila was severely affected and is a historic town known for its university and the arts.

In the immediate aftermath of the earthquake, people moved into tents, hotels, or slept in holiday homes, with families or in their cars.

The government established a very prescriptive processes for sheltering affected families. Within one year, new apartment blocks and modular housing units were built to house families for 3 years. Cash grants were also provided for minor repairs.

Disaster overview

First assessments were that 55% of the buildings in L'Aquila were usable, 15% were usable with simple repairs, 20% were not usable, and the rest required further study. 50,000 buildings, including public buildings, offices and factories, were affected.

For search and rescue and subsequent operations, the civil protection were able to mobilise 12,000 volunteers after the earthquake. In addition, 2,300 firemen were mobilised.

A building damage assessment was conducted by 500-600 experts in teams of 2-3 people. Each team assessed 4-10 buildings per day, a total of 1000-1500 buildings every day. 50,000 buildings were assessed within two months.

In the immediate aftermath of the earthquake, the whole centre of L'Aquila was evacuated.

Sheltering policy

About 35,000 people moved into tents, 30,000 people moved into hotels made available on the coast, others moved into second homes or slept in their cars. It was estimated that up to 100,000 people were sleeping outside of their homes.

The aim of subsequent responses was to return as many people as possible back to their own homes as soon as possible.

To shelter families for the first three years, two types of building were developed:

- appartment blocks (185 buildings containing 4500 flats were built in the first year, housing 15,000 people)
- modular housing units (3475 were built in the first year housing 8500 people)
- cash grants for minor repairs and rental for families with agreed levels of building damage.

Buildings and housing schemes were designed to reduce seismic risks. They also included schemes to reduce energy consumption. Many included solar and photovoltaic panels, rainwater harvesting, and thermal and sound insulation

Left: tent camps,
Centre: modular housiung units
Right: apartment blocks
Photos: Dipartimento Protezione Civile
Croce Rossa Italiana

B.13 Italy - 2009 - Earthquake

Case study: Shelter construction

Full case study

Country:
Italy

Disaster:
Earthquake in Abruzzo region.

Disaster date:
April 6th 2009

Number of houses damaged:
23.500 classified as E to F, in other words, uninhabitable.

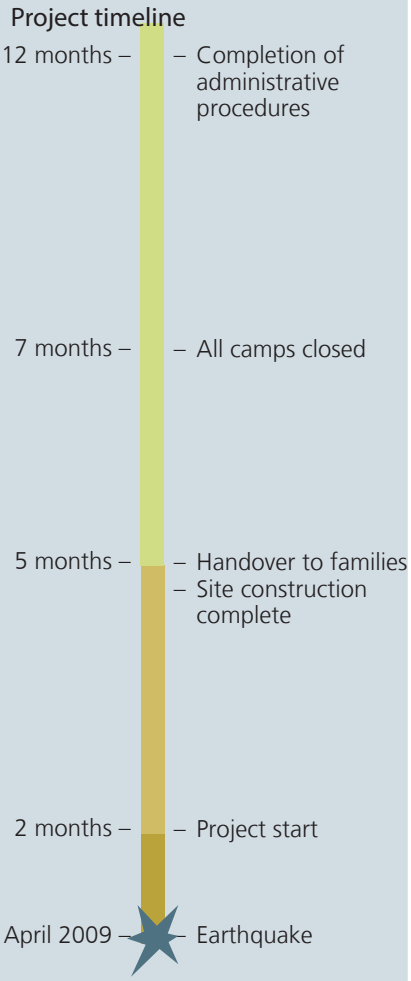
Number of people displaced:
70.000 homeless.

Project target population:
100 families in one fully destroyed village
Later developed into a 5 million Euro scheme

Occupancy rate on handover:
100% occupancy on completion. Will be occupied until original houses are rebuilt/ repaired.
The shelters have a 3 years use agreement but a 'life cycle' of 30 years.

Shelter size:
1-2 people (type A) 45 m^2,
3-4 people (type B) 52 m^2,
5-6 people (type C) 74 m^2.

Materials cost per shelter:
Total cost: 450 a 800 €/m^2.



Summary

The organisation used contractors to build three different sizes and designs of shelter for 100 families affected by the earthquake. This was a pilot programme, from which the government designed a programme to house an additional 3475 families. The government led the overall shelter process limiting the inputs of the disaster affected families, whilst the organisation, facilitated discussions to encourage involvement of the earthquake affectees.

Strengths and weaknesses

✓ There was strong cooperation between local / municipal authorities, local contractors and beneficiaries to define and develop the project.
✓ The first shelters with a design lifetime of 30 years were constructed within months
✓ Three different shelter designs were built and allocated based on the family composition.
✓ The organisation was able to act as a facilitator between the affected families and the authorities
✓ The pilot project was followed by the government's construction of 3475 additional units using a similar programme approach.
✓ The government provided all service infrastructre.
× Most of the decisions were government-led within a very prescriptive legal framework. This limited inputs by the affected population to suggesting preferences but not to take decisions.
× The project was limited to 100 families. This was due to limitations in the funds available combined with the high construction costs of the shelters. However the project did cover 100% of the community of Onna.
- There was very strong media pressure to deliver.

Modular housing units under construction
Photo: Fabio Torretta, Croce Rossa Italiana

Occupied modular housing units
Photo: Agostino Pacciani (IFRC/CRI)

Modular housing units

The organisation undertook a pilot programme to build 100 modular housing units. These units were fully serviced with fitted kitchens, bathrooms and electricity. The government was responsible for all services including roads.

Beneficiary selection

Onna was chosen because it had become the 'symbol' of the Abruzzi Earthquake. It is a village near l'Aquila home to 120 families, particularly affected by the earthquake. 80% of the houses were damaged and 20% of the houses were uninhabitable.

The funding, the identification of the resettlement areas, the project approval process and disbursement mechanisms were all agreed with the national civil protection authority and with the municipal authority.

The organisation working with a local non-governmental organisation set up by the inhabitants of Onna after the earthquake. Together, using criteria established by the government, they formed a list of who should receive the shelters. The list was delivered to the municipal authorities.

The local authorities of Onna were directly responsible for the selection of beneficiaries and their registration. The definitive official list fully respected the list that the international organisation had drawn up with the local organisation and the town's inhabitants.

The organisation facilitated for all of the affected families to have adequate housing, as they were entitled to by law. Criteria and measurable 'indicators' were established to ensure accountability.

Technical solutions

The decision to use timber framed prefabricated shelters was made for the following reasons:

- relatively high budgets were available as the disaster was in an industrialised country
- relatively high cost of labour for other types of construction
- an existing regional industry making prefabicated shelters
- The temporary shelters were prefabricated in the north of Italy, in the province of Trento, where there is a traditional in the construction of wooden homes.
- time pressures: although starting two months after the earthquake, the construction programme needed to be completed within three months (90 working days), before the autumn/winter season.

Three sizes of shelter unit were developed. These were

- 1-2 person units 45m^2
- 3-4 person units 52m^2
- 5-6 person units 72m^2

The total cost of the project for 100 households was five million euros. This included construction, provision of services and infrastructure.

Implementation

The organisation was fully aware that it had no adequate technical expertise to construct shelter to the scale and speed required. As a result it identified an implementing company to construct the shelters.

The organisation needed to ensure that quality standards were achieved, that administrative and legal procedure were correctly followed and that the programme was coherent. A staff of ten people were employed for the monitoring process. They supervised and monitored the programme by:

- Providing continuous technical assistance to anticipate arising problems and overcome bottlenecks that would cause delays.
- Regular visual checks and field visits and by 'remote control' though information management at the central office.

In addition to the construction, the organisation, working with the authorities, ran a public information campaign. This campaign was focussed towards donors to raise awareness on the construction programme. It accompanied activities with web-based updates. The campaign was based on press, media and events. The communication Service, working through the press office, led all the public information programme.

On completion, ownership of the shelters was handed over to the

authorities with the agreement that families would be able to occupy them rent free for three years.

Although the long term for the shelters was not finalised, it was anticipated that the reconstruction and restoration of the historic centre of Onna would take many years. When families do eventually return, these emergency shelters could be re-used as state housing. Alternatively, as L'Aquila has a strong identity as a university town, they could also be used as accommodation for students.

Top and left: occupied housing units
Bottom right: Units came with fitted kitchens
Photo: Agostino Pacciani (IFRC/CRI)

A.2 Chile - 2010 - Earthquake

Case study:

Country:
Chile

Disaster:
Earthquake

Disaster date:
February 27th 2010

No. of houses damaged or destroyed:
More than 200,000 houses

Project target population:
10,000 households

Shelter size:
Variable

Materials Cost per household:
375 USD value per household on the card

Project timeline

- 17 months – Project completion
- 15 months – Final delivery of cards
- 13 months – Number of beneficiary households increased
- 6 months – First delivery of cards
- 5 months – Partnership agreement with supporting company signed
- 3 months – Start
- 2 months – Project coordinator hired
- 1 month – Shelter specialist arrives to support the country team
- February 27th 2010 – Earthquake

Project description
Following a non-food item distribution to 10,000 households, plastic cards with magnetic strips were given to earthquake affected households. These cards were valid for 30 days from manufacture and could be redeemed in 40 pre-designated hardware stores located in the affected regions.

Strengths and weaknesses

✓ In general the project was well received by beneficiaries giving them flexibility to spend resources as they saw fit.

✓ The project team invested time to explain the project to the beneficiaries. Suppliers were also able to explain the process well to beneficiaries.

✓ Community members were encouraged to group their purchases together to receive free or reduced price delivery of their materials from the merchants.

× The process of choosing beneficiaries was not as clear as it should have been. Many affected people felt that many of those who received assistance didn't suffer major damage to their homes. Others noted that the project excluded some families who they thought should have been eligible to receive the assistance. This led to some jealousy and resentment from community members who did not receive cards.

× More time should be given for the use of the card or it should have been distributed earlier than it was.

× The project did not provide technical support on safer and more earthquake resistant construction. It did not build on the experiences of recent programmes in neighbouring Peru.

- The prices of a basket of selected materials at various hardware stores should have been monitored over the course of the project. At the start, a baseline price survey could have been conducted to check that the project had not lead to price escalaiton. However in a mid-term evaluation, 80% of the targeted families found the prices in the stores acceptable, and there was little evidence of price escalation due to the project.

The earthquake caused a tsunami.
Photo: Sebastián Klarén

After the earthquake

On 27 February 2010 an earthquake of magnitude 8.8 struck Chile. The epicentre was located 60km southeast of the nearest city in the Maule region (400km south of Santiago).

The earthquake generated a tsunami, affecting 500km of coastline. The earthquake and successive tsunami caused hundreds of deaths and serious damage to homes and other infrastructure, primarily in the Maule and Bío Bío regions.

The survivors of the earthquake had to survive the remaining months of the winter without appropriate shelter.

According to the Chilean Ministry of Planning, in the worst affected region (Maule) nearly one in five people had a damaged or destroyed house. The earthquake affected 5 cities with over 100,000 inhabitants, 45 other cities with over 5,000 inhabitants each, and more than 900 villages. It affected both rural and coastal communities.

Emergency response

During the emergency phase of operations, the organisation distributed the following non-food items:

- Tents (1,587families)
- Tarpaulins (20,650 families)
- Blankets (44,740 families)
- Hygiene kits (11,290 families)
- Kitchen sets (11,175 families)
- Buckets (22,370 families)

However this first phase of the response was slow and did not meet all of the needs. As a result other approaches were developed.

Implementation

It was decided to implement a voucher scheme using a plastic card with a magnetic strip.

The voucher scheme complemented the delivery of the emergency items, as it allowed for the improvement of housing solutions through the purchase of different household items, as well as material for the reconstruction of damaged homes. The monetary value of the card (equivalent to 375 USD) was decided in line with the legal minimum wage at the time.

The project provided cards which could be redeemed for construction materials.
Photo: Mirna Suárez

The organisation trained both staff from the participating suppliers and beneficiaries on the use of the cards. In a project evaluation, recipients of the cards generally found the staff at participating hardware stores knowledgeable about the project.

Staff from the hardware stores travelled to communities with product catalogues. This assisted affectees who had limited access to transportation.

A partnership was established with the Corporate Social Responsibility programme of a Chilean company. The company verified beneficiary data, printed relevant documentation and opened a permanent call centre to answer any questions about using the card.

A call centre was also established to allow beneficiaries to verify the amount of funds remaining on their card along with the location of participating stores.

The validity of the card was set on the magnetic strip by the manufacturer, but an expiration date was also printed on each card. Due to the time needed to distribute the card, some beneficiaries had less time to purchase material.

Selection of beneficiaries

The criteria for selecting beneficiaries was very broad, and took into account which families had received relief kits. No detailed damage and needs assessment was conducted. In practice, the project relied on beneficiary lists that were provided by local authorities and community leaders along with lists provided by project staff. These lists were developed during the distribution of relief supplies in March and April 2010, some months before the distribution of cards.

In some cases the data in the lists wasn't accurate, leading to the misprinting and subsequent voiding of the cards at the distribution sites. During distributions there were families at the distribution sites who claimed that they should be included in the project. In these cases, they were added to a waiting list and told that there would be a second distribution in the community at a later date.

There was also the risk that segments of the affected population were not included because they did not have good relations with the community leaders or they lived in sites between targeted communities.

Technical solutions

Once the users received their cards, they had one month to use it. Partial purchases were allowed, meaning that they could buy several times during the month in smaller volumes. One other way to use the funds on the card was to make a bulk purchase for the total value of the card.

At a later stage, initial home repair guidelines were delivered at the same time as the cards. These were in line with an agreement signed for future collaborations between the organisation and the relevant government Ministry. During an interim project review, approximately 80% of respondents stated that they had the knowledge to make their own repairs with the materials purchased with the card, 17% paid for someone else to do them, while 4% stated that they did not have the knowledge and would have liked to have been trained in how to make the repairs themselves.

Project conclusion

Initially the project targeted 8,400 households, but this was later increased to 10,000 families. The project was implemented in one year – from May 2010 to May 2011. It took a little longer to close the project as some transactions could only take place once all invoices had been received.

The project required significant amount of paperwork. Photo: Jorge Romo

Team members, a phone line and posters explained how the project worked.

A.3 Grenada - 2004 - Hurricanes Ivan and Emily

Case study:

Country:
Grenada

Disaster:
Hurricane Ivan (Cat. 4)
& Hurricane Emily (Cat. 1)

Disaster date:
September 7th 2004
and July 13th 2005

No. of houses damaged or destroyed:
14,000

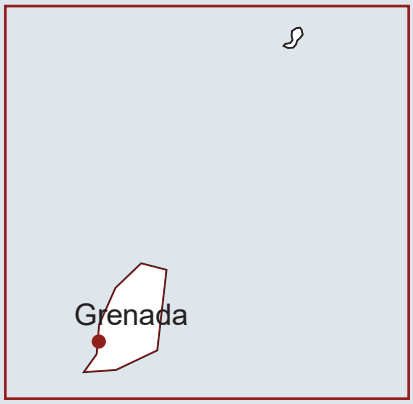
No. of people affected:
About 61,000 people;
50% of the population was left homeless

Project target population:
- 750 families received a new roof or a house
- 2,000 families received hurricane straps
- 128 carpenters trained

Occupancy rate on handover:
100% (estimated)

Shelter size:
11m² -70m²

Materials Cost per shelter:
Average cost per shelter repaired 2,500 USD



Project timeline

Project description
Over 2 years, the roofs of over 650 houses were repaired and 100 homes were built from scratch. 128 people were trained and certified as carpenters, over 2,000 houses were strengthened with hurricane straps and 32 communities were better prepared to face the next disaster.

Strengths and weaknesses

✓ Capacities in hurricane-resistant construction techniques were increased through training of men and women.

✓ Those trained during the project received a certification in carpentry. At the end of the project most of them were able to find a related job.

✓ The project was integrated with an island-wide project of disaster preparedness.

✓ Over 2,000 houses were strengthened with hurricane straps as a risk reduction and risk mitigation project.

✓ Fact sheets were distributed through newspapers and with materials. They promoted safer construction techniques.

✓ Community members in 32 communities received training on safer roof techniques.

× The project did not meet the needs of many of the most vulnerable. The weakest houses could not get a roof because they needed too much retrofitting.

× More houses should have been built to replace the destroyed homes.

× The trainees who received materials did not get the community help anticipated. Carpenter teams had to be deployed to help.

× The project focused on the needs of homeowners and did not support tenents.

× Larger houses received a higher financial value of support as their houses were built from more materials.

The project focussed on building safer roofs.
Photo: Emeline Decoray

Before the hurricane

Before the disaster, Grenada had not been hit by a hurricane since 1955. People had forgotten about the hurricane-resistant techniques which had previously been applied by carpenters.

The houses in Grenada are constructed in two types; either from wood or from concrete. Wooden houses have timber frames and are clad in timber and have corrugated iron roofs. Concrete houses are commonly made from concrete blocks and have a corrugated iron roof.

Many wooden houses were resting on concrete or wooden pillars, their structures had no braces, not enough studs and the roofs were flat with long eaves.

After the hurricane

The hurricane damaged 90% of the housing on the island. Concrete structures partially or entirely lost their roofs. Wooden houses were severely affected or totally destroyed. The agricultural sector was also severely affected.

Implementation

Initially, the project focused on re-roofing 100 homes. Six team leaders were trained in hurricane-resistant techniques which had been used by carpenters 50 years earlier. Trainees were selected and assigned to each team leader.

In total 128 men and women were trained. They received a one-day theoretical course followed by hands-on training. At the end of the course, the most capable became assistant carpenters. After gaining more experience some of them became team leaders.

The trainers who qualified, received a certificate in Carpentry and Masonry from the Technical College (T.A. Marryshow). They were evaluated after rebuilding 5 to 6 roofs with a team composed of a team leader, an assistant carpenter and 2 trainees.

After this the trainees could receive material to rebuild their own destroyed roofs.

The project ultimately had more than twenty teams of 4 people working island- wide.

A disaster preparedness project was also implemented in 32 communities. On weekends, some public awareness activities were held to train some community members on different topics including rebuilding better roofs. As a mitigation project, 2000 vulnerable homes received hurricane straps which were installed by trained community members.

Selection of beneficiaries

The beneficiaries were selected by the organisation according to criteria defined by the government and the agencies involved in the relief emergency operations. Two types of criteria were used: social (vulnerable people affected by the hurricane) and technical (house damaged or destroyed by the hurricane).

All of the houses were technically assessed before the beneficiaries were selected. This allowed the organisation to decide on the type of assistance the beneficiary would

The project used "old time" techniques, learning from the past and which buildings had survived the hurricane and why.
Photo: Emeline Decoray

obtain. Able-bodied beneficiaries were invited to become trainees and receive the material to rebuild their roofs. If the beneficiary was elderly, or was unable to undertake construction himself or herself, a carpentry team was sent to reinforce and re-roof the house.

Technical solutions

The techniques applied to rebuild the roof and to strengthen the house before building the roof were "old time" techniques, which had resisted Hurricane Ivan. The "old time" wooden houses resisted the wind forces better than the newly built houses, even concrete houses.

The houses received some reinforcement, such as doubling studs in the corners, around doors and windows, bracing the corners in both directions, attaching the flooring beams to the pillars, and attaching them to the foundations with metal straps. The smallest houses received a gable roof with a 30° slope and 25cm eaves, while the largest one received a hip roof.

Logistics and supply

All materials were purchased locally, through local suppliers, even if it was imported material.

After an assessment of each damaged house, a bill of quantity of the material needed to rebuild the roof was drawn up. This was calculated by putting the size of the house into a standardised spreadsheet.

The material was delivered on site before the start of the work. At the beginning, all the logistics was done from the project warehouse: storage of the material, loading of the truck and delivery on site. Because the project grew rapidly, the supplier was asked to manage a part of the logistics from his warehouse. The bills of quantity were sent to the supplier 3 days prior to the delivery date. This way, most of the logistics issues were transferred to the supplier. As a consequence of this, the organisation had to coordinate closely with the supplier.

	A	B	C	D	E	F	G
1	QUANTITY OF MATERIALS						
2							
3						builder:	
4		width		length		surveyor:	
5	house	12.0		18.0	feet	owner :	
6	eaves	8	inches			place:	
7	slope	30	degree	7	inches/feet	date:	
8							
35		thickness	width	length	unit	Quantity	CHECK
36	top plate G	2	6	12	ft	2	
37	ridge pole G	2	6	16	ft		
36	top plate G	2	6	12	ft	2	

A spreadsheet was developed that calculated the materials required given the dimensions of each house.

The project retrofitted 2000 houses with hurricane straps.
Photo: Emeline Decoray

A.11 Haiti - 2010 - Earthquake

Case study:

See "A.4 Haiti - 2010 - Earthquake - Overview", p. 12 for background.

Country:
Haiti

Disaster:
Earthquake

Disaster Date:
January 12th 2010

No. of houses severely damaged or destroyed:
185,000

Project target population:
8,450 households after 24 months

T-Shelter size:
Aim for 18m² minimum
Less considered when insufficient space

Materials Cost per household:
T shelter: 2,800 USD
500 USD livelihoods grant

Project cost per household:
T-shelter projects: 4,500 USD

Project timeline

- 36 months- – (Anticipated) - On-going monitoring
- 24 months - – 8450 households supported
- 20 months - – Decongestion of camps: Delmas 75
- 18 months - – Decongestion of camps: Croix de Bouquests
- 13 months - – Decongestion of camps: Simon Pele
- 11 months - – Decongestion of camps: Annex de la Mairie
- 10 months - – Decongestion of camps: Sint Luis de Ganzague
- 8 months - – Decongestion of camps: Carradeux
- 6 months - – Project start
- January 12th 2010 – Earthquake

Project description
The project supported people to leave overcrowded camps and encouraged them to lead their own recovery process. It provided transitional shelters for those with land, cash for those who needed to rent, and relocation grants for those who moved to different areas. It also subsidised health care and provided livelihoods grants which were used to help re-establish businesses, or to support children going to school. Camp decongestion required at least one year of monitoring and support after families had relocated.

Strengths and weaknesses

✓ The project took a broad approach to shelter, looking at the overall settlement issues.
✓ Households were involved in identifying a shelter solution with which they felt comfortable.
✓ Families were able to quickly pick up some threads of normality with the cash support to develop income generating activities.
✓ Physical security for people was improved once they were out of the camps.
✓ Cash gave people a greater degree of choice and permitted them to spend money according to their own priorities. This in turn helped to maintain people's dignity.
✓ Cash had potential benefits for local markets and trade.

× The process was very labour intensive and required constant monitoring and support.
× The process for cash transfers was cumbersome and needed to be shortened.
× Technical support for some construction aspects has been limited. In particular, viewing the land and identifying the work that was required before construction could begin.
× Camp committees were difficult to manage as they believed that they should be receiving a salary.
- Some people did not want to leave the camps as they believed that they would continue to receive goods if they remained there.
- Some households split across multiple sites to receive a greater total amount of assistance.

Background

See "A.4 Haiti - 2010 - Earthquake - Overview", p. 12.

After the earthquake

Up to eighty percent of the population in Port-au-Prince rented either the house or the land. In other urban centres such as Leogane, up to seventy percent of the population rented.

Reconstructing houses would restore the assets of the landlords, but would not ensure the availability of this accommodation to the former tenants who are currently shelter-affected.

Residential reconstruction activities therefore included measures to ensure that former tenants received benefits in kind through agreed rent-free tenancies for a defined timeframe, separate cash grants linked to rental accommodation, or shared usage rights.

Settlement approach

The organisation implemented projects using a 'settlement approach'. Communities and infrastructure were supported, integrating other sectors such as water and education. Many of the projects had strong economic and social 'livelihoods' components.

Shelter was seen as including support to all of the settlement options chosen by affected populations, including host families, rental accommodation and, where necessary, camps. In choosing between options, families and groups can make best use of their coping strategies.

Five months after the earthquake, the shelter team began registering people in four camps in an area of Port au Prince. A variety of solutions to support households were identified.

The interventions were based on assessments and discussions with families. Three areas of support were identified:

- an improved shelter solution,
- support for livelihoods,
- an option to help their children return to school.

The project also had a significant information component and the organisation actively promoted public health messaging.
Photo: Julien Goldstein

Different options offered

Different options were provided depending upon the context that the family found itself in:

1) Own land

Some people had the option to move back to where their house was or to a piece of land to which they could show ownership. They received a T-shelter on their land and received a 150 USD grant.

8% of families received this form of assistance.

2) Access to land

Some people knew someone who had a plot of land who agreed that they would be able to reside on the plot for two years. They had to produce a signed document stating that they can live on the land for two years, and a copy of the ownership documents and their identification

They received a T shelter built on the land and a 150 USD grant.

3) Repairable houses

People who had houses classified as green (having minor damage) were offered cash or a voucher to access the needed materials, an unconditional business grant, and training on earthquake resistant construction.

In the first two years of the project, no families chose this support option.

4) Resettlement in Port au Prince

Families identified accommodation within Port-au-Prince that they could rent. If the accommodation was deemed to be secure, had water and sanitation facilities and was seen as a safe dwelling, the family received up to 500 US dollars to resettle. This sum covered a year´s rent.

Often, people moved towards the areas they lived in previously as they were familiar with the area.

72% of families in the project chose this option.

5) Resettlement in the provinces

19% families chose to return to their provinces of origin. These families received a resettlement grant.

Additional support

All Families additionally received:

- A livelihoods grant of 500 USD divided into two distributions of 250 USD. The first was one month after having left the camp and the second was after three months.
- A training was provided on managing finances and business opportunities of their choice.
- Families were supported with health insurance for one year. The health insurance was provided by a local organisation. The insurance was 1 USD monthly per person, and entitled them to free consultation at clinics run by the organisation. It also limited their payments for medicines to a maximum of 150 USD. They could also have low cost medical investigations.

The project included support for livelihoods , support getting children back to school and access to improved health care.
Photo: Julien Goldstein

The small minority of families who did not take up any of the support offered signed a document to show that they had refused the offered support and would remain in the camps. Once families moved out of the camps, sometimes other families might settle in space made. It was the responsibility of the Haitian authorities to deal with these cases.

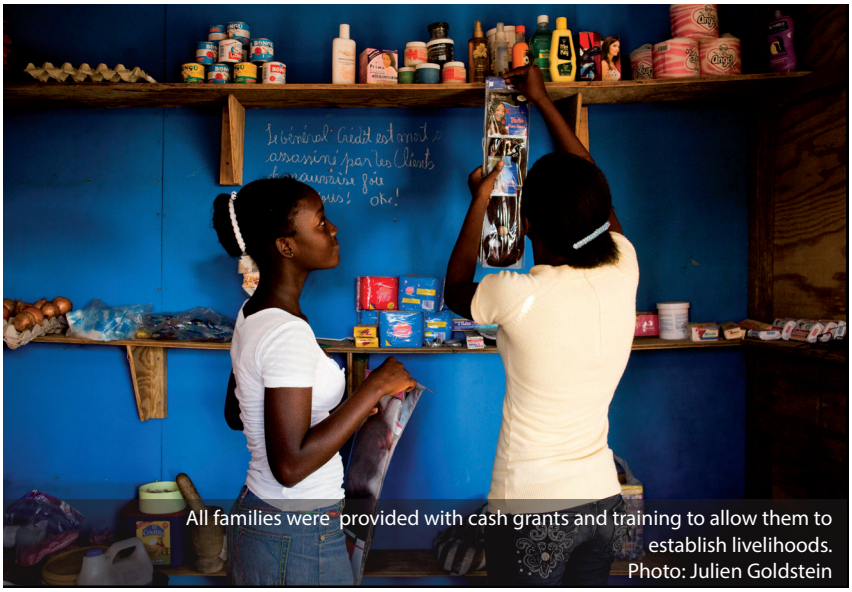
Monitoring and evaluation

The organisation was asked to intervene in the camps that it is working in either by the government, local organisations that were involved there or by the communities themselves. In some cases camps under threat of eviction asked the organisation to help.

All families in the camps were eligible for one of the support options above. The focus was on people without a land title. After registration, people were responsible for organising their preferred accommodation.

Camp decongestion did not end with finding shelter solutions and moving families out of the camp. At least one year of monitoring with support in livelihoods and vocational training followed.

The organisation provided transitional shelters for those with land to build on. It provided cash grants to help people other rent or resettle elsewhere.
Photo: Julien Goldstein



All families were provided with cash grants and training to allow them to establish livelihoods.
Photo: Julien Goldstein

A.17 Malawi - 2009 - Earthquake

Case study:

Country:
Malawi

Disaster:
Earthquake

Disaster date:
December 6th and 20th 2009

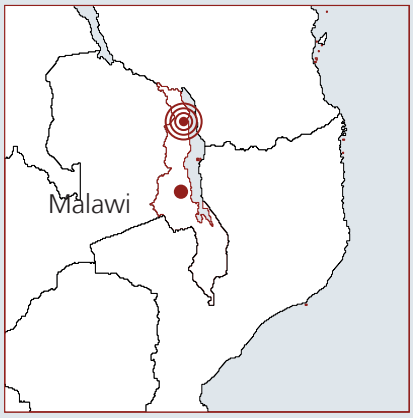
No. of houses damaged:
6,000

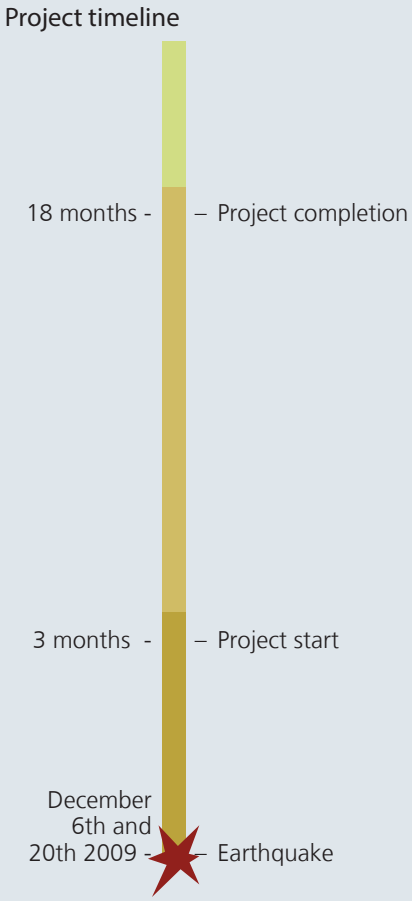
No. of people affected:
24,000

Project target population:
2,400 people (rural and urban)
Government construction guidelines also developed.

Shelter size:
New build houses - 45m²
House repair - 20m² to 40m²

Materials Cost per shelter:
House construction (including labour) approx 2,400 USD
Repair grants were 310 USD / household





Project description
The project provided materials, cash grants and training to build and repair houses. The project led to national guidelines on safer house construction that were adopted by the government. The project also provided psychological support, hygiene promotion, sanitation facilities for households and schools, and disseminated better building practice.

Strengths and weaknesses

✓ Strong links with communities, government, and other organisations enabled access to the affected communities.

✓ Communities and local government were responsible for developing the selection process that was managed and implemented by the communities.

✓ International links provided access to technical support and specific assistance, especially during the first phase of the emergency.

× The national organisation lacked the technical experience to implement large scale shelter programmes and had to rely on external support, especially during the first phase of the programme.

× The organisation was the main, and often the only, provider of assistance after the earthquake. Deploying and sharing the resources of other ongoing programmes was a challenge in terms of personnel, vehicles, office space, and finance and administration systems.

× The projects had to be implemented within a short time to coincide with the dry season, to meet donor requirements, and to meet the expectations of the community. This created a constraint in terms of time available for staff development and training, maintaining quality assurance, and the timely resourcing of the programme, such as the purchase of equipment and access to funds.

- The recovery programme was able to engage with other initiatives that were running prior to the earthquake, such as housing and urban planning projects, and disaster risk reduction planning and preparedness. Through the support of an international agency, partnerships were formed with government and other stakeholders to develop a disaster risk reduction strategy to assist reconstruction.

Before the earthquake

Malawi is one of the lowest income countries in the world, with many households having cash income below one US dollar per day. The population is manly rural, living in scattered communities focused on agricultural activities. Land is allocated through traditional authorities. In urban areas property and land is bought or rented.

Traditional houses are built from wattle and daub with thatched roofs. While lacking durability, these dwellings were largely undamaged by the earthquake, provide good thermal comfort, and are constructed using local materials. All other buildings are of brick and block construction.

At the low-income end of brick construction, houses are built with un-burnt brick and mud mortar. Where there are sufficient resources, bricks are burnt using locally sourced firewood.

To economise on the use of bricks, walls a single brick thick were often built. These walls are not earthquake resistant. Additionally, the position and size of doors and windows and the type of un-braced roof construction, added to the structural failing of the buildings.

Houses are generally constructed over a period of time, as families gain the resources to purchase the required materials.

In rural areas most households owned the houses they lived in. In the urban areas many were tenants and had less opportunity to build or repair their homes.

Issues of public health were greater in the urban area. Latrines in the rural areas were generally constructed using local materials, whilst in urban areas many were built of brick, but were no longer usable.

After the earthquake

The first earthquake on the 6th December destroyed and damaged thousands of houses, hundreds of schools and public buildings, cracks appeared in the ground and the levels of the earth altered in some locations.

The project lead to the establishment of national guidelines on safer house consustruction and had a strong training component. Photo: Jamie Richardson

The number of deaths and injuries were relatively low but, as this part of Malawi had never experienced an earthquake, the population was traumatised by the event and was fearful of going back to their homes.

On the 20th December there was another earthquake.

In some areas near the town of Karonga, the land is lower than Lake Malawi, and there was the natural fear that the earthquake may cause fissures that would lead to flooding. This community moved to an area of high ground where the government and other agencies established a temporary camp.

In the first months after the emergency most households slept in temporary shelters outside their houses. There was a limited distribution of tents, but for most, temporary shelters were constructed using local materials such as timber and thatch.

Implementation

One of the guiding principles for the project was that householders, communities, and government were responsible for providing safe and adequate housing. The organisation would provide support were there were gaps in skills, knowledge, and resources.

The following parallel activities were implemented:

- Construction of new houses
- House repairs
- Construction of latrines
- Training of hygiene promoters
- Training of artisans
- Beneficiary dissemination workshops
- Guidelines for safer house construction

Two project officers were appointed to manage the urban projects and the rural projects and both shared resources and staff.

Guidelines for safer house construction

During the emergency phase of the response, an international shelter specialist assisted. This expertise led to the organisation taking a national lead in shelter and allowed an alliance to develop with government, other agencies and non-government organisations working in housing and shelter. This group was given the responsibility by the government to produce guidelines on house construction to assist the recovery process. The guidelines were produced as a manual and as a series of posters.

It was recognised that information should be made available nationally to reduce the risk of all hazards, including earthquakes. The guidelines would be the start of a process to create national guidelines and standards for construction.

Construction of houses

The Government of Malawi had already produced designs for rural housing and these designs were adopted and modified to improve structural performance.

Every beneficiary was given a range of designs to choose from. They were given the possibility to make further modifications so long as these met the design guidelines.

Both householders and artisans were provided training to ensure that important construction details and methods were implemented. The organisation provided construction supervisors to monitor and assist the construction process.

Cash grants were provided to the householder to purchase materials and pay for labour. Payments were made in tranches aligned with the phases of construction. The householder was responsible for the construction.

The houses were constructed using locally made burnt brick, mud and cement mortar, timber for the roof structure and joinery, and iron sheeting for roofs.

House repairs

The construction supervisors, with the householder, surveyed the houses to identify the repairs and produce a prioritised schedule of work and an approximate budget.

The householder was paid a grant in two phases to carry out the work. Repairs focused on strengthening each element of the structure.

Hygiene promotion and sanitation

The urban part of the recovery programme identified a need for better sanitation and hygiene practice. In addition to house repairs, 250 household latrines and school sanitation facilities were constructed.

Selection of beneficiaries

The project targeted the most vulnerable within the communities. Vulnerability criteria were collaboratively identified.

Community groups were established to identify beneficiaries, to process the application, and to have officers from government and the organisation verify the applications. An appeals process was established to allow for the review of an application.

This method of selection empowered the communities, allowed government to have responsibility for the administration of the recovery process, and enabled the organisation to provide support and monitoring of the process.

Houses were built through cash grants. Cash was transferred by mobile phone. Families were encouraged to purchase work in groups to obtain lower prices.
Photo: Jamie Richardson

Technical solutions

There were many constraints in terms of available materials, financial resources, skill level, and cultural aspiration. This led to the choice of brick construction.

Proper brick bonding, the use of lintels to brick openings, the bracing of roofs and methods in connecting the brickwork, were not previously applied. The position and size of door and window openings was addressed, as was the design of unsupported masonry such as gables and internal partition walls.

Cash transfers

The transfer of funds provided a challenge in the rural areas, and was implemented through a partnership with a mobile phone company.

Beneficiaries were given a phone and funds as credits were transferred to their phone. These credits could be exchanged for cash through the phone company's outlets, or exchanged for materials at specified hardware stores.

Logistics and supply

Beneficiaries were encouraged and supported to buy materials in groups. The suppliers could then maximise efficiency and minimise rates charged by delivering in quantity. The organisation provided four wheel drive vehicles for transport when required.

Local suppliers were used for all materials other than the doors and windows, which went out to tender and were purchased in the capital.

Materials list

Materials	Quantity
Timber 1"x8" (25x200mm)	17
Bricks (230 x115x 75mm)	8400
Wire mesh	25 m^2
Chlorodine (Anti-termite treatment)	1l
Cement	22 bag
Reinforcementbars12mmx12m	17
Supportingplainbars6mmx6m	5
Solignum (timber treatment)	1l
Damp proof course	3
Quarrystonesfortheringbeam	3 Tonnes
Timber 2" x 3" (50x75mm)	16
Timber 2" x 4"(50x100mm)	3
Timbers 2" x 6" (50x150mm)	25
Wire nails 2" (50mm)	5Kg
Wire nails 3"& 4" (75,100mm)	7Kg
Wire nails 5" & 6" (125,150mm)	15Kg
Roofing nails	18Kg
Galvanized ridges	5
IronSheets28gaugex14'(4.3m)	28
Sand for pointing, plastering, flooring	8 Tonnes
Cementforpointing,plastering, flooring	26 bags

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

- 9 months- – Project Completion
- 7 months- – Reassessment
- 4 Months- – Ban on harvesting timber - new approach to vouchers
- 3 months- – Suppliers and beneficiaries identified
- 1 month- – Project start
- October 18th 2010- – Typhoon Megi

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.28 Sri Lanka - 2009 - Conflict Returns

Case study:

Country:
Sri Lanka
Conflict:
Population movement due to civil war
Conflict date:
Conflict ended in May 2009
No. of houses damaged:
160,000
No. of people affected / displaced:
300,000
Project target population:
2,511 families
(Estimated 12,555 people)
669 houses built by January 2012
Shelter size:
46m^2
Materials Cost per house:
4,600 USD
Additional costs per house:
3,100 USD

Project description
This owner-driven programme provided cash to support people to build houses damaged or destroyed by the conflict. The project aimed to contribute to the sustainable rehabilitation and reconstruction in the north of Sri Lanka. It primarily supported people who have been displaced who were resettling after the conflict.

Strengths and weaknesses

✓ The owner-driven approach with direct cash grants to the beneficiary bank accounts created a sense of ownership.

✓ The project was able to build upon experiences and use staff from the post-tsunami recovery programme.

✓ The shelter projects were part of a larger programme including support in water, sanitation, livelihood, disaster risk reduction, community infrastructure and efforts to rebuild civil society.

✓ The project aimed to empower civil society, and provoke them to take initiatives on behalf of themselves.

× The project was delayed by lack of legal documents.

× Often beneficiaries could not produce evidence of land ownership, such as land permits, birth/death/marriage certificates etc. as they were lost during the conflict.

× Construction skills differ from one family to another. As a result experienced staff were required to ensure that the project was effective.

× Because the project started with beneficiary lists from the local authorities, it was open to some politicisation.

× Each house required a minimum of eight documents and five separate transactions. This led to delays when combined with the processing of funds requests and bank transfers.

× The project aimed for high quality but as a result is relatively small scale, aiming to meet 1.5% of the housing needs. In total all organisations together aim to meet a total of 20% of the overall housing need.

- The organisation was able to establish good relationships with the government and military allowing improved access to difficult to work in areas. However given the context this required significant efforts to be seen to remain impartial.

Houses were rebuilt using cash grants.
Photo: Silvester Kueenseger, IFRC

Background

Conflict between forces of the government of Sri Lanka and Liberation Tigers of Tamil Eelam (LTTE) began in 1983 and continued until 2009.

Between 2006 and February 2009, over 281,000 people became internally displaced. This was in addition to over 214,000 people who had been displaced before 2006, meaning that over half a million people had been displaced by the conflict.

The total population that lived in the Northern Province of Sri Lanka prior to May 2009 is yet to be assessed.

The conflict left hundreds of thousands of people in transit, displaced, and seeking refuge with host families or in government-run camps or centres for internally displaced people. Two entire districts were fully deserted and three other districts had partial displacements as a result of the conflict.

Hundreds of thousands of people lost almost everything and suffered without shelter, water, sanitation, health care, livelihoods or other basic facilities.

The government and humanitarian actors estimated that approximately 160,000 houses in the north of Sri Lanka were in need of reconstruction. This figure excludes more than 100,000 families who were scheduled for return from India and other countries.

Of those houses that needed to be reconstructed, 74% needed to be constructed anew, and the rest required repairs. Considering the size, complexity, and evolving nature of the situation, it had been a challenge to gain access to isolated or inaccessible areas and to assess the needs of the most-affected people.

Implementation

The national organisation with support from its international counterparts received approval from the government to assist 2,511 households.

Of these, 2,181 are new build houses for fully damaged houses, and 330 are repairs for the partially damaged houses. 669 were completed by the end of 2011 with 1,294 ongoing.

Selection of beneficiaries

The organisation was provided with a list of beneficiaries by the local authorities (a list from the District Secretariat, approved by the Government Agent), and given an opportunity to verify beneficiaries and communities.

The final selection was done by the by the organisation after conducting interviews. Each beneficiary in the given list provided the following documents at the interview:

- family details,
- copy of the National Identity Card,
- copy of the bank pass book/ bank details,
- copy of the deeds,
- consent letter by land owner approved by the assistant government agent if the land is not owned by beneficiary,
- plan of the site.

After the selection of the families, each community was given

Rebuilt house in Northern Sri Lanka.
Photo: Silvester Kueenseger, IFRC

a chance to object when the lists were publicly displayed.

Noting that families are re-building their houses on their own land, a site investigation was carried out following the beneficiary selection.

The site audit was done by a project technical officer and a field engineer to satisfy that the house had stood on the site before the war and was completely damaged and to ensure suitability for reconstruction.

Beneficiary files

A beneficiary file was built up for each beneficiary with the file cover clearly marked with the project name and number, beneficiary name and beneficiary address. The beneficiary file consists of :

- a family details form,
- a copy of the beneficiary's National Identity Card,
- a copy of the beneficiary Bank pass book indicating name and account number,
- copies of documents indicating ownership of land (copy of the deed or consent letter by the land owner approved by the assistant government agents if the land is not own by the beneficiary),
- a plan of the site,
- the site audit report conducted by the organisation,
- a copy of the house plan,
- a baseline survey form,
- documents such as affidavits, certificates etc. in the absence of required documents,
- any other documents relevant to the project.

Grants were phased, and each grant was conditional upon the previous level of construction being attained.
Photo: Ganga Kariyawasam, IFRC

Housing construction

A cash grant amount of 2,900 USD (LKR 325,000) was paid to each beneficiary through the bank in five instalments. An additional grant of 267 USD (LKR 30,000) was provided to construct the toilet and for the water supply.

Each stage was to be completed by the beneficiary within three weeks of receiving the instalment. On completion of each stage, the next grant should have been received within one week.

The technical advisors and support is given by the technical officers and the field engineers, who supervised 100 families and 500 families respectively.

The standard house under the project is a permanent house of minimum size of 500ft^2 (46m^2) floor area with two rooms. The following elements are required for the house to be considered as complete:

- The house is bounded by brick or block wall and covered by a tiled roof.
- There is one internal lockable room with internal plastering, flooring, doors & windows and sashes.
- There is one internal or external kitchen with internal plastering and flooring.
- There is one internal or external toilet with adequate effluent disposal.

Each beneficiary may adjust the standard design to suit their individual needs, within the parameters of the budget and minimum standards.

Housing construction with each instalment

Instalment	Amount	Work to be completed	Technical details
1	440 USD	Foundation (house and toilet) - within 4 weeks	Laying of 3" screed concrete, rubble masonry foundation in 1:5 cement mortar along with damp proof course plastering and applying of damp proof course tar.
2	790 USD	Construction of super structure (house and toilet*) with brick or block walls up to roof level - within 6 weeks	The brick or block work of the walls up to roof level including the lintel tie beam above the window level using two 10mm diameter torsteel bars in 1:3:4 concrete mixture and toilet superstructure.
3	790 USD	Roof (house and toilet*) - within 4 weeks	House - roof work using clay roof tiles Toilet - roof work using clay roof tiles or concrete slab
4	615 USD	Internal plastering and floor concreting of one bed room, kitchen and toilet. Fixing of all door and window frames - within 6 weeks	The internal plastering of one bedroom and kitchen in 1:5 cement sand mortar along with fixing of all door and window frames. Also must concrete the floor areas of one bedroom and kitchen with 1:3:4 concrete mixture.
5	220 USD	Flooring of one bedroom, kitchen and toilet. Complete one lockable room (fixing of doors and windows and sashes in one bedroom) - within 2 weeks	The fixing of door and window sashes in one bedroom. Each beneficiary must have at least one lockable room. Also lockable room floor and kitchen floor needs to be plastered and finished with cement.
Total	2,900 USD	Time taken to complete the construction work is 20 weeks. Additional time required for funds request and transfer.	

*Water supply can be provided instead of a toilet

A.30 Tonga - 2010 - Tsunami

Case study:

Country:
Tonga

Disaster:
Tsunami
(known as the Samoa Tsunami)

Disaster date:
September 30th 2009

No. of houses damaged:
79 destroyed, 30 with major damage

No. of people affected / displaced:
465

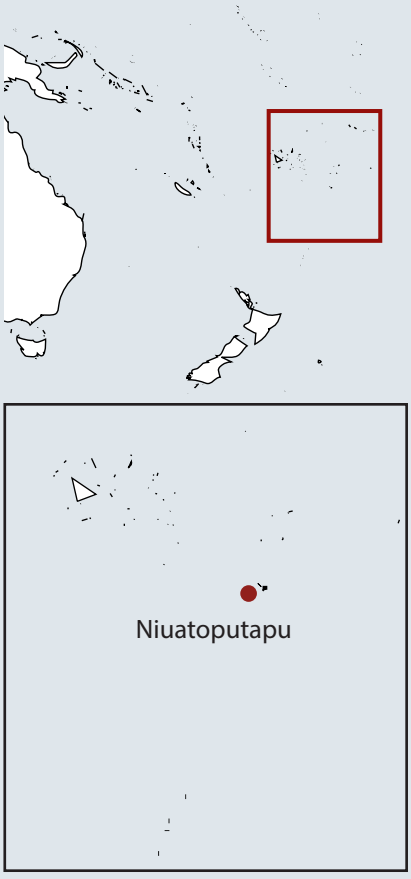
Project target population:
74 households

Occupancy rate on handover:
Estimated 90% at handover

Shelter size:
18m²
2.4 m tall

Materials Cost per shelter:
4,350 USD

Project cost per shelter:
8,900 USD



Project timeline

- 15 months – Project completion
- Construction completed and government building certification received
- 10 months – Construction of shelters and latrines on Niuatoputapu begins
- 9 months – Shelter pre-fabrication completed, prototype latrine built.
- 8 months – Construction of footings on Niuatoputapu begins
- 7 months – Shelter pre-fabricated design tendered and contract awarded
- 6 months – Shelter prototypes constructed on Niuatoputapu
- 5 months – Community assessments
- Project start
- September 30th 2009 – Tsunami

Project description
This project provided cyclone resistant transitional shelter, water supply and sanitation to 74 families who lost their homes and elected to remain on Niuatoputapu, while waiting for assistance to re-build permanent housing. The tsunami had destroyed the houses of more than half the island's population. The shelter materials and construction teams were imported from an island 600km away.

Strengths and weaknesses

✓ The project successfully addressed the significant needs of a remote population. For the first months after the disaster no other non-government organisation worked on Niuatoputapu.

✓ Interviews with beneficiaries as part of a project evaluation indicated the shelter had met, and in many cases exceeded, their expectations.

✓ Excellent logistical organisation with the support of a well-established local implementing partner helped to keep the project on time.

✓ Rainwater harvesting was included with the shelters to supplement drinking water sources.

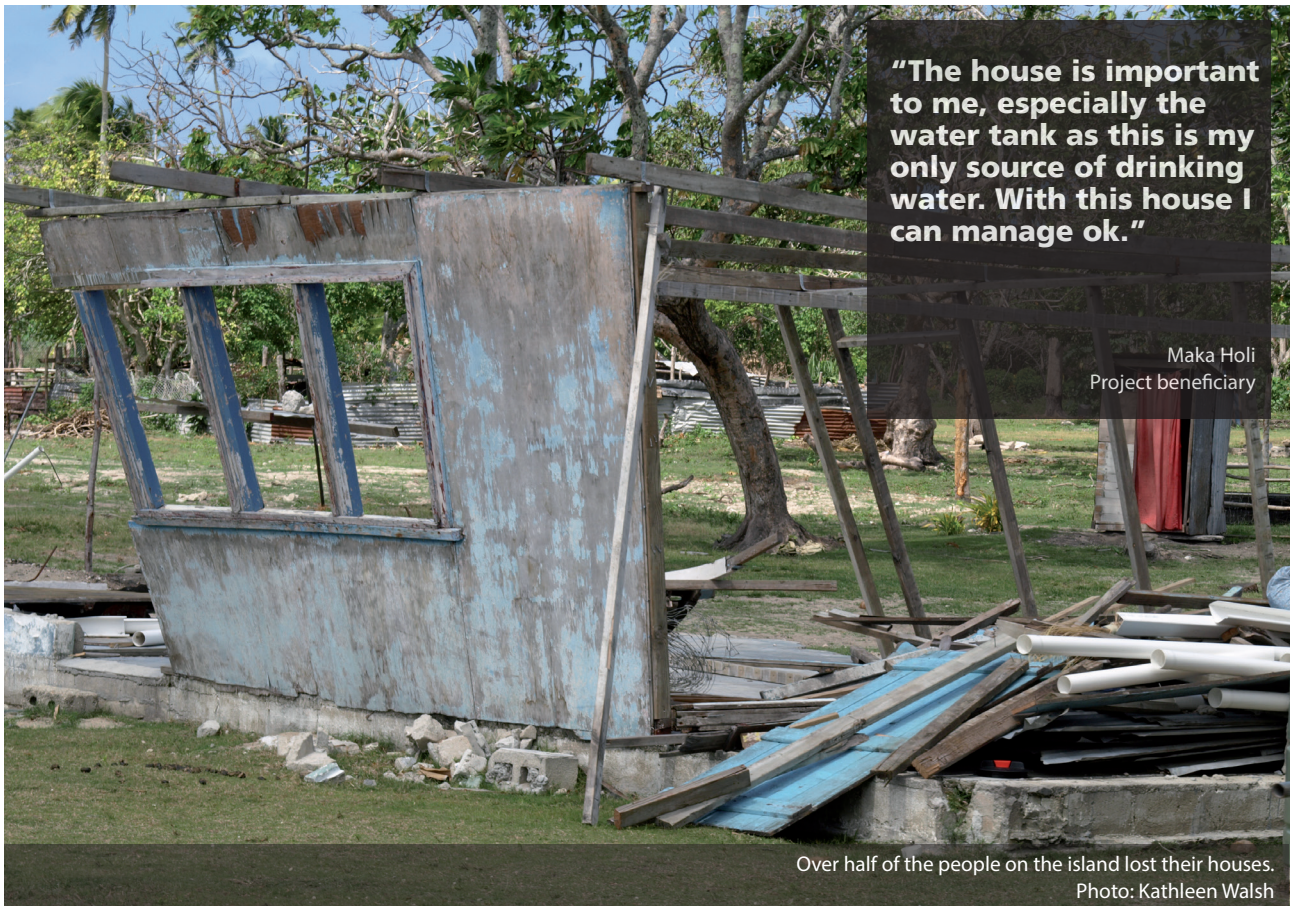
× A formal handover of the shelters to beneficiaries did not take place during the project leading to some uncertainty about ownership.

× Community consultation could have been stronger at critical points of the process of shelter design and latrine construction.

× Construction of latrines was not completed by a number of households in one village. Follow up was required to understand the issues and ensure completion where feasible.

- Initial assistance was requested in water supply only but the deployment of an engineer quickly identified other needs including shelter.

- As this project had a low number of beneficiaries, and high costs, the project team could not be large. It was difficult to provide a range of skills with the limited number of personnel.



Over half of the people on the island lost their houses. Photo: Kathleen Walsh

Before the tsunami

Niuatoputapu lies at the northern edge of the Kingdom of Tonga and although small, is the main island among the Niua group. Niuatoputapu, occupied by approximately 850 people, is extremely remote and highly vulnerable to natural hazards. It has very limited transport and communications, and just three settlements on its northern shore.

After the tsunami

An earthquake measuring 8.3 on the Richter scale, 300 Km north east of Niuatoputapu caused three tsunami waves up to six metres in height. Nine lives were claimed and four people were left critically injured.

The townships of Hihifo and Falehau were severely damaged, and all government houses and offices in Hihifo were totally destroyed. All essential services including the local hospital, airport, communication offices, ground and surface water were seriously damaged.

The initial assessment indicated that 79 homes were destroyed and 30 had major damage. The total number of people affected at that point was 465. These families were initially housed in tents, often on the land of other families, or shared housing.

Implementation

The locations of houses was discussed with each family separately to ensure that the land was either their own or that they had consent to locate a house and toilet on the site. Each household signed an agreement that this was the case. For the land closest to the sea in the town of Hihifo, there were strong government sensitivities to re-constructing housing in this area, and finally it was decided not to build on this land.

As there was a lack of resources on Niuatoputapu, a contract for prefabrication of shelters, toilets and water tanks was offered to a company based in the capital Nuku'alofa, six hundred kilometres away. They were responsible for shipping materials to the dock on the island with the project manager arranging the shipping.

A contract team of carpenters was set up on the island with a local overseer. The local implementing partner had a representative overseeing the process, supported by the project manager. This contract team accessed materials from the depot of the implementing partner via consultation with the representative. They constructed the footings in phases, leaving time for the concrete to cure, and then in stages, constructed the sub-frames and erected the shelters. There were up to three teams working on the island at one time.

The project manager, local representative and the contractor all had some responsibility for monitoring progress and quality.

To encourage householders to contribute, the toilet superstructure was only provided once pits had been dug by households. Water tanks were only provided once platforms had been constructed. This was only partly successful.

The project illustrated the challenges of running small projects on remote islands with a small project team.
Photo: Paul Davenport

A government building assessor resident on the island provided both interim and final certification for the buildings based on government standards for cyclone resistant shelter.

Selection of beneficiaries

Beneficiaries were those families identified by the local implementing partner in an initial damage assessment. To qualify for a shelter, their home and assets had to have been completely destroyed or lost in the tsunami.

Technical solutions

The technical and resource capacity of Niuatoputapu is very limited. Therefore it was decided to fabricate transitional shelter kits in the capital. These could then be flat packed and shipped to the island. The erection of the prefabricated elements was undertaken by local trades people supported by the householders where appropriate.

Shelters were designed to be cyclone resistant and were certified to be of standard according to Tongan building regulations by the government building inspector on Niuatoputapu.

The design of the shelters ensured they were simple enough to be built in a remote location and that they could be dismantled and re-built as the government was offering land further from the coast to encourage people to move for their future safety.

The project built shelters using contracted teams from Niuatoputapu, 600 km away.
Photo: Kathleen Walsh

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 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.

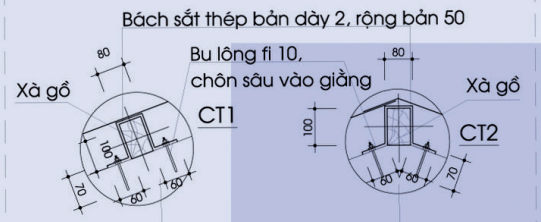
Generally speaking, all materials were available in the localities.

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



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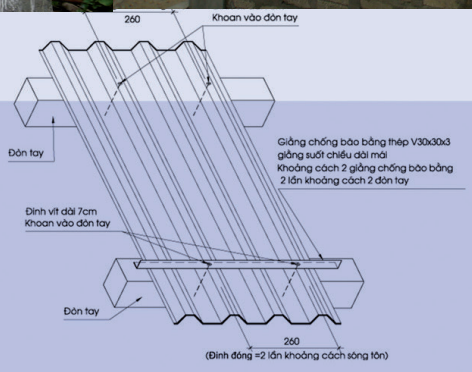

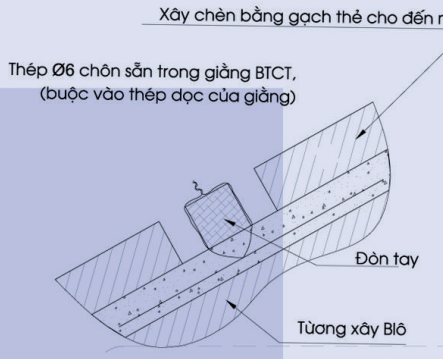

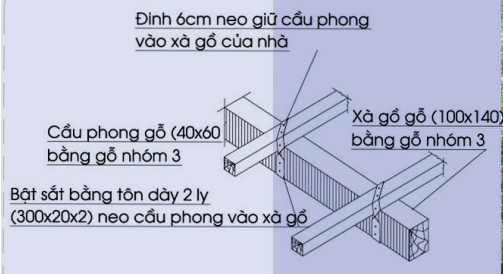

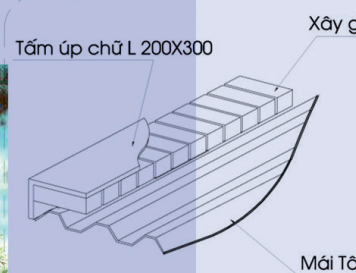

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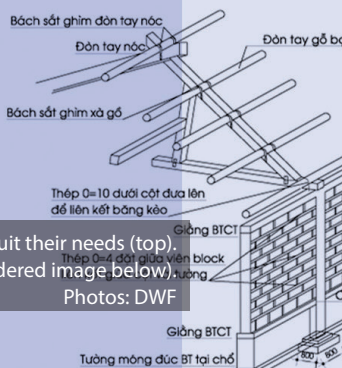
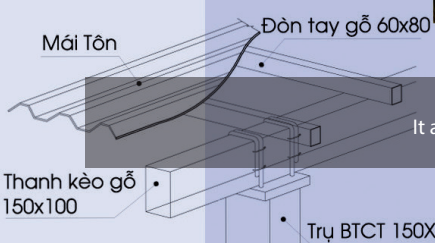
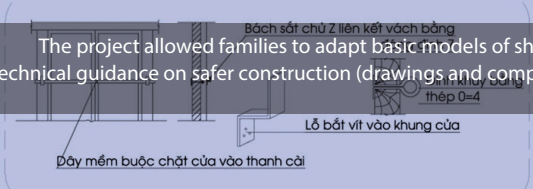






The project allowed families to adapt basic models of shelter to suit their needs (top).
It also provided technical guidance on safer construction (drawings and computer rendered image below).
Photos: DWF

A.3 Colombia – 2010–2011 – Floods

Case Study: **Keywords:** Non-displaced, Housing repair and retrofitting, Advocacy, Infrastructure, Training.

Country:
Colombia

Project location:
Department of Chocó

Disaster:
Floods

Disaster date:
2010 to 2011

Number of houses damaged / destroyed:
Over 350,000

Project target population:
5.463 people in 5 communities
80 households in target village

Project outputs:
80 elevated houses
1.1km footbridge
Disaster risk reduction activities for 5527 people

Occupancy rate on handover:
100 per cent

Shelter size:
70m^2

Materials cost per shelter:
US$ 3000

Project cost per shelter
US$ 5300 (including staffing, volunteers, and logistics)

Project timeline

Project description

The project used community participation to improve the overall living conditions of 80 families who were struggling to survive following flooding. It supported a total of 5,527 people in surrounding villages with disaster risk reduction (DRR) activities. Stilt construction was used to build 80 new houses and a 2.5m high, 1.1km long footbridge. Disaster preparedness activities, first aid, hygiene promotion and safe construction trainings were also provided. The project is now an example, both at regional and national level, of what can be done to support riverside communities to mitigate the effects of recurrent floods.

Strengths and weaknesses

✓ The project demonstrates (both locally and globally) that there is an alternative to resettling people affected by floods and that living with floods is possible.

✓ Long-term, positive impact on the community's resilience, disaster preparedness and social cohesion.

✓ As logistics costs were high, a greater impact was achieved by concentrating on a few communities.

✓ The disaster risk reduction (DRR) project included housing improvements, infrastructure reconstruction, food security, environmental education, hygiene promotion, livelihoods and training on how to elevate buildings.

✓ The model is easily replicated for other flood-prone communities.

× The project was relatively small-scale and resources have not been allocated for large-scale replication.

× The project did not have either communication or advocacy strategies.

× Local government was involved late in the project.

× Water and sanitation components of the project were not resolved.

- The government had limited capacity to provide technical and financial support.

- High logistic costs demanded capacity from outside the village, staff from the organisation and local alliances.

- Risk management and DRR at local level is still solely focused on emergency response.

- Project timelines imposed by donors were very tight. The project needed to balance the timeframes and flexibility required for local construction practices, livelihoods and genuine participation against pressure to complete the project.

The project had a strong focus on training and disaster preparedness, sometimes using simulations.
Photo: Sandra D'Urzo/IFRC

Before the floods

Chocó is a department in north-western Colombia, on the Pacific coast and is famed for its jungle and biodiversity.

As most of Chocó is inaccessible by road, rivers are traditionally the major transport routes.

The community of San José de la Calle was displaced by conflict in the region in the early 1990s. Since then, livelihoods have been based on timber exploitation and seasonal fishing. The remote location hampers development of alternative livelihoods and job creation, while municipal services such as electricity and water are scarce or non-existant.

In 2002, there was a massacre in the nearby town of Bellavista. Since then, international aid organisations distributed relief and made water and sanitation improvements in the area. San José de la Calle benefited from a latrine-building project, but unfortunately these were only usable in the dry season.

Until recent years, floods lasted about one month, isolating households, and interrupting schools and livelihoods. Families built mezzanine levels inside their homes to keep them and their possessions dry.

After the floods

The 2010 floods lasted six months, during which the community lost most of its economic resources. The severity of the flooding is expected to continue in future years primarily as a result of over-exploitation of the forests leading to silt deposits in the Atrato river.

Some people considered resettling closer to the main town but the community was attached to the collectively owned land. A national decree protects this ethnic group and other indigenous populations.

Implementation

The project was implemented with a focus on participation. Over the course of one year, the entire community contributed to create a village which serves as a model for other projects. The community council was the main decision-making entity.

Lumberjacks from the village worked together to cut timber and decided its price. Women cooked collectively during the construction, and children helped to carry smaller materials for the footbridge.

Continuous dialogue with the main community representatives (the council, women's groups, craftsmen and the lumberjacks union) facilitated collective decision-making. This was achieved during the donor's timeline of 15 months (one year of construction activities).

At first, craftsmen were not paid for the construction of their own houses, and only technical assistance was provided. Later, food for work and cash for work were provided to accelerate construction, though families still needed to continue with existing livelihoods activities.

Skilled carpenters were hired from outside the community. Construction was managed in teams of three people who were paid daily. The main carpenter and his assistants received US$ 340 for each completed house.

On-the-job training was provided to carpenters to ensure long-term knowledge transfer of techniques such as wooden pole treatment and replacement and the principles of elevated construction.

Initially, damaged tools were replaced by the project. Later it was decided that each carpenter or woodcutter would pay for his tools and keep them at the end of the project.

The project began by elevating an existing house and school building. However, a technical review stated that new construction, although far more expensive, would be more effective than elevating existing buildings.

A pilot house, elevated by 2.5m, was then built to demonstrate the building technique. Families would need time to adjust to the new design, especially in dry season, but were keen to live "on the first floor" in order to escape the effects of flooding. A total of eighty new houses was built.

The new footbridge design was based on a 3km long bridge built in another community. The bridge had shown to have a positive effect on psycho-social wellbeing, as villagers could stay connected with one another during the months of flooding.

A school, an elevated collective garden, a community centre and an elevated children's playground were also built.

There was no water and sanitation component to the project. Existing, partially-damaged latrines were dismantled.

Selection of beneficiaries

The entire community benefited from the risk reduction aspects of this project. In the selected village all houses were reconstructed.

Coordination

The project was coordinated with government departments and institutions. The government was

In one "model" village, the organisation built eighty elevated houses and community infrastructure.
Photo: Sandra D'Urzo/IFRC

willing to provide extra funds to complete the newly-built houses and helped to promote the project elsewhere.

Unsuccessful attempts were made to coordinate with other organisations to resolve the water and sanitation issues.

> 'We are happy because we are going to resist the waters, when the river will come, we will be here, ready, resisting the flooding"
>
> Beneficiary

Community-based DRR

Five communities and schools were supported to enhance their preparedness for recurrent floods. This support included:

- risk management plans
- community risk maps
- emergency equipment
- trainings on disaster prevention for community councils and the local authorities
- training of thirty teachers and local authorities in school risk management
- risk awareness and self-protection training for school children
- a first aid post inside the schools
- two disaster simulations involving 820 people.

Several videos were produced during the project to showcase the DRR component as a model to other communities, and to increase the awareness of technical options to improve flood resistance.

In the targeted village:

- Carpenters wrere trained on the care and maintenance of the houses. 55 carpenters received a recognized training on safer construction.
- 480 household water filters and 500 individual filters were delivered.
- A solid waste management plan was established and a compost area organised.
- Seeds were produced in the collective garden to support replanting of timber species used for construction.

Technical solutions

Several elevated footbridges with a total length of 1.1km were built to connect the main dock with most homes, schools, community buildings and the community garden.

The bridge was constructed from a wooden frame with recycled wooden railings and paved with recycled plastic slabs (using 1 million recycled plastic bottles). It was one third cheaper than using new timber. Using the recycled materials also avoided using 2,800 timber slabs, equivalent to cutting 15 trees that would take up to 40 years to grow back.

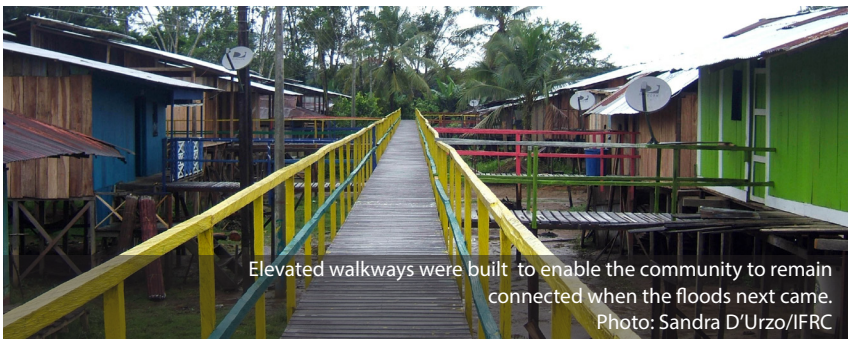
The recycled plastic slabs were guaranteed for 20 years with reduced maintenance, three times the duration of timber.

Logistics

Construction involved the transportation of 24,500 sawn boards by boat.

Eleven woodcutters and five lumberjacks participated in the construction. The timber used was a local species of tree sourced from collective land or land belonging to individual households.

The timber was processed into planks in the forest and then transported to villages by boat where it was then distributed by hand.



Elevated walkways were built to enable the community to remain connected when the floods next came.
Photo: Sandra D'Urzo/IFRC

A.13 Haiti – 2010 – Earthquake

Case study:

Keywords: Returns, Unplanned camps, Urban neighbourhoods, Infrastructure, Community engagement

Country:
Haiti

Project location:
Port au Prince

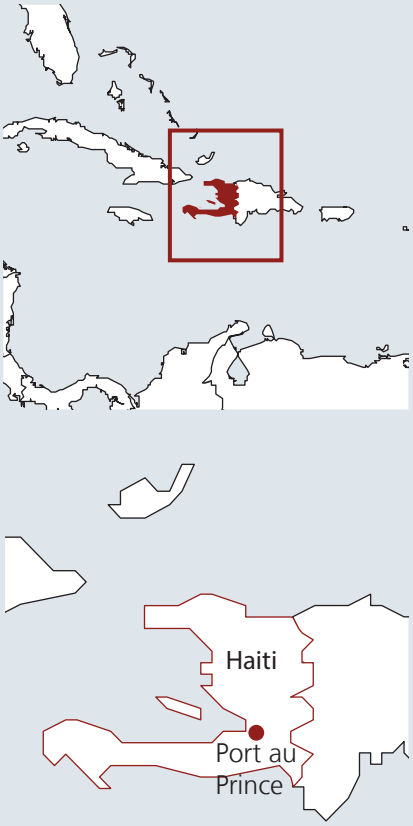
Disaster/ conflict:
Earthquake

Disaster/ conflict date:
12 January 2010

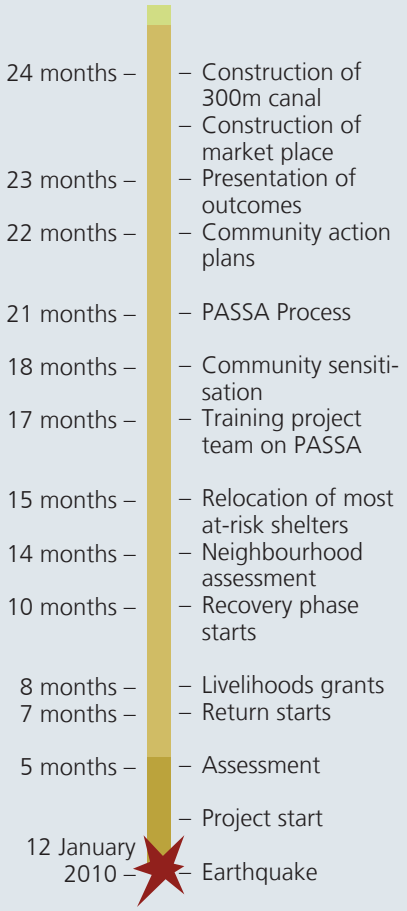
Number of houses damaged / destroyed:
180,000

Project target population:
700 families

Project outputs:
Increased awareness on safer construction,
Cadastral map,
Community Action Plan,
300m of canals
Community Market Place



Project timeline



Project description

The organisation used the Participatory Approach for Safe Shelter Awareness (PASSA) process to support the community make the transition to neighbourhood recovery. A range of participatory activities were carried out to decide both a comprehensive community plan for reconstruction, and a detailed list of related programme activities by the organisation. The identification of problems and solutions enabled the community to make plans for their own long-term recovery activities.

Strengths and weaknesses

✓ A participatory planning approach promoted a high level of engagement by the community which led to a programme that responded to people's self-determined needs.

✓ The process empowered and gave a voice to members of the community who are not often heard.

✓ The plans that were developed cut across a number of different sectors which resulted in an integrated approach to settlement planning.

✓ The project built on relations with camp residents early in the response to support recovery.

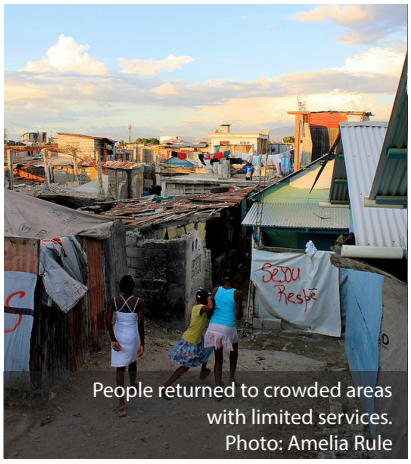
✓ Enabled the community to directly act in their neighbourhood to improve their quality of life.

× PASSA was not used in the first year of the response leading to delays in the recovery planning.

× Participatory tools are only the first step for reconstruction. Additional training, planning and technical skills are required for safer construction.

× More time was needed to explain that participatory tools only informed planning, and expectations for concrete results needed to be managed.

- PASSA was developed in rural contexts, the focus on 'shelter' needed to be adapted to 'habitat' to encompass the infrastructural and social aspects of living in an urban context.
- "PASSA" can be carried out simultanously with other assessment techniques.
- GIS mapping weas essential to monitor progress.
- Considerable time is required to plan the participatory process and analyse the information from workshops.
- Local terms needed to be used to ensure a full understanding of issues.
- Participatory tools developed for rural contexts can be adapted for urban contexts.


People returned to crowded areas with limited services.
Photo: Amelia Rule

The organisation used a PASSA process: residents identified their own problems and the actions needed to address them.
Photo: Mandy George

Before the earthquake

After land was reclaimed from the marshes in the 1980s, an informal settlement developed in Delmas 19, Port au Prince. The houses were self-built structures made with poor-quality materials such as concrete blocks, corrugated iron and wood, and constructed with little knowledge of safe building techniques.

Infrastructure was poor with limited water and sanitation services, and the site was badly drained with limited access.

After the earthquake

The earthquake destroyed half of the houses in the settlement and damaged half of the remaining structures. The main drainage canal was also damaged and blocked by rubble and debris.

Many water reservoirs belonging to individual households and commercial suppliers were damaged and pit latrines were inaccessible or broken. There were more than 100 families, with only one public latrine, living in makeshift shelters.

Selection of beneficiaries

Following the earthquake the organisation provided emergency assistance in the targeted camp, and identified the clear need for joint livelihoods and shelter support.

In June 2010, the private landowner offered US$ 200 to families to leave the site. Consequently two-thirds of the camp population relocated. The majority were from the adjoining neighbourhood, and the organisation followed them as they returned home to demolished houses, makeshift shelters and a lack of services.

The groups with the highest shelter vulnerability were renters and those who lived next to the canal on land that could be reclaimed by local authorities. Those facing possible eviction had a broad range of backgrounds in terms of education levels, livelihood strategies and home ownership.

Direct support was given to specific households based on vulnerability assessments developed with the community, while the whole community benefited from improvements to site drainage and public spaces such as the market.

Implementation

The participatory process began with an explanation to participants of how a detailed planning process would result in the best solutions for reconstruction. The coordination of different sectoral projects, such as solving drainage issues before providing shelter solutions , achieved a joint approach to settlement rehabilitation.

The organisation used the "Participatory Approach for Safe Shelter Awareness" (or PASSA see - PASSA, Participatory Approach for Safe Shelter Awareness, IFRC 2011). PASSA was a relatively new, and formally structured approach to participation in shelter projects. It was based on a tool commonly used in WASH programming.

The PASSA process involves working with a group of 40 representative people. This group was selected by the community and did not include the existing committee members. However, all activities were carried out in coordination with the committee members.

PASSA comprised eight participatory activities, which were carried out over two to three months:

1. historical profile and everyday problems
2. community mapping and visit
3. frequency and impact of hazards
4. safe and unsafe habitat
5. options for solutions
6. planning for change
7. problem box (future planning)
8. monitoring plan (future planning)

After each activity, the group shared their work with family and neighbours to encourage understanding of the process across the community.

At the end of the process, all the work, findings and plans were shared firstly with the committee members for feedback and input, and secondly presented to the whole community at an open day held in the community centre. The PASSA group members shared what they had done and received their participation certificates.

The main problems faced by the community were:

- weak infrastructure and flooding
- public health, water, sanitation and waste management issues
- safe access routes and personal safety
- unsafe shelter and settlement.

Both the market (left) and the path (right) were identified needs and both were built by residents with the support of the organisation.
Photo: Amelia Rule

The identified solutions were to:

- construct the canal
- install solar street lighting
- construct shared latrines
- improve waste management
- improve housing and planning
- improve technical expertise through supervision and training.

Community projects

Planning for change started with mapping the issues in the neighbourhood and understanding their relationships. This enabled the community to take into account issues, including gender, protection and security. Once the issues had been identified the groups discussed each problem in turn.

Working groups, called 'cells', took on each subject and carried out further work, before creating an overall Plan of Action.

A security cell positioned solar lighting while a community waste management group cleared waste.

Community contracts were written for people from the neighbourhood to build the canal. This employed over 300 people.

Materials and technical supervision were provided by the organisation and fifteen shared latrines were constructed by the families themselves.

Community construction teams that had received training before working on the canal also built the market.

All of these activities started with awareness raising and engagement with relevant authorities. The projects also aimed to improve skills for the housing construction and repairs which would follow.

Challenges with PASSA

The community had raised expectations about what PASSA could provide. They thought they would immediately receive the solutions they identified. The facilitators spent a lot of time explaining that the participatory approach would help to identify priorities and the solutions that the community themselves could achieve. It would also analyse where support was needed from the organisation and the local authorities.

The PASSA tool was developed in a rural context with a specific focus on 'Shelter'. As a result, some limitations were found using the tool in an urban context and within an integrated approach. The team adapted the activities to take into account the wider issues of infrastructure, water sanitation, urban issues such as spatial planning and security problems.

DRR components

The area was suffering from poor drainage, poor waste management, poor housing construction and poor infrastructure. All these aspects made the population vulnerable to flooding, the effects of hurricanes, outbreaks of disease and earthquake risks.

PASSA raised understanding of how risks to health and safety were caused not only by natural disasters but also by the everyday practices of the community.

Poor waste management and lack of upkeep of the canal lead to serious blockages and subsequent flooding of low-lying houses with waste and sewage.

To mitigate against these problems the PASSA process helped participants to identify simple actions that they could conduct. These included improved construction and environmental management, and how to prepare, plan and respond to a natural disaster.

Technical solutions

When provided with the materials and technical support necessary to carry out the reconstruction the PASSA process had ensured that the community was highly motivated.

At the end of 2012, Haiti had no official building codes and material standards were not enforced. The general level of understanding by architects and builders of seismic construction techniques was limited. A great deal of time was spent with engineers, seismic specialists and construction professionals to ensure that the shelter solutions were safe and that the community understood the reason behind the application of new techniques.

This knowledge was transferred outside of the participatory planning sessions, delivered instead through on-site practical training sessions.

Participatory Approach for Safe Shelter Awareness (PASSA) is a participatory method of disaster risk reduction (DRR) related to shelter safety. It is a variation of Participatory Hygiene and Sanitation Transformation (PHAST), which has been used by many Red Cross Red Crescent National Societies in water and sanitation programmes since the late 1990s.

The aim of PASSA is to develop local capacity to reduce shelter related risk by raising awareness and developing skills in joint analysis, learning and decision-making at community level.

PASSA is a process, facilitated by volunteers, that guides community groups (called PASSA groups in this manual) through eight participatory activities which enable the participants to do the following progressively:

- Develop their awareness of shelter safety issues in their community
- Identify hazards and vulnerabilities that create risk related to shelter
- Recognize and analyse causes of shelter vulnerability ÌÌIdentify and prioritize potential strategies to improve shelter safety
- Make a plan to put those shelter safety strategies into place, based on local capacities
- Monitor and evaluate progress.

Source PASSA, Participatory Approach for Safe Shelter Awareness, IFRC 2011

"PASSA helped us to see that many problems in our area are not complicated to fix, they are small things that can have a large negative impact – such as the rubbish blocking the canal and causing flooding."

PASSA participant
Delmas 19

Defining the community:

In this complex urban context, the community was defined by: housing typologies, level of poverty, physical boundaries of roads (making the area a pedestrian community), a representative committee and the familial and neighbourly networks that were already in place.

Drainage was identified as a key safety issue. 300m of drains were cleared and covered to make a path.
Photos: Amelia Rule

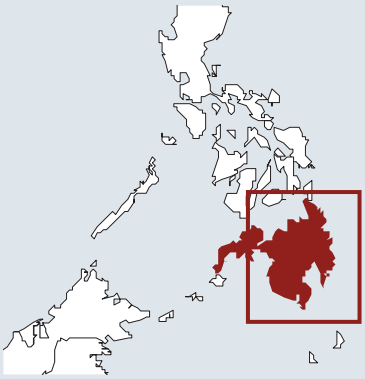
A.25 Philippines – 2011 – Cyclone

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

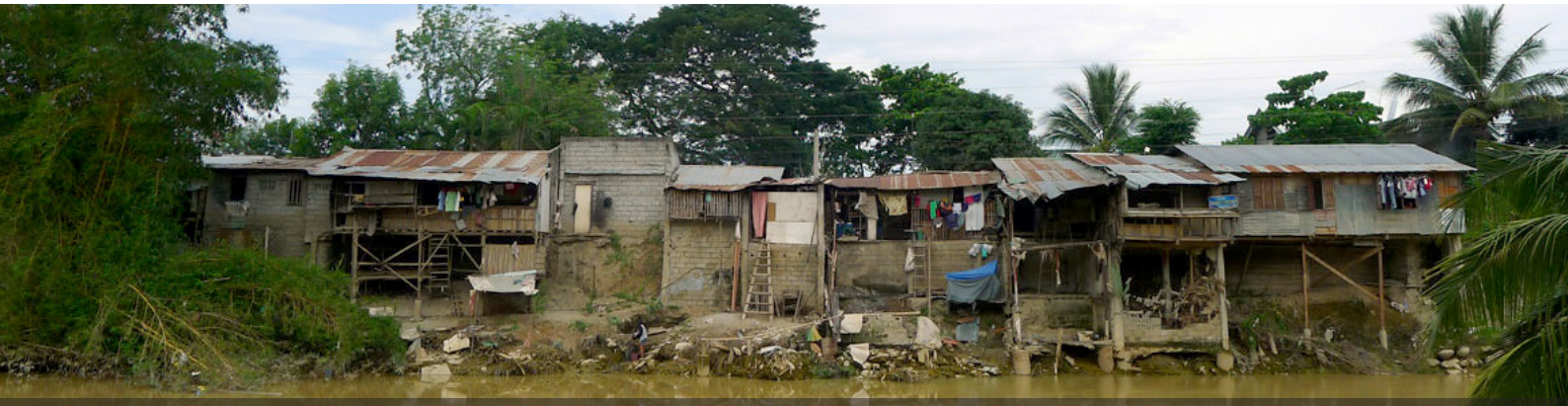
Tropical storm Washi, (also known as Sendong), hit the Mindanao region of the Philippines from the 16th to the 18th of December 2011. The storm brought strong winds and heavy rain that led to flash floods, landslides and protracted flooding. 624,600 people were affected, 430,000 people were displaced 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 co-ordination 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.1 Colombia – 2011 – Floods

Case study

Keywords: Core housing / progressive shelter; Advocacy / legal; Site planning; Infrastructure; Training.

Emergency:	Flooding, Colombia.
Date:	Recurrent floods over many years.
People affected:	Community of 148 families (1,054 people).
Project location:	Doña Ana, San Benito Abad Municipality, Department of Sucre.
Beneficiaries:	Entire community.
Outputs:	148 housing units, settlement infrastructure (water, sewage, energy and school construction).
Ocupancy rate:	100%.
Shelter size:	49.75m² (including kitchen, bathroom and 2 bedrooms).
Cost:	Materials and labour: US$ 11,100 per household. Total cost including administration and connection to utilities: US$ 21,300 per household.

Project description:

This project supported the entire community of Doña Ana to voluntarily resettle to a new location, due to severe annual flooding. The project was implemented by a consortium which included a private foundation, public bodies and aid organisations.

The project involved community-led planning and settlement design and construction, in order to reinforce the community's resilience and capacity to develop sustainable living solutions in their new village. In total, 148 families were supported with new houses and infrastructure. Furthermore, the project may serve

Emergency timeline:

[a] Annual, seasonal floods in original area of Doña Ana.

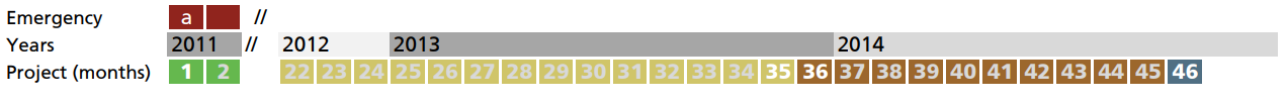
Project timeline (number of months):

[1-16] Phase 1 (Jan 2011-April 2012). Land selection and construction of 53 houses.

[10-20] Phase 2 (Oct 2011-Aug 2012). Collective fundraising and construction training. [19-35] Phase 3 (July 2012-Nov 2013). Community buildings plus 73 houses completed.

[36-46] Phase 4 (Dec. 2013-Oct. 2014). Community school construction.

[46] Oct. 2014: Planned project end.



Strengths

✓ Strong engagement of national authorities in both project planning and resolution of land-tenure issues.

✓ Social and community mobilisation established a sense of belonging as well as facilitating construction.

✓ Environmentally-friendly development: introduction of new ecological water treatment plant.

✓ A holistic approach to the project included socio-economic support, psycho-social support, capacity-building of woman's groups along with infrastructure and education components.

Weaknesses

× The community is reliant on fishing but the industry itself is in decline. New, sustainable income generation activities are hard to establish.

× Ventilation of the houses was limited, requiring adaptations to doors and patio to better adjust to heat and humidity.

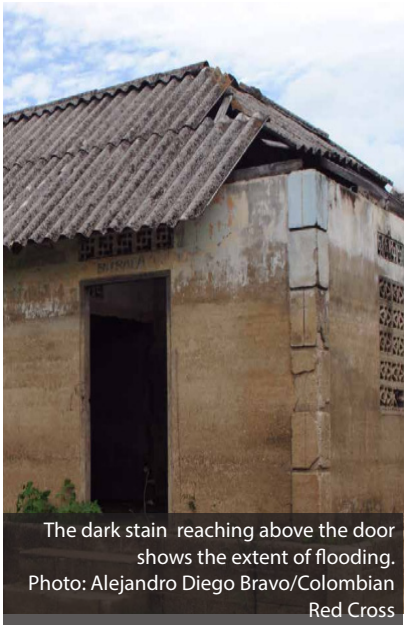
× Additional psycho-social support is necessary to help the elderly overcome the loss of the old village and increase collective ownership of the new village.

× Additional training on water and solid waste management has been required to ensure sustainability of the water treatment plants and environmental education efforts.

Observations

- The resettlement process goes beyond the project's lifetime, with a continuous effort required by all parties to ensure a successful transition.
- It is important to consider links and interactions between the new settlement and neighbouring areas to maximise integration and development.

The layout of the old village. The site was severely flooded on separate occasions over many years.
Photo: Alejandro Diego Bravo/Colombian Red Cross



The dark stain reaching above the door shows the extent of flooding.
Photo: Alejandro Diego Bravo/Colombian Red Cross

Living conditions in the old village

The community of the 'old' village of Doña Ana, located within a lagoon system, was increasingly affected by seasonal, protracted, 2-metre-high floods, which lasted several months. The floods damaged houses and assets, reducing incomes and livelihoods, and ultimately made living conditions very difficult.

During flood periods, people built timber mezzanines inside their homes to elevate the floor, but this meant people could not stand up in their own homes. Sometimes water levels reached roof-level, collapsing some of the weaker structures, with the church and the school inaccessible for long periods.

Living conditions in the new village

Although the 'old' and 'new' Doña Ana settlements are located only half an hour from each other by boat, the change in living conditions is dramatic in terms of house typology, settlement density, access, livelihood development and general lifestyle pattern.

Children and younger people easily and happily adjusted to the new circumstances, especially given that they were forced to live confined inside their houses during several days or weeks when floods hit in the old settlement.

The elderly population found it more difficult to overcome the feeling of loss that they had, mourning the end of the old village. Feasibility studies are being carried out, as part of an environmental education and DRR project in the lagoon, to create a sort of 'memorial park' in the old (and often under-water) village, to ensure that people can return to honour the dead, who remain buried in the cemetery in the old village.

Currently the community envisages various collective projects, fundraising for new places of worship and creating new cooperatives in order to generate income and ties with the surrounding villages.

Beneficiary selection

The decision to move the entire community of Doña Ana to a new settlement with no risk of flooding was taken following an assessment of the winter floods by the National Authority for Disaster Management.

Project implementation

The project was completed in four phases, described below.

> "The entire community needs to take responsibility and respect one another working hand in hand."
> Villager

Phase 1

The first phase involved the establishment of the mechanisms for coordinating and managing the project, with the implementing organisation partnering with the National Unit for Risk Management (UNGRD). The management committee was made up of representatives from the municipality, the implementing organisation, private foundations, and the UNGRD.

Together with the community, the local authorities, and the technical support of the hydro-geologic department at Sucre University, a new location was identified. The privately-owned land was surveyed by the authorities as a contribution to the project.

The community took part in mobilisation activities and participatory planning workshops.

Phase 2

More stakeholders entered the programme, with local authorities, non-governmental organisations and private foundations joining together to collectively fundraise and share financial, human and technical capacities. A further 22 families received construction training and built their new houses, assisted in terms of the supply and quality control of materials as well as technical assistance from the implementing organisation.

The community not only contributed to the building of their homes but also provided the labour for shared facilities such as the community centre. The emphasis on working together for a new future motivated most community members, though the elderly had more difficulty in adjusting to the move.
Photo: Alejandro Diego Bravo/Colombian Red Cross

A new water system was set up and the community established a development plan.

Phase 3

During this phase a further 73 houses were built and a number of infrastructure milestones were reached, including the construction of community buildings, the development of a sewage system and connection to the power grid. Small-scale livelihood projects began during this phase, such as kitchen gardens and poultry farming, with the government Department for Social Prosperity also providing livelihood support.

Phase 4

In the final phase, the construction of the school for 130 pupils will be completed, with intensive involvement of the community in the building process and associated themes of participation, accountability and maintenance of educational facilities. Further work on the development of community organisations will also be carried out.

Construction process

The community participated in all steps of the construction. The construction materials were purchased by the organisation, with the village leaders and committee kept informed of prices and progress. The organisation provided training for unskilled community labour for the construction process, and hired qualified building professionals from outside for more specialised tasks.

Coordination

The most important element in the coordination of the project was the input of the community itself and the trust developed between the community and the implementing organisation and its government counterparts. Community participation was crucial since initially the community was divided over whether to move or not. Without a collective decision the project would have been unsuccessful.

The consortium of different organisations was initiated by Colombian civil society groups, who turned to the main organisation for assistance in identifying a long-term development project into which they could channel their resources.

The consortium led the engagement with the local community, and the implementation itself. The local authority was particularly active in the first phases, especially in terms of site selection and legal considerations. The organisation started a livelihood project of home-based gardens, during which alliances were established with other institutions to ensure future technical assistance.

> "Doña Ana is the proof that it is possible to save a community at risk, to build a better future for society."
> Project staff member

Disaster Risk Reduction (DRR)

There were three phases of DRR:

- Risk awareness raising and knowledge development through risk-mapping workshops and other exercises.
- Risk management through disaster management training and the creating of a brigade that assisted in the phase-by-phase move from the old to the new village.
- Recovery and risk-reduction through environmental awareness-raising and education, and initiatives to create a risk-informed community. While construction works were carried out in the resettlement site, regular monitoring of the old site took place to ensure that nobody was re-occupying the empty houses.

Technical solutions

Technical aspects of the project included:

- Land surveys to ensure a safe relocation site.

The layout of the new village.
Photo: Alejandro Diego Bravo/Colombian Red Cross

- The design and construction of durable housing, based on minimum space standards and disaster-resistant features.
- Water pumping with filtering beds to clean waste-water before it returned to the lagoon.
- Rainwater harvesting.

Materials

The majority of materials were purchased from local suppliers, following a tendering process. The materials were brought to Porto Franco, the closest town, and then transported by canoe to the project site.

When housing construction was underway in Phase 1, a road was built, which improved access for Phases 2 and 3.

Wider impacts

The project is unique in Colombia in its combination of funding from private foundations and civil society, and implementation by a well-established national humanitarian organisation, with the support of the community and local government.

The funding requirements of this multi-phased project may be difficult for other communities to replicate, but the modalities and mechanisms of implementation of this programme demonstrate a model that could be replicated in other areas of Colombia or other parts of the world.

This project is an example of a success story for a community struggling with the adverse effects of flooding, a situation many remote communities around the world find themselves in. The story of the project has been disseminated at a number of high-level conferences including the World Urban Forum in Medellín.

Example of construction costs (Phase 3)

Item	Cost (US$)	% of total
72 houses (US$ 11,100 each)	799,200	49%
Preparation works	7,500	0.5%
Plot clearing & site planning	50,000	3%
Sanitation and electrics	330,000	20.5%
Roads and other infrastructure	439,000	27%
TOTAL	1,625,700	100%

A.1 Cuba – 2012 – Hurricane Sandy

Case study

Keywords: Household items; Construction materials; Tools; Support for host families; Housing repair and retrofitting; Training; Guidelines / materials / mass communications.

Emergency:	Hurricane Sandy, Cuba.
Date:	25-26 October 2012.
Damage:	220,000 homes damaged and 22,600 destroyed.
People affected:	3,000,000 affected (27% of Cuba's population).
Project location:	Org. A: Holguín province. Org. B: Holguín, Guantánamo and Santiago provinces.
Beneficiaries:	Org. A: 7,952 people. Org. B: 10,967 families.
Outputs:	Org. A: 320 roofing kits, 400 toolkits, 1390 family NFI kits. Org. B: 4,949 shelter kits.
Ocupancy rate:	Org. A: 100%. Org. B: 95% due to some families choosing other options.
Shelter size:	Repaired houses averaged 70m².
Cost per shelter / household:	Org. A: US$ 1,650 (US$ 1,100 for materials plus training and technical assistance costs). Org. B: US$ 815 per shelter kit.

Project description:

Two organisations delivered a standardised roofing kit to families whose homes had been damaged.

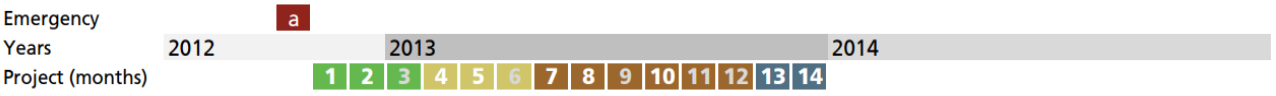
The organisations, in partnership with the government, provided materials tailored to the needs of each household. Organisation A provided technical assistance, trainings on DRR and a WASH component, whilst Organisation B implemented a Participatory Approach for Safe Shelter Awareness which included construction workshops.

Emergency timeline:

[a] October 2012: Hurricane Sandy hits.

Project timeline (number of months):

[1] Nov. 2013: Planning phase begins.
[4] Organisation B detailed assessment. Organisation A distributes all hygiene kits. [5] Government and community meetings, sensitisation. [6] Organisation B begins implementation.
[7] Organisation A finishes NFI distribution, roofing kit installation begins. [8] Organisation B begins PASSA training. [10] Organisation A capacity-building training.
[13] Organisation B handover.
[14] Organisation A handover.



Strengths

- ✓ As many houses were smaller than the average of 70m², providing tailored, rather than standard, kits meant that more households could be assisted.
- ✓ The two projects complemented the government response by providing materials that were not available in-country.
- ✓ Organisation A's tailored technical assistance meant safe repairs and correct installastion of most roofs.
- ✓ Organisation B's community-led DRR approach has built communities' capacities to cope with disaster.
- ✓ Organisation A found that 94.5% of respondents to an evaluation survey were fully or extremely satisfied with the technical assistance and materials received.

Weaknesses

- × Import regulations meant materials arrived slowly, delaying the implementation of the projects.
- × Not all structures were strong enough to support a roofing kit. In these cases some families received government support, though the waiting list was long as destroyed houses were prioritised first.
- × The total number of beneficiaries reached by the international community was only a small proportion of those in need, something beneficiaries themselves raised as an issue.

Observations

- Houses with 45-degree roof inclinations had to be modified to 30 degrees. Salvaged wood was used for some of the extra purlins due to timber shortages.

Organisation B introduced the new technology of Hurricane straps to Cuba. The straps were not always folded down correctly so training and site inspections were organised to reduce incorrect application. Photos: Santiago Luengo/IFRC

Situation before the disaster

Cuba is unusual as the vast majority of houses are state-owned. Many of these buildings, and related infrastructure, are in decay.

Urban areas, such as the cities of Santiago and Holguín, have building codes, but in rural areas houses are self-built and codes are rarely enforced.

Houses are built with wood and/or cement with thatched or, more commonly, corrugated iron sheet roofs. As local construction techniques do not involve the secure fastening of roofs, many were blown away by the hurricane.

Situation after the disaster

During the storm itself, most of the population was evacuated to safer areas (either collective centres or hosted by relatives with durable houses). Affected families were then divided into two groups:

Group 1 – Complete housing collapse

After the initial evacuation, some of the families in this group continued living with host families (often relatives), creating additional pressure on the hosts, who struggled with their own recovery.

Some families built makeshift shelters on the sites of their destroyed homes, using salvaged materials. These families faced very poor hygiene conditions, had no access to drinking water, and were unable to protect themselves from the heavy rains that followed Sandy. Both agencies distributed NFIs, including to host families in order to relieve some of the pressure of hosting.

Group 2 – Partial collapse or roof damage

Most of these families remained living in their homes, making repairs from salvaged materials. They also faced very poor housing and hygiene conditions.

Shelter strategy

Emergency response in Cuba is coordinated by the Government through Civil Defence Committees and the military. International NGOs, donors and UN agencies can only act with approval from the government.

The national shelter strategy had two stages:

Immediate emergency response: evacuation and the provision of temporary shelter solutions, whilst basic services were restored (led by the Cuban Government).

Recovery: risk and vulnerability were reduced through support for sustainable housing recovery and improved capacity for planning and risk-management (led by the Cuban Government with support from the international community).

All houses were repaired on their original plots and no households were relocated as part of the project.

Project implementation

Organisation A implemented its project as a consortium of Cuban and international agencies – including the Cuban Civil Defence Committee, municipal governments, the National Housing Institute (Instituto Nacional de la Vivienda - INV) and its municipal offices (UMIV - Unidad Municipal de Inversion de la Vivienda), the National Association of Architects and Engineers (UNAICC) and an international NGO. Organisation B implemented as a single organisation, coordinating with relevant partners.

The two organisations had slightly different approaches to implementation. Organisation A provided direct technical support to families and supported the government's DRR messaging. Organisation B, which has a permanent presence in the country and a large network of volunteers, chose to focus on applying its Participatory Approach for Safe Shelter Awareness (PASSA - see **Shelter Projects 2011-12**, A.13) at the community level.

Moving into the recovery phase, each home was assessed for damage by UNAICC and UMIV. Following the technical surveys, individual repair plans were drafted for each home.

The local government provided subsidies for families to purchase

Organisation A ran trainings to instruct beneficiaries on safer and stronger construction techinques. Teaching aids included posters and scale-model houses.
Photo: Ictiandro Castillo. Graphic: CARE International.

construction materials at reduced prices, and to be able to repair their homes with the receipt of the roofing kit.

Both organisations trained community brigades, masons, carpenters and volunteers on safe roof installation. Community brigades were made up of groups of between 2-10 people with construction skills, who supported the community as volunteers. They worked with close supervision and support from specialists in roof installation from UNAICC and UMIV. Monitoring visits were conducted, as well as satisfaction surveys and evaluations.

Beneficiary selection

Organisation A's area of intervention was selected in coordination with government and other agencies, with Baguano and Cueto municipalities in Holguín province chosen on the basis that they were two of the most severely affected areas.

Organisation B's area of intervention was selected after the initial emergency assessment. Organisation A's caseload was mostly rural while Organisation B's beneficiaries were more likely to be in urban areas.

Organisation A's list of beneficiaries was provided by the Cuban Civil Defence Committee and municipal governments, with the organisation double-checking that beneficiaries met the following criteria:

- Social vulnerability – priority was given to female-headed households, single mothers, the elderly, and the disabled.
- Economic vulnerability – those facing severe economic difficulties received government subsidies (bonds) to purchase construction materials.
- House collapsed – prioritised for NFI and hygiene kit distribution.
- House partially collapsed and roof lost – prioritized for roof replacement and home repair (if the house structure could support the roof).

Organisation B used similar criteria but selection was made together with the community through neighbourhood meetings.

Coordination

The government took the lead in the response. No Shelter Cluster was initiated and the few coordination meetings that did occur took place in Havana and not in the affected region. Both agencies implemented a standard roofing kit designed and approved by the INV.

> "We learned that a joint voice and message is more powerful, and that national and international organisations can work together towards common goals."
> Technical specialist from Cuban partner organisation

Common messaging on DRR capacity building and Building Back Safer messages was developed amongst the agencies for Information, Education and Communications (IEC) materials which were then disseminated by NGOs and international agencies.

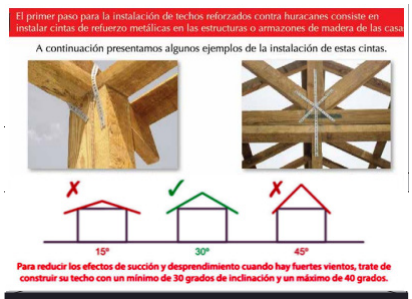
Organisation A's messaging included hygiene promotion, safe and correct use of NFIs (including mosquito nets) and Build Back Safer techniques and safe roof installation.

Technical solutions

By tailoring technical assistance to the needs of each individual household, the risk of inappropriate construction was minimised.

Organisation B implemented hurricane strapping, and this was the first time the straps had been used in Cuba. The organisation used examples from intervention in Haiti to advocate for government acceptance of their usage.

Organisation B found that house typologies varied greatly and consequently the straps had to be adapted to different constructions. This led to delays, but also improved understanding of the technique.



Organisation B developed training material that included messages such as how to improve joining and the optimum slope for roofs.
Graphics: IFRC/Cruz Roja Cubana

Disaster Risk Reduction (DRR)

High winds and tropical storms are significant hazards in Cuba and roofs are frequently lost during storms.

Given that only a small quantity of iron sheets are produced in Cuba, the loss of a CGI sheet roof is an extremely expensive one. It is important that investment in CGI sheeting is long-term and that roofs are secure so that investment in costly CGI sheeting is not wasted.

Advice on safer home repair and roof installation included:

- Roof slopes of 30-40 degrees;
- Veranda roofs should be separate from main roofs;
- CGI sheets must overlap by at least 1.5 ridges
- Purlins every 1.2 m, fixed to the structure;
- Purlins should be installed with the widest dimension of the section extending away from the roof-frame (the opposite is a common mistake in Cuba).

Organisation A provided DRR messaging at different project stages. When the individual repair plan for each household was developed by UNAICC and UMIV, Organisation A's poster on safe reconstruction was used as the basis for discussions with each household.

Training workshops with brigades were conducted by UNAICC and UMIV on how to safely install roofing kits, using posters and scale models to illustrate the techniques.

Once the training was complete, UMIV and UNAICC organised practical sessions where brigades installed an actual roof kit, which then became a "model home" example in each community.

Organisation B used its PASSA to reinforce messages within the community. Members of the local authorities participated in the training to gain ownership of the tool and eventually apply this Shelter DRR tool in other areas as well, though unfortunately it was not possible to complete the implementation during the project's emergency response phase.

Materials

Most materials, including all CGI roofing materials, had to be imported, and import regulations lengthened the delivery process. Only timber was available in sufficient quantities to be sourced locally, although in some instances salvaged timber was used by Organisation B in place of more expensive purlins to make it easier to implement the hurricane strapping.

Once the roofing materials had been cleared by the authorities, they were transported to the project site by the government.

The two shelter kits differed in materials cost. Organisation A used 0.55mm thick CGI, the painting of which added to the final cost, making it slightly more expensive per shelter than Organisation B. Organisation B also benefitted from economies of scale.

Wider project impacts

The introduction of hurricane roofing straps by Organisation B was a significant improvement to construction techniques in Cuba. The straps were not available on the local market.

The official roof kit design developed and validated by the INV was for gable roofs, rather than the hip-roofs found locally in rural areas, particularly Bagunos and Cueto. As a lesson learned, Organisation A and UNAICC jointly advocated for the adoption of a new technical specification for houses with four-sided hip-roofs, and this is currently being considered by INV and a new design should be developed in time for the next emergency response.

A completed house with CGI roof.
Photo: Santiago Luengo/IFRC

Cuban authorities are considering building on the approach of using local resources for technical assistance. UNAICC, for example, is present in all provinces and could be mobilised to provide technical assistance in times of emergency.

Both organisations raised their profiles as credible counterparts of the government in both emergency response and capacity building.

Organisation A's roof kit

Item	Quantity
CGI roofing Gauge 26, 1.07m x 3.70m, anti-siphon.	20 sheets
Galvanised steel purlin,	
3"x 2" x 7m	12 pcs
Roof ridging 45cm x 183cm x 26m	6 pcs
Galvanised screws (4.2mm x 16mm)	220 pcs

A.1 Dominican Rep. – 2012 – Hurricane Sandy

Case study

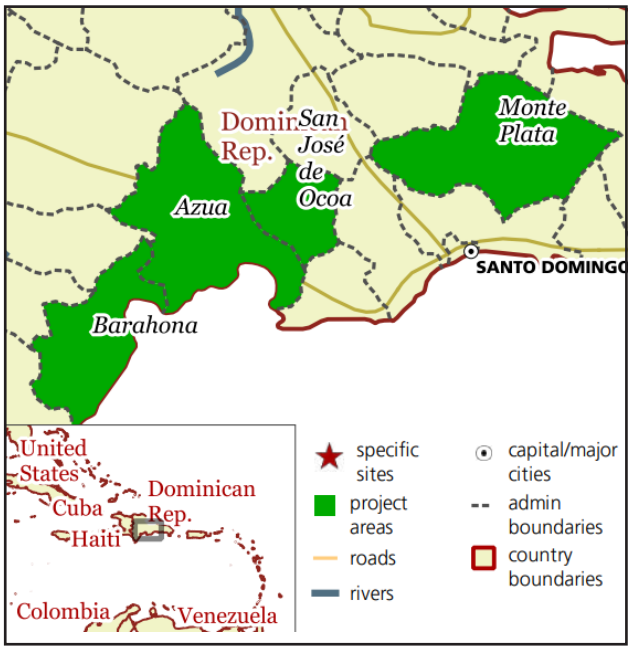
Keywords: Household items; Construction materials; Housing repair and retrofitting; Cash / vouchers; Training; Structural assessment.

Emergency:	Hurricane Sandy, Dominican Republic.
Date:	24-26 October 2012.
Damage:	24,559 houses damaged, 200 houses destroyed.
People affected:	122,795 people.
Project location:	Azua, Barahona, Monte Plata, San José de Ocoa.
Beneficiaries:	5,041 people.
Outputs:	949 households supported. 581 received NFIs, 368 received construction materials. Six collective centres were reinforced.
Ocupancy rate:	95%.
Shelter size:	26.49m², about 40% of the size of the average home.
Cost per shelter / household:	NFIs: US$ 116. Materials: average US$ 205. Total cost per shelter including project costs: US$ 360.

Project description:

An integrated early recovery project which combined a shelter response with WASH assistance and risk-reduction components. With the objective of assisting the most vulnerable families, NFIs and tailored shelter-repair kits were distributed through vouchers redeemed at local suppliers.

Technical assistance and training was provided to communities and local craftsmen to improve disaster-resistant construction techniques.

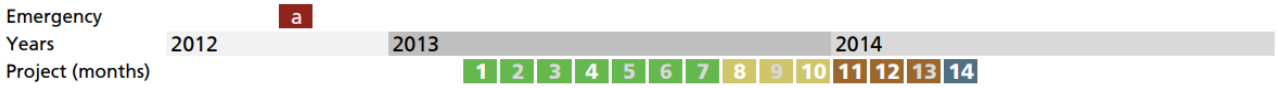


Emergency timeline:

[a] October 2012: Hurricane Sandy hits.

Project timeline (number of months):

[1] March 2013: NFI distribution.
[2] Planning.
[4] Beneficiaries identified.
[8] Detailed damage assessments conducted and individual house plans developed.
[10] Safe shelter trainings for carpenters and masons.
[11] Final classification of aid package for each family.
[12] Distribution of materials.
[14] Project handover.



Strengths

✓ Beneficiaries and construction workers became more aware of the value of safe construction techniques.
✓ There was an effective introduction of new elements, such as hurricane strapping, into traditional construction methods.
✓ The project employed lessons learned from interventions in other countries in the Caribbean, and the project contributed to the organisation's wider "Safe Shelter" programme in the country.
✓ Growth of local businesses was stimulated.

Weaknesses

× Using first-time local suppliers caused delays in the organisation's internal administrative procedures for procurement of materials and goods.
× Software used in the evaluation was not made available during assessment, complicating analysis.
× Some homes could not be reinforced, lowering the benchmark of the project. To compensate, collective centres were reinforced to provide safe places for everyone to go to during an emergency.
× Transportation costs were not completely accounted for, and some families had to reduce their expenditure on materials in order to pay for transport.

Observations

- Communities which the organisation had not previously worked with were less organised and slower to understand the aims of the project. They were also less receptive to projects with a risk reduction component.
- Local institutions were weak, reducing the ability to work jointly with them.

Hurricane straps were introduced to the Dominican Republic for the first time as part of the project. Other improved construction techniques included improved foundations.
Photos: Sandra D'Urzo/IFRC

Situation before the disaster

Before the disaster the level of knowledge of safe construction amongst communities was limited. Many vulnerable families were living in low-standard shelters and the risk of flooding was the most frequent threat.

Roofs were not usually reinforced and often unsafe, with families using concrete blocks and tyres as counter-weights to keep them in place during storms.

Roofs were typically covered in corrugated zinc sheets, with the frame and wall structures made from wood. Some walls were built out of a combination of mortar, wood and blocks and few were strong enough to resist damage by storms or earth-quakes.

Situation after the disaster

Hurricane Sandy exacerbated this situation, with an estimated 24,559 homes affected, and 200 destroyed, in 215 communities across the Dominican Republic.

In mid-December 2012, the organisation confirmed that national rebuilding efforts had not reached half of the destroyed houses and around 500 houses were still partially damaged. Approximately 1,500 homes had received no aid to help replace items which they had lost in the hurricane.

Shelter strategy

There was no specific strategy at government level for the shelter and housing sector. A more general response was undertaken in terms of road and infrastructure repairs and health-related measures.

In the four municipalities where the project intervened local authorities made efforts related to housing reconstruction. However, these construction works did not employ reinforcement technology such as diagonal bracing or hurricane straps.

The organisation's own strategy was divided into two phases: emergency and recovery. The emergency phase included the assessment of shelter needs and the distribution of NFIs.

Initially it was planned that the recovery phase would include the reconstruction of destroyed houses. However, due to lack of funding it was only possible to support work on partially-damaged structures that were structurally sound enough to be repaired.

The recovery phase consisted of distributing shelter kits and providing training on the use of hurricane straps, as well as a WASH response.

Project implementation

The project had a limited budget which could not cover full reconstruction or new housing. Instead, the focus was on reinforcement of shelters that were partially damaged. The project did not have the resources to rebuild destroyed homes or reinforce homes with severe structural damage.

To make sure that those families whose shelters could not be reinforced still had access to safe shelter in an emergency, the organisation also reinforced wooden collective centres using the same techniques employed for reinforcing houses.

The organisation met with the communities several times to explain the selection process and the aims of the project.

After the selection of beneficiaries was completed, the shelter component was articulated in various steps by sensitising the communities on:

- Risks related to unsafe shelter.
- Actions and construction techniques that could serve to mitigate those risk and reinforce houses.
- Care and maintenance of housing units.

The project included both practical construction training and the PASSA approach to Disaster Risk Reduction. Photos: Dominican Red Cross

A detailed house damage assessment of 1,182 houses was conducted by the organisation and 949 were deemed eligible for assistance. Individual shelter-repair kits for each house were developed to ensure tailored assistance based on the levels of damage, typology and construction materials.

Materials provided included the following, (not all were supplied in every case):

- Timber elements
- CGI sheets
- Hurricane straps
- Nails

Demonstration sessions on safe shelter as part of three-day trainings were conducted by the organisation's shelter specialists to inform communities and construction workers. Sensitisation was carried out before distributing the vouchers for firstly NFIs and then secondly construction materials.

Construction materials were prioritised for those whose homes were partially or completely destroyed, but some repair kits were also given to families whose wooden homes were intact but needed reinforcing.

The community was in charge of managing the repair process, providing the labour and implementing the new construction techniques. They were guided by both the organisation's staff and the construction workers who had received training from the organisation. The quality of repairs and reinforcements was monitored.

A voucher system was used for the NFI part of the response. A voucher worth US$ 116 was given to each beneficiary family and this could be redeemed at a supplier identified by the community itself.

The construction materials were also distributed through a voucher system, with each family receiving a specific voucher based on the individually-assessed costs and Bill of Quantities (BOQ) for repairing their homes.

Receipt of the voucher was subject to the presentation of a record of participation at one of the small community training sessions on safe shelter. The voucher also had an expiry date printed on it.

Beneficiaries were expected to cover the costs of transportation, though in some cases the organisation provided vehicles to transport the items if a deal could not be negotiated with suppliers.

However, in some communities the costs of transporting materials were high and the organisation was not able to support these communities, resulting in them having to spend a smaller proportion of their voucher on materials in order to cover the transport costs.

Beneficiary selection

Beneficiaries were selected through a two-stage process. First, a "Community Census" was conducted amongst all those directly affected by Sandy. This information was then analysed using statistical software in order to prioritise beneficiaries.

Households had to meet the following selection criteria, defined by the organisation in collaboration with community leaders:

- Their situation had been directly affected by Sandy.
- They were unable to rebuild their home or regain basic living standards alone.
- One or more family members had a physical or mental disability or was a member of a discriminated group (e.g. Haitian immigrants).
- Families with specific conditions of vulnerability such as female-headed households.

Once the families who met these criteria were identified, beneficiary lists were hung in the organisation's offices and other visible places.

Following selection, each family's home was surveyed by an engineer, in order to develop a plan of works for the necessary materials and repairs.

Families whose homes were too weak or badly built to benefit from reinforcement received a package of household items instead.

Coordination

Coordination mechanisms were put in place between the organisation, community leaders and grass-roots organisations to ensure a transparent and equitable beneficiary selection process, with a two-way flow of information, joint monitoring and accountability.

Several joint public initiatives were launched, such as public exhibitions, debates and participative workshops.

Technical solutions

Hurricane strapping is a new technology for house construction in the Dominican Republic. Since the community members themselves were in charge of managing the repair process, the organisation trained construction workers in how to employ the new technique. These workers either implemented the new technique or demonstrated so that community members could implement it themselves.

The repair kits were designed in Santo Domingo and transported to the provinces, and then on to the communities.

Disaster Risk Reduction (DRR)

In three of the four provinces participating in the project, Participatory Approach for Safe Shelter Awareness (PASSA) groups were organised.

PASSA is a method of DRR, with the objective of developing local skills to reduce vulnerabilities related to housing and settlements. These groups were responsible for developing the eight PASSA methodology activities, which are a series of steps that take up to two months and result in creating action plans to minimise the vulnerability of shelter and settlements. (see **Shelter Projects 2011-12**, A.13).

In the community of Rosario, the plan of action included roof strengthening, resettlement of at-risk houses and improving the foundations of timber houses with brick construction. In the long-term, the community's capacity to analyse and mitigate risks was expanded, enabling them to make demands on local authorities.

Safe construction techniques were communicated through a construciton manual, posters and leaflets.
Graphic: Cruz Roja Espanola

Materials

Since hurricane straps were not previously used in the country, the organisation had to supply them.

Other materials were available from local suppliers.

Wider project impacts

Some of the beneficiaries used the assistance to improve their homes beyond simple reinforcement.

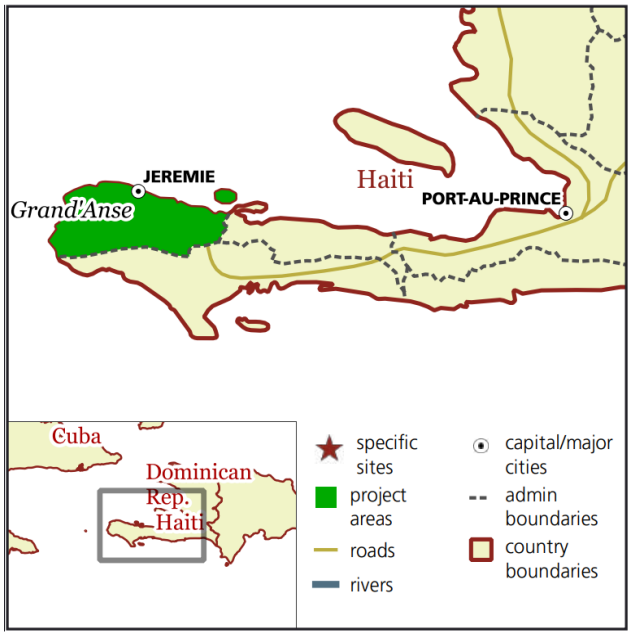
The communities that implemented the Participatory Approach for Safe Shelter Awareness (PASSA) broadened the house reinforcement programme to include other houses that were not matching the programme criteria, but were included through participatory budgets from their local authorities.

A.1 Haiti – 2012 – Hurricane Sandy

Case study

Keywords: Housing repair and retrofitting; Cash / vouchers; Training; Structural assessment.

Emergency:	Hurricane Sandy, Haiti.
Date:	23-26 October 2012.
Damage:	6,666 houses destroyed, 24,348 damaged, and 9,352 flooded.
People affected:	195,300 affected, 20,000 evacuated, 2,298 homeless.
Project location:	Grand'Anse Department.
Beneficiaries:	1,700 households (8,500 people).
Outputs:	100 new houses, 414 houses repaired. Over 1,000 households received cash for NFIs and DRR training. Around 84% were completed within the project timeframe.
Ocupancy rate:	89% of completed new houses and 100% of completed repaired houses.
Shelter size:	Varied: model houses = 20-30m², beneficiary houses = 16-40m².
Cost:	US$ 2,050 cash grant for new construction, or US$ 750 for repair. Beneficiaries also made their own contributions.



Project description:

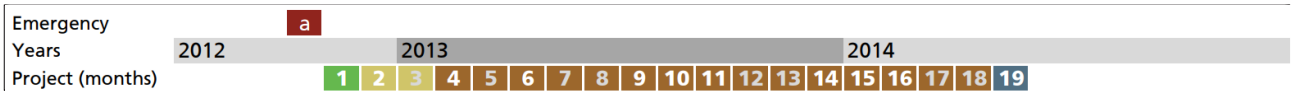
Following an initial emergency response, the project distributed conditional cash grants and technical supervision to support beneficiaries in the construction or repair of houses. Builders were trained in Improved Vernacular Construction (IVC) techniques, using local materials.

Emergency timeline:

[a] October 2012: Hurricane Sandy hits.

Project timeline (number of months):

[1-2] November 2012: First phase planning.
[2-4] First implementation phase (emergency distribution).
[4-18] Second phase planning and implementation.
[9] Vernacular construction training begins.
[10] First model house completed.
[11] First cash instalment.
[14] Second cash instalment.
[15] First repaired house completed.
[16] First new house completed.
[19] May 2014: Project ends, some repairs not complete.



Strengths

✓ Existing local knowledge on safer construction was improved, with the new techniques replicated by non-beneficiaries.
✓ Multiple model houses were adapted to the different environmental and cultural contexts in the area, reflecting the materials locally available.
✓ Beneficiaries were empowered to take ownership of the project by managing the construction process themselves.
✓ The project integrated DRR, Shelter and WASH programming.

Weaknesses

× Limited availability of qualified technical project staff made for a lengthy recruitment process.
× The integration between Shelter and WASH teams could have been improved, with joint-planning and joint training to enable both teams to better supervise the beneficiaries' work.
× The close work with the community required investment of staff numbers beyond the means of the project budget.
× A complete market assessment was not carried out at the beginning of the project and subsequent shortages of materials caused some delays.
× Although transport costs were factored in to the grants, some beneficiaries preferred to buy lower quality, locally available materials which did not need to be transported.

Observations

- Some of the beneficiaries in the repair category managed to build a new house, salvaging materials from the old one.

Left: Beneficiaries chose the materials they were most familiar with for walling. Centre and Right: Model houses from Anse D'Hainault and Corail. The houses were designed to reflect the traditional architecture of the local area.
Photos: Blanca Sancho Moreno

Situation before the disaster

People were living in rural areas and the majority of houses in the affected areas were poorly constructed with low-quality materials, reflecting both the level of poverty and lack of technical knowledge.

The location of many of these houses in areas prone to strong winds and flooding magnified the risks posed by the sub-standard housing construction.

Situation after the disaster

In the aftermath of the disaster some households were hosted by family or friends, some were evacuated to emergency shelters and some stayed in their damaged houses. Many families had lost their livelihoods.

Shelter strategy

Following the 2010 earthquake in Haiti, there was plenty of good practice to draw from in project planning. However, as Grand'Anse Department had not really been affected by the earthquake, most agencies were not operative in the area and few intervened after Sandy hit. The disaster attracted a limited response from donors.

No coordination strategy was officially activated and the Shelter and CCCM Cluster in Haiti did not dedicate a working group to the Sandy response.

Guidelines for response did exist in the form of a best-practice manual published by the Unité de Construction de Logements et de Bâtiments Publics in 2010, but these rarely referred to local building technologies or vernacular materials.

Project implementation

Emergency phase

Any family whose house had been completely destroyed or severely damaged was given an unconditional cash grant of US$ 100, paid through a money transfer company. This intervention was completed within four months of the disaster and involved 761 families.

The households mainly used the money to buy food and non-food items or to replace household livelihood assets as well as paying school fees for their children or buying materials to rebuild their houses.

Recovery phase

After the initial beneficiary registration, verification visits were conducted to the families to assess the damage to the house.

Three categories of assistance were provided:

- Category 1: House destroyed. Conditional cash grant of US$2,050 to rebuild the house and latrine (100 households).
- Category 2: House damaged, vulnerable household. Conditional cash grant of US$750 to rebuild the house and latrine (414 households).
- Category 3: House damaged, household does not meet vulnerability criteria. Unconditional cash grant of US$ 100 (1,186 households).

The third category was added to the project plan based on the findings of the assessment.

Some of the beneficiaries claimed that the grant was too small, but most completed their houses with the grants.

A training programme for masons and carpenters was established, whilst beneficiaries received key sensitisation messages.

Construction

Beneficiaries were given the responsibility for managing the construction process, with technical support from the organisation through the lifetime of the project. This method was difficult for some beneficiaries to accept initially, since a great deal of humanitarian assistance in Haiti has been implemented directly by aid organisations.

Motivating beneficiaries was one of the biggest challenges, as it required a great deal of staff input and energy, and breaking a long-term culture of dependency was not always possible.

After ten months, the training of carpenters and masons was complete, and beneficiaries were encouraged, but not obliged, to hire a builder from the approved list. The design of the house was up to the family, but they had to observe the implementation of improved construction techniques.

Cash was paid in two instalments. The first instalment (approximately 40%) was paid upon signing the agreement. The second instalment was paid upon verification of the first phase of works by the project's technical team. For Category 1 this meant completing the foundation

and structure, while Category 2 repair phases were defined on a case-by-case basis.

Cash was transferred through a money transfer company. The beneficiary list with mobile phone contact numbers was given to the company who sent an SMS with a code to the beneficiary which was then used to collect the money from an authorised distributor. In areas where there was no network, or a beneficiary did not have access to a phone, community mobilisers gave the code directly to the beneficiary.

Beneficiary selection

Two assessments were made. The emergency assessment identified 761 households with damaged or destroyed houses who needed immediate support.

A second, more detailed assessment resulted in 1,700 households being allocated to the three different categories of assistance. Households were selected against vulnerability criteria with an emphasis on female-headed households, physically handicapped persons, and elderly persons living alone.

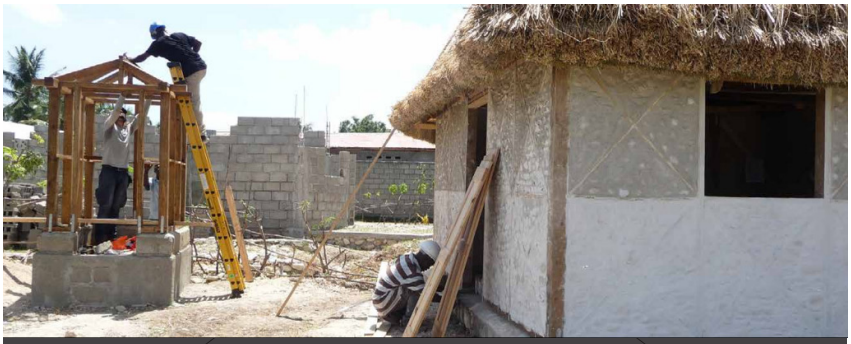
In order to participate in the project, beneficiaries had to provide the organisation with proof of property and land ownership, and sign an agreement with the organisation detailing the conditions of how the grant was to be used.

A small number of beneficiaries were unable to produce ID cards, but this was mostly resolved on a case-by-case basis with the local authorities and other family members. In cases where no solution could be found and the agreement could not be signed, the Category 3 US$ 100 was awarded instead.

Some beneficiaries were unable to find a plot of land in a safe area and others did not wish to move. The organisation conducted a significant amount of advocacy to explain the dangers of staying in high-risk areas, but ultimately the beneficiary had the final decision.

Coordination

The project benefitted from a Memorandum of Understanding between the implementing organisation, and a technical partner organisation which provided both technical expertise and training.



Construction of latrines (on the left) was integrated into the project.
Photo: Blanca Sancho Moreno

Technical solutions

Improved construction techniques were based on existing local traditional techniques with new disaster-resistant features.

Traditional local houses were built on wooden posts dug directly into the ground, which quickly rotted, weakening the structure. The new design introduced a proper foundation of cement and stones and added cross-bracing to the walls.

Diverse ways to strengthen the joints between the different structural elements were also introduced, or adapted from current local best practices.

To resist high winds, houses were built with four roof slopes, using corrugated iron sheets or straw.

Disaster Risk Reduction (DRR)

DRR was integrated into the project through the plot selection process, and through training and sensitisation on safe construction.

The technical partner provided the first Improved Vernacular Construction (IVC) training, based on a detailed assessment of local construction techniques and included topics such as the selection of safe sites, basic architectural and construction principles, and the properties of local materials.

> "I did not understand why I had to buy the materials and hire the masons or why the organization was not building the house for me. But when I finished the house by myself, I knew that I was able to do things that I never thought I could."
> Beneficiary

Ten carpenters and masons were trained as facilitators, who in turn trained 130 builders (five of them women). The training involved the building of twelve different model houses, all of which were adapted to the specific contexts of the area they were built in.

In order to reach the wider population and other NGOs, a one-day practical workshop in IVC techniques was facilitated by the technical partner.

The DRR sensitisation received by Category 1 and 2 families was more detailed than for Category 3 households, as the first two groups received a greater number of direct visits from community mobilisers.

Some Category 2 repairs were of poor quality, mostly due to a lack of motivation on the part of the beneficiaries.

Wider project impacts

Some families that did not receive direct assistance have begun to replicate the construction techniques used in the project. Some of the carpenters and masons trained by the project, advocate for their customers to implement the IVC techniques.

CASE STUDY

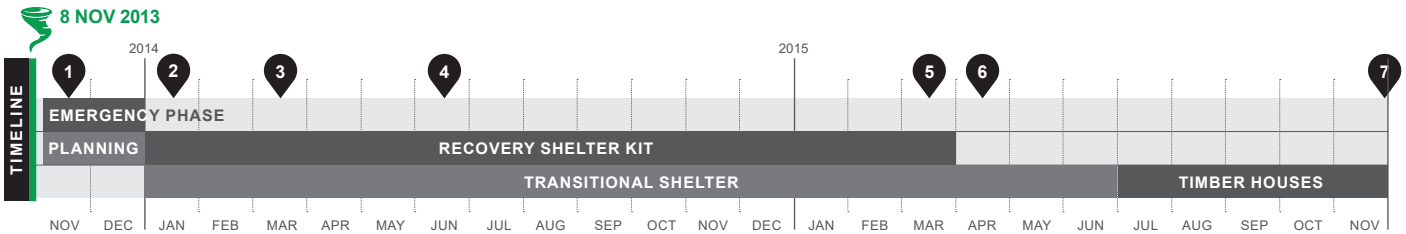
PHILIPPINES 2013-2015 / TYPHOON

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.

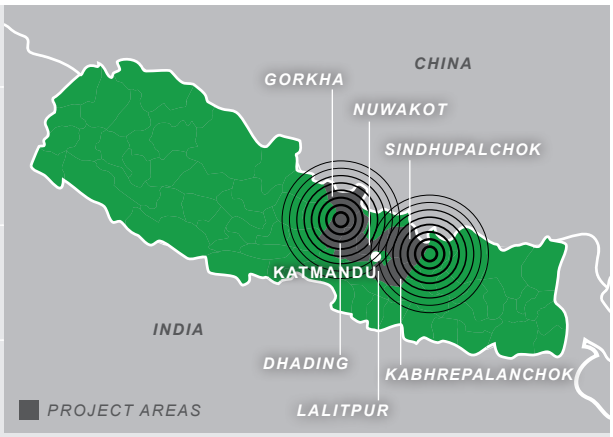
The project distributed timber from fallen trees for various shelter interventions.

CASE STUDY

NEPAL 2015 / EARTHQUAKE

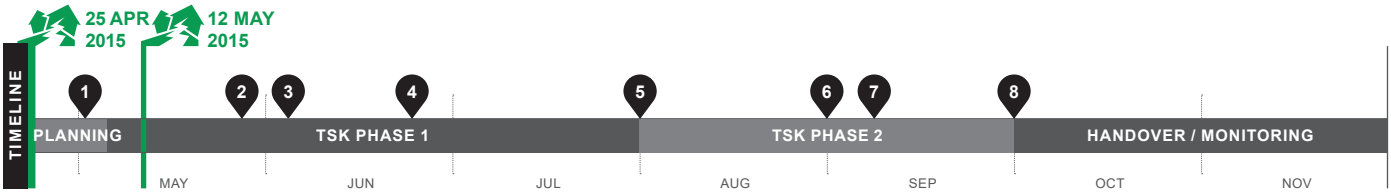
KEYWORDS: Transitional shelter, Distribution, Community participation, Coordination, Training, Disaster Risk Reduction

CRISIS	**Nepal Earthquakes, 25 April 2015 and 12 May 2015**
TOTAL HOUSES DAMAGED	**604,930** fully damaged **288,856** partially damaged (National Disaster Report 2015).
TOTAL PEOPLE AFFECTED	**886,456** affected families **649,815** displaced families
PROJECT LOCATIONS	**Sindhupalchok, Gorkha, Dhading, Lalitpur, Nuwakot, Kabhrepalanchok districts.**
BENEFICIARIES	**5,065** households, including 350 people with disabilities, 1,000 single female-headed households and 100 single elderly individuals.
PROJECT OUTPUTS	**5,065 Transitional Shelter Kits** distributed.
SHELTER SIZE	**16.7m²** (according to sample design).
SHELTER DENSITY	**3.4m² per person** (based on average household size of 4.88, from 2011 census).
MATERIALS COST	**Approx. USD 200** per household (NPR 21,484), including labour, and transport.
PROJECT COST	**USD 250** per household (estimated).
OUTCOME INDICATOR	93% of households used the kits to build temporary shelters within the first month of distribution.



PROJECT SUMMARY

The project targeted more than 5,000 families – whose houses had been damaged or destroyed – with the distribution of transitional shelter kits to make basic repairs, or build a temporary shelter. Training was provided to demonstrate the design of a suitable shelter that could be constructed with the supplied materials. In so doing, the project aimed at facilitating the early start of people's self-recovery.



1. 2 May 2015: **Rapid assessment completed.**
2. 26 - 31 May 2015: **First distribution of Transitional Shelter Kits for 228 families in Kavrepalanchok district.**
3. 1 - 8 Jun 2015: **Transitional Shelter Kit distribution in Kavrepalanchok district completed (606 families).**
4. 15 - 30 Jun 2015: **Distribution of Transitional Shelter Kits to 617 families in Sindhupalchowk district**
5. 31 Jul 2015: **Procurement of 3,000 additional kits completed.**
6. 31 Aug 2015: **Distribution of Transitional Shelter Kits to 2,207 families in Lalitpur and Dhading districts completed.**
7. 1-15 Sep 2015: **Distribution of Transitional Shelter Kits to 1,407 families in Gorkha, Sindhupalchowk, and Nuwakot districts completed.**
8. 30 Sep 2015: **Transitional Shelter Kit intervention completed and final monitoring and reporting started.**

STRENGTHS

+ High community participation.
+ Rapid project implementation and at scale.
+ The coordination with local government and like-minded organizations leveraged resources.
+ Production and distribution of instruction manuals on various options for temporary shelters.

WEAKNESSES

- The earthquake directly affected the organizations' local staff.
- Lack of clearly defined internal procurement procedures.
- Medium-term disaster response staff shortages.
- The assistance provided focused too heavily on a set design.

CASE STUDY

SITUATION AFTER THE DISASTER

See page A.3 for more information on the background and the national shelter response.

After the earthquake, many families were sleeping in open areas without adequate cover, suffering cold night-time conditions and rain. The monsoon season (mid-June to early September) further exacerbated the existing shelter situation for thousands of families whose homes were damaged or destroyed. The monsoon arrived a few weeks after the second earthquake and people had to rely on emergency shelters, built with salvaged materials, plastics and tarpaulins, to withstand the heavy rains. Apart from shelter, people also needed a place to store their materials, crops, agricultural products and cattle. The need for early recovery solutions – that could protect families and assets – was high.

ASSESSMENTS AND PRE-DISTRIBUTION PLANNING

The organization deployed its experienced disaster response personnel to Nepal within 48 hours of the disaster, to support the Nepal office in resuming office functions, as well as initiating disaster response activities. **Rapid assessments were conducted** in collaboration with the Shelter Cluster and governmental agencies (at national and local levels), to determine the appropriate shelter interventions and identify areas most in need of support.

For the distribution of the Transitional Shelter Kits, the project targeted six of Nepal's most severely affected districts. The beneficiary selection process focused on **both a blanket approach for entire communities** devastated by the earthquake (85% households affected), **as well as targeting of specific vulnerabilities,** using the following criteria: disability, single female-headed families, those who suffered casualties during the earthquake and low-income families. Kits were also distributed through the Nepal Blind Association and the National Handicapped Association, in various earthquake affected districts.

Beneficiary selection was completed in consultation with local government officials, and lists were verified by community leaders and local partners on the ground. Staff conducted field visits, direct observations and interviews to avoid duplication.

Simultaneously, the organization did internal planning and preparations for budgeting, procurement, warehousing, transportation, other logistics preparedness and detailed distribution planning. **In the early stages of the response, regional and global experts were brought in** to guide the technical specifications of the kit. Several similarities emerged with the response to the Pakistan earthquake in 2005, prompting to adopt a similar shelter design. The Pakistani response was similar in context, with the mountainous area, supply chain challenges, and frigid winter temperatures. The design was adjusted to incorporate locally available materials.

DISTRIBUTION PHASE

The organization mobilized five staff (one international and four nationals) and eight trained volunteers, to distribute the kits, as well as to provide orientation and training to the community, on how to use these items to prepare temporary shelters using a Build Back Safer approach, **suggesting to use a recommended semi-circular design or the beneficiary's own preferred one.** Based on need, other staff was chosen to support functions such as procurement, warehousing, transportation, communications and post-distribution monitoring.

Some people used the materials provided to build temporary shelters according to the organization's design.

Volunteers from local communities were actively involved in beneficiary registration, distribution and transportation of the materials at the household level, assisting families who could not transport the materials. **The project was implemented with local partners,** enabling a higher number of vulnerable families to be served, in a shorter period.

EXISTING PARTNERSHIPS AND COMMUNITY PARTICIPATION

The relationships developed in almost two decades operating in the country were a fundamental strength in mobilizing resources after the disaster. For example, **pre-established women's groups** supported distributions, whilst engineering students (engaged before the disaster) became key informants to develop culturally appropriate shelter solutions.

Community participation was encouraged throughout the project cycle, with beneficiaries being active in identification, selection and verification processes, communication channels related to distribution information, crowd management during distributions, trainings on shelter set-up, transport of the kits from distribution sites, as well as post-distribution monitoring and feedback. More than 1,000 community volunteers were mobilized, significantly supporting an increase in social ties and motivation for self-recovery.

POST-DISTRIBUTION MONITORING

An independent team (seven trained M&E staff and volunteers) **was deployed to conduct Post-Distribution Monitoring** (PDM), to determine how the distributed shelter materials were used, their relevance and effectiveness. Within weeks of the first distributions, the PDM team carried out field visits to eight different distribution areas and interviewed more than 329 households using a mobile app.

The results showed that **93% of households used the materials for constructing temporary shelters, within the first month of the distribution**. Among them, **63% followed their own design**, normally including the use of salvaged materials, whilst 30% used the design suggested by the organization. For non-displaced populations, transitional shelters provided a basic starter home, to be upgraded, expanded to permanent shelters or replaced, over time and as resources allowed. Finally, only 7% did not construct any shelters within a few weeks, as they had other key priorities, including food, livelihoods and agriculture, as the project started during the harvesting season (June-July). In addition, some female-headed households were waiting for additional help from their relatives and local volunteers, in order to construct the shelter.

Although a set design was provided by the organization, many people adopted their own designs, using the materials provided with the kits, along with salvaged materials, to meet their own specific needs.

The PDM team also set up a **beneficiary communication and feedback mechanism**, and the organization established a **quality-assurance monitoring system**, to support real-time adjustments of the materials being procured. This process was managed by senior disaster-response staff and logistics personnel, through random inspections. An additional level of oversight was obtained through field visits and community meetings, which were facilitated by senior staff. The organization likewise supported the **monitoring of all local partners** involved in the distribution.

MATERIALS SUPPLY AND LOGISTICS

All materials were procured nationally, following competitive bidding processes. The first lots of items were delivered within the stipulated timeframe, allowing the distribution to start within the fourth week after the disaster. **This local procurement was efficient, contributed to the local economy and kept the costs low**, while adhering to quality criteria as per Cluster specifications. However, the procurement of the second lot of CGI sheets took longer than expected, as the demand increased drastically two months after the disaster. Considering the distribution plan, **the logistics and procurement staff decided to temporarily warehouse all the kits at central locations** in Kathmandu, then dispatch them to distributions points in targeted districts, following recommendations by the distribution team. The staging and distribution points were decided in consultation with representatives of affected communities and local authorities, who carried out **logistical surveys of targeted distribution points**. However, there were not enough suppliers that could provide the required specifications and stocks. **Consultations were carried out** with likeminded organizations and experienced team members from the regional office, regarding market surveys and different procurement processes.

TECHNICAL ASSISTANCE AND DRR

The organization provided two main types of technical support. Firstly, by **disseminating Disaster Risk Reduction and Build Back Safer key messages** during pre-distribution orientations. Secondly, by providing **direct technical construction support**. Local engineers were trained on how to construct the temporary shelter units according to the design, and took on a training role during the installation of the kits. This methodology included building a demonstration unit prior to distribution. The beneficiaries were also informed about the different design options that could be utilized, and a low-literacy instructional guide was distributed during the demonstration.

The communities were also encouraged to listen to government's radio and other public service announcements, that broadcasted the 10 key messages developed by the Shelter Cluster.

MAIN CHALLENGES ENCOUNTERED

GEOGRAPHIC AND WEATHER CHALLENGES

During the monsoon season, several landslides occurred due to the cracks made by the earthquakes. Further, floods in the seasonal and perennial rivers, due to the heavy rains, made roads impassable. In view of this, the organization mobilized highly trained and committed staff to the distribution sites and extra precautionary measures were taken for safety and logistics within each local context. The teams stayed in the remote villages for the duration of the distributions.

LACK OF INFRASTRUCTURE

In certain distribution sites, damaged electricity and mobile networks created challenges in communication. As such, the team had to carry additional equipment and communication tools, including power banks for charging mobile phones. The organization also coordinated with local authorities and partners, to ensure emergency communications.

During implementation, there were protests and strikes due to disagreements on the newly issued constitution. This hampered distribution planning, as in certain areas there were road blockages. The organization had to proactively coordinate with all stakeholders, including government and communities, to overcome this challenge.

CONTINUOUS AFTERSHOCKS

Strong aftershocks were felt for a long period, even during the distributions. In view of this, all volunteers and staff were oriented on safety and personal preparedness measures.

WIDER IMPACTS OF THE PROJECT

Apart from providing an immediate repair, the temporary shelters also became a **stepping-stone for families to transition to permanent housing solutions**. The types of housing construction that were hardest hit by the earthquakes – those constructed out of mud, stone and timber – were also those where salvaged materials could be used, in conjunction with the Transitional Shelter Kits, to rebuild.

Additionally, the design adopted in this response, adjusted from the experience in Pakistan, proved to be extremely effective in Nepal. **Through coordination, this solution eventually inspired a standard supported by the Cluster** and adopted by numerous other organizations.

STRENGTHS, WEAKNESSES AND LESSONS LEARNED

Temporary shelters, built with the materials provided, bridged the gap during reconstruction of more permanent houses (here, in Kavrepalanchok district).

STRENGTHS

+ High community participation. More than 1,000 community volunteers were mobilized for the distribution of the kits. Partner organizations, local youth clubs, social mobilizers and community leaders partook in the distributions.

+ Project implemented rapidly and at scale, particularly for the first batch of kits, which were distributed in less than three months after the first earthquake.

+ Coordination with local government and like-minded organizations leveraged resources, avoiding duplications and strengthening networks, therefore creating opportunities for longer-term recovery efforts.

+ Produced and distributed 5,000 instruction manuals on various options for temporary shelters to affected communities. Furthermore, families were provided with technical assistance for temporary shelters, through orientations on various construction techniques and safe reuse of materials.

Materials	Units	Quantity
CGI sheets 0.35mm thick, 12ft long	pcs	10
Steel reinforcing rod (re-bar) 12mm diameter, 24ft long	pcs	4
Steel pipe, 15mm diameter, 20ft long	pcs	8
Galvanized iron wire, 16 gauge	kg	1.5
Roofing nails, Umbrella type	kg	1.5
Nails, large (75mm) and medium (40mm), galvanized	kg	1.5
Tin Snips	pcs	1
Pliers	pcs	1

The level of community participation in the project was very high.

WEAKNESSES

- The earthquake directly affected the organizations' local staff, who could not resume functions quickly. Customized disaster response trainings (specifically on shelter interventions in emergencies) should have been provided to key staff and volunteers involved in shelter response activities.

- Lack of clearly defined, internal, procurement procedures caused a delay in the start-up phase of the project. Internally, different organizational stakeholders had varying degrees of understanding of what processes needed to be in place, prior to procuring relief materials. This breakdown in communication resulted in materials being procured too slowly, as non-emergency processes were being utilized.

- Shortage in medium-term disaster response staff. The organization had an experienced disaster-response team in the region, which deployed immediately after the earthquake to set up a response framework and mobilize the national team. However, **longer-term field positions took months to be filled**. This was due to slow HR processes and waiting for longer-term funding to be secured. This delay caused initially deployed staff to become burned out, and delayed the scale-up of programming.

- The assistance provided focused too heavily on a set design. After about two months, people had recovered to a certain level with whatever resources were available, and they were capable to build contextually better shelters than the semi-circular ones promoted by the organization. Regardless, the same kit continued to be distributed and the same design recommended, rather than broader advice and support to build safe structures of different kinds. This would have been more appropriate, given that M&E findings showed that the majority of the families built the shelters with their own designs.

LEARNINGS

- **Programmes should be designed according to social, cultural, religious, infrastructural and geographical factors of the affected areas.** The shelter design and materials distributed in the emergency phase should enable the affected population to construct durable shelters, using other local/salvaged materials.
- **The situation changes very quickly during the disaster response period,** hence the team needs to be **flexible and proactive**, making necessary adjustments to the programme accordingly. Flexibility can be integrated by improving damage and needs assessments, incorporating secondary information and joint shelter assessment reports.
- **Feedback mechanisms reported an interest in cash-for-work activities,** as a way to increase community participation and ownership.
- **Blanket targeting of most-affected areas was easier in certain communities,** though more prioritization exercises were needed in partially affected areas.
- **It is very important to manage communities' expectations, so as not to create aid dependency,** but rather building on each community's own strengths and resources. In some instances, the communities demanded more materials than they required. Community-led, transparent, beneficiary selection, verification and control mechanisms can manage this.

OVERVIEW PHILIPPINES 2013 / TYPHOON HAIYAN

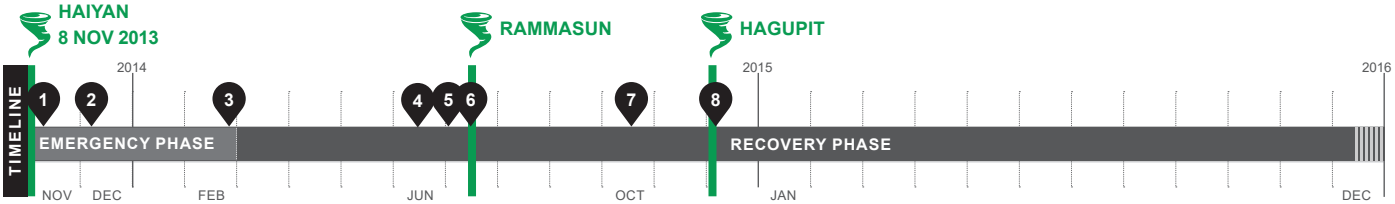
CRISIS	**Typhoon Haiyan (Yolanda), 8 November 2013.**
TOTAL HOUSES DAMAGED[1]	**1,012,790 houses (518,878 partially damaged and 493,912 totally destroyed).**
TOTAL PEOPLE AFFECTED[2]	**3,424,593 households** (16,078,181 persons).
RESPONSE OUTPUTS[3] National Housing Authority (NHA)	**29,661** houses 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.

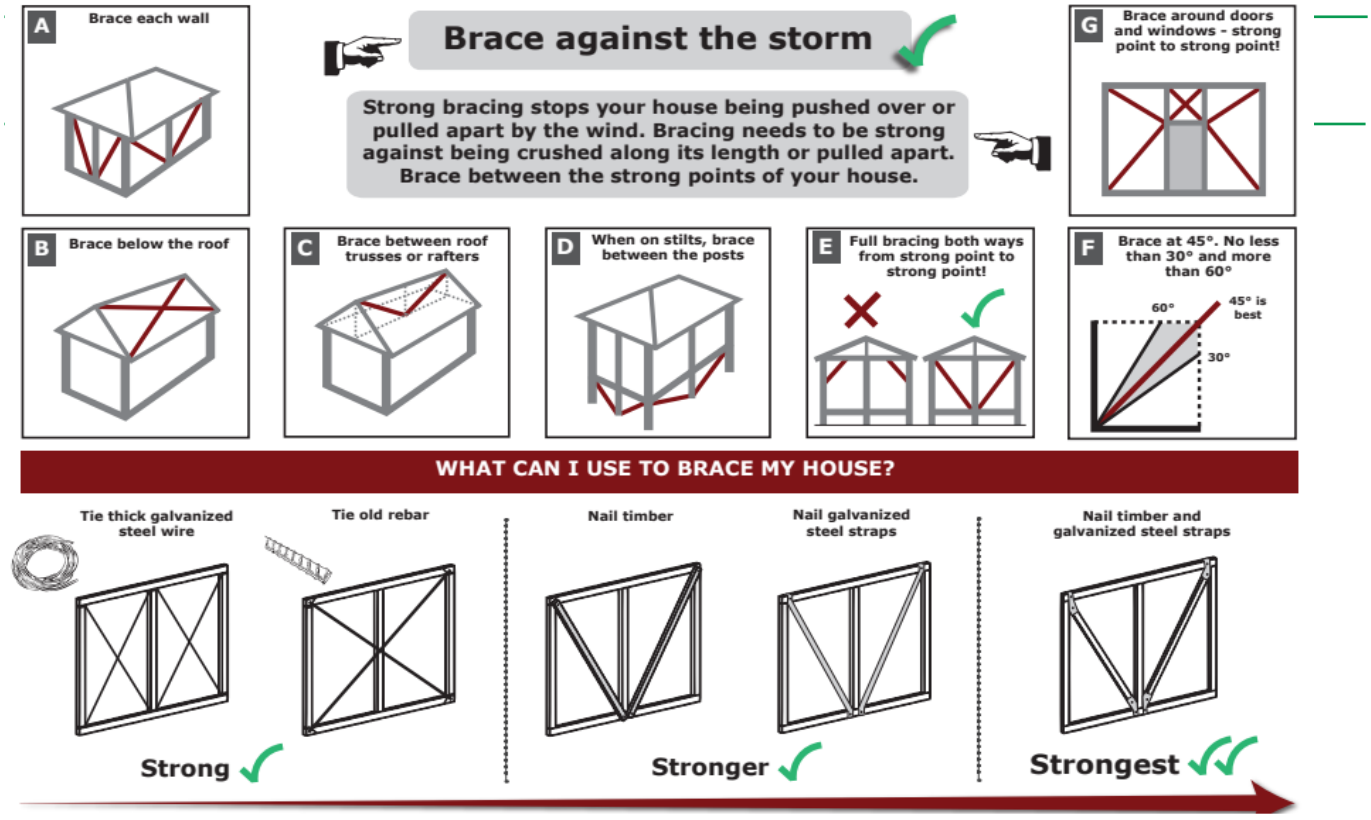


1. 11 Nov 2013: **State of Calamity is declared by the Government of the Philippines. Shelter Cluster is activated.**
2. 6 Dec 2013: **Office of the Presidential Assistant for Rehabilitation and Recovery (OPARR) is established.**
3. Feb 2014: **Emergency shelter assistance reaches 500,000 households.**
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

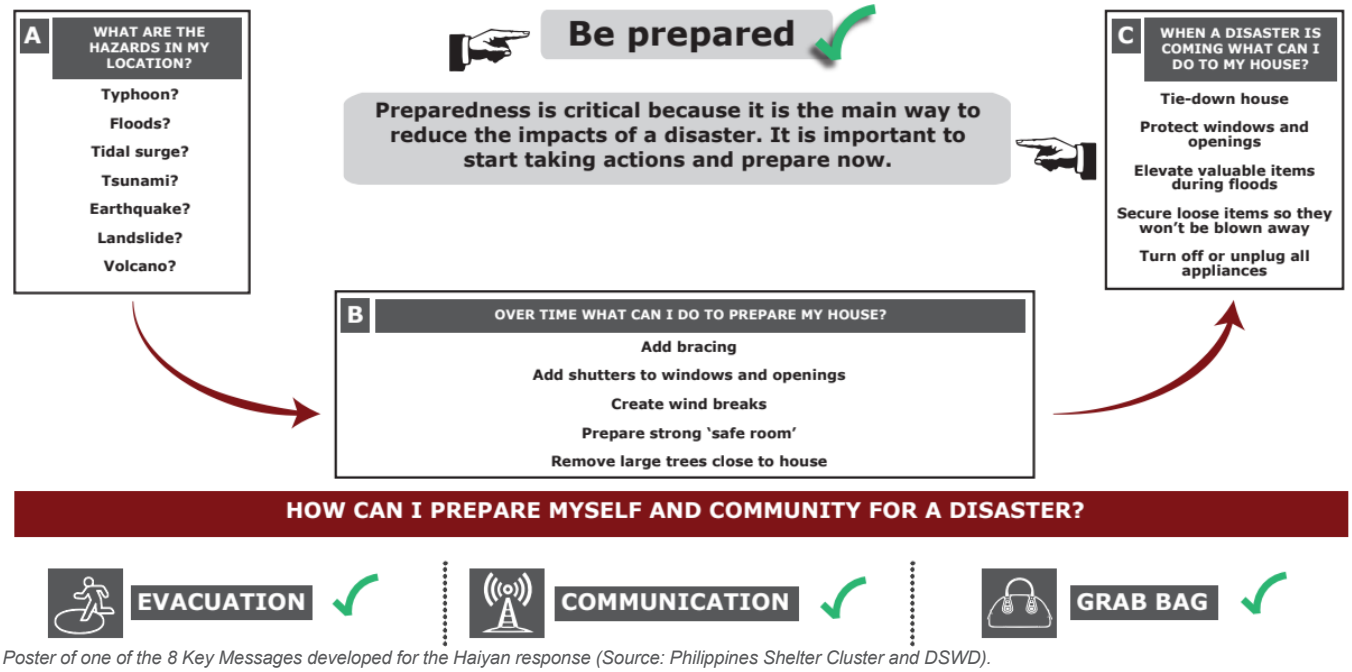
Most shelter programmes relied on coconut lumber as the predominant building material during recovery, drawing from the large number of trees downed in the typhoon. Many households noted that the quality of lumber produced and distributed during recovery was of mixed quality. Despite distribution of 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

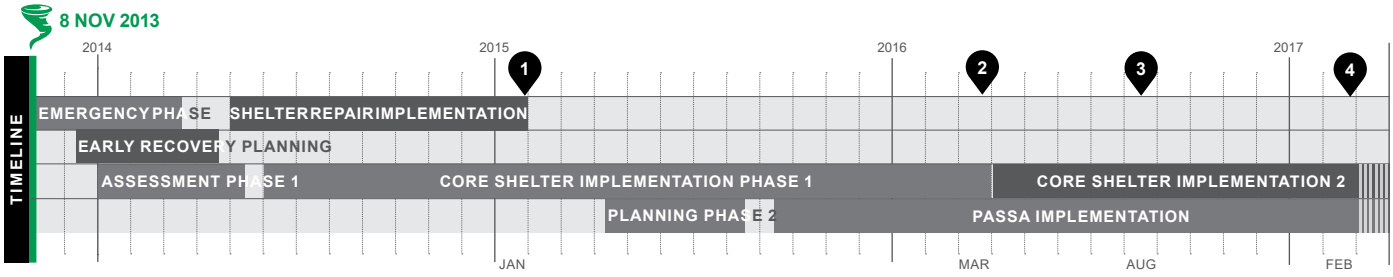
PHILIPPINES 2013-2017 / TYPHOON

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.

CASE STUDY

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, 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.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Core shelters and latrines were built to a set design, which was presented at community meetings to explain its features and receive feedback.

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 18m^2 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 22m^2 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

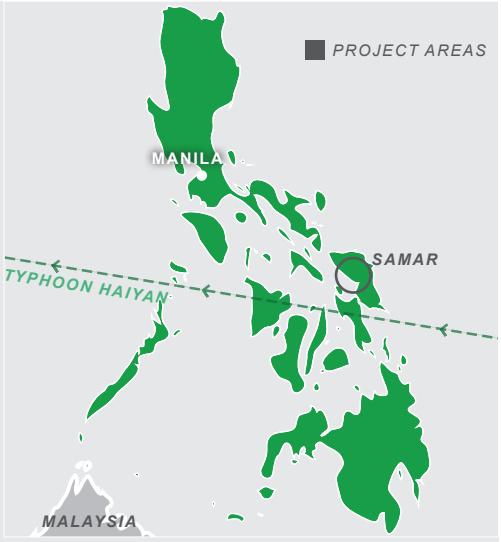
- **Heavy top-down decision-making for a construction project ends up with compromised corners.** Decision-making should be consultative and flexible to complement technical recommendations. The transfer of knowledge and learnings from one project to the next is crucial.
- **Collaborative rather than 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.

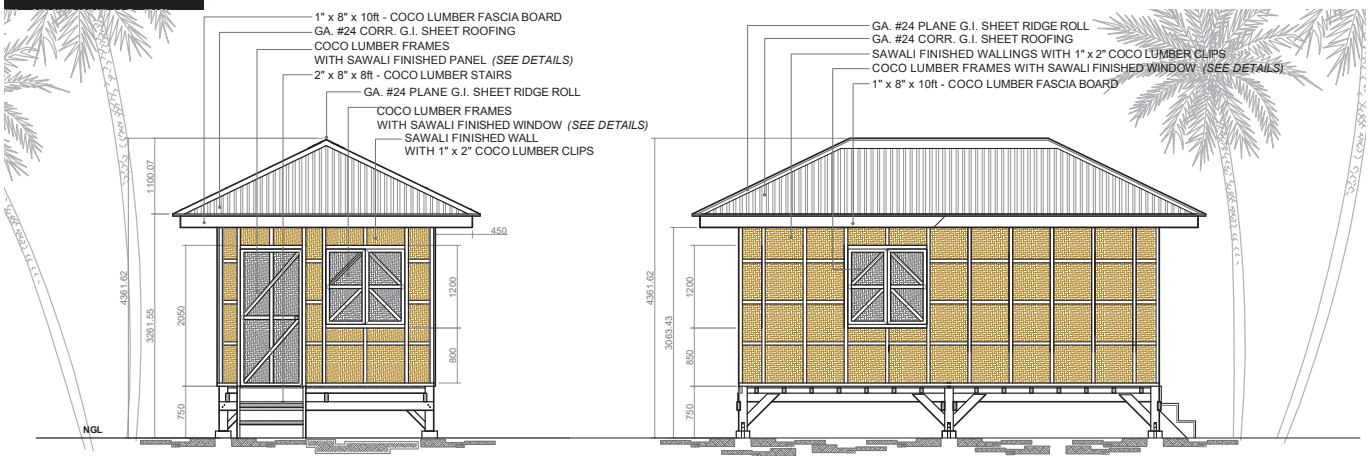
SHELTER DESIGN

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.

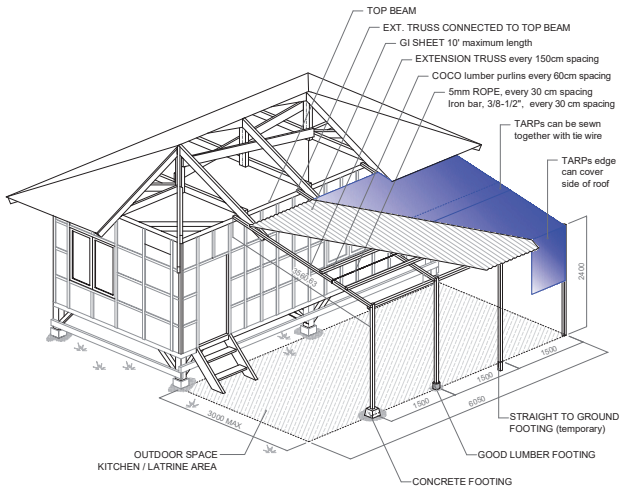
WEAKNESSES

- 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

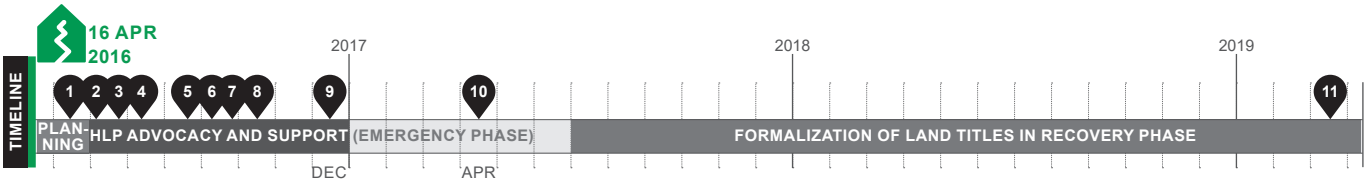
ECUADOR 2016–2018 / EARTHQUAKE

KEYWORDS: Advocacy, Security of tenure, HLP Rights, Coordination, Local authorities engagement

CRISIS	Ecuador Earthquake, 16 April 2016
TOTAL PEOPLE AFFECTED	**386,985** individuals (on government register)
TOTAL HOUSES DAMAGED	**45,455** houses damaged or of restricted use
PROJECT LOCATIONS	Across the affected provinces of Manabí and Esmeraldas, plus concentrated activities in Pedernales and Jama municipalities
PROJECT BENEFICIARIES	**Over 30,000 households** were able to access reconstruction grants **Over 5,000 households** who received assistance from humanitarian partners were not disqualified from government subsidies
PROJECT OUTPUTS	**Advocacy** with the government and legal assistance to the Shelter Cluster, enabling affected people to receive shelter and housing support Around **420 families received land titles** from the local authorities, as of March 2019

PROJECT SUMMARY

Housing Land and Property (HLP) rights were a primary area of concern during the humanitarian response to the earthquake in Ecuador in 2016. In recognition of this, the Protection and Shelter Clusters collaborated to set up an HLP Working Group in the early stages of the response. This group was able to identify potential barriers to assistance and managed to actively influence public policy in order to ensure that the humanitarian response and reconstruction process did not exclude the most vulnerable populations.



1. May 2016: **The government releases its reconstruction plan. The HLP Working Group is set up jointly between the Shelter and Protection Clusters.**
2. Jun 2016: **First advocacy statement released.**
3. Jun 2016: **Adoption of Ministerial Agreement allowing those without legal titles to access reconstruction subsidies.**
4. 5 Jul 2016: **HLP concept note published.**
5. 18 Jul 2016: **Proposal of activities for regularization of land in rural zone released.**
6. 4 Aug 2016: **Comments shared on the government housing recovery regulation for earthquake-affected communities.**
7. Aug 2016: **General guidelines and protocols for relocation processes distributed.**
8. 9 Sep 2016: **Paper on the vulnerability criteria for the prioritization of assistance released.**
9. Dec 2016: **Regional training workshop conducted with representatives of humanitarian organizations, central and local government, and civil society.**
10. Apr 2017: **First legal land title delivered.**
11. Mar 2019: **Around 420 land titles delivered.**

STRENGTHS

+ Wide impacts of the project which influenced government regulations.
+ Good collaboration between international and local actors.
+ Effective partnership between the Shelter and Protection Clusters.
+ Advocacy as a powerful tool in humanitarian response.
+ Dedicated HLP support for the shelter response.

WEAKNESSES

- Lack of buy-in and visibility of the project.
- The project could not address all land issues nor support all cases.
- Limited sustainability of the actions in the long term.
- Timeliness of the group's activation and involvement of local stakeholders.

Advocacy through the Shelter Cluster helped families receiving temporary shelter support not to be disqualified from government assistance.

LAND TENURE CONTEXT

For more information on the shelter response to the 2016 earthquake, see overview A.39 in Shelter Projects 2015-2016.

Problems associated with land tenure in Ecuador had existed for many years. A high proportion of the population in both rural and urban areas did not have access to formally recognized land titles. In urban areas, poor land-use planning had resulted in an increase of inadequate and informal settlements. In rural areas, the Law on Rural Lands and Ancestral Territories of March 2016 – which aimed to guarantee more land rights to rural communities – was still pending adoption, meaning these communities had limited legal protections.

SITUATION AFTER THE 2016 EARTHQUAKE

In the impact zone of the 2016 earthquake, several types of tenure were observed, including communal ownership rights. Based on information collected by agencies responding in the area, it was estimated that only between 20–30 per cent of people had formal land titles. In addition to this, even in places where land records were in place, these were lost or destroyed due to the earthquake itself.

GOVERNMENT RECONSTRUCTION PLAN

The government's reconstruction plan was released by the Ministry of Housing and Urban Development in early May, to provide housing repair and reconstruction support through financial assistance in the affected provinces. This incentive programme, when first offered by the government, only extended to legally recognized owners of land, who could provide proof of property ownership through a title registered at the property public office.

This approach would have excluded many vulnerable people, including entire villages. Many communities in rural areas affected by the earthquake found themselves in a bureaucratic limbo, waiting for the passing of the Law on Rural Lands and Ancestral Territories.

Even if people were not wishing to access the government assistance packages, rebuilding without legal security would have put them at risk in the future. Shelter actors that were intending to support the most vulnerable affected groups were also informed that any emergency or transitional assistance could exclude beneficiaries from future government subsidies.

There was a very real need to establish minimum legal evidentiary standards and mechanisms to provide security of tenure to affected communities, as well as minimum technical standards that allowed building in the affected area with sufficient legal certainty.

Many families in the affected areas did not have proof of land owenrship. Rebuilding without legal certainty would have put them at risk.

THE HLP WORKING GROUP

The Shelter and Protection Clusters, recognizing the potential challenges in ensuring assistance to affected people, collaborated to establish the Housing, Land and Property (HLP) Working Group at the national level in late May 2016. The group was led by a national organization that had been working in collaboration with national authorities to strengthen disaster-related legislation since 2012. Although this work had mostly been focused on the facilitation of international disaster assistance, the establishment of the group allowed the organization to build on its previous experience.

The working group was initially made up of interested organizations from the two Clusters, including four international actors and other local organizations. Many of these actors had backgrounds in, or at least understanding of international disaster relief and humanitarian law. The group also made contacts with local organizations focused on human rights and environmental law, as well as with those working in property law from academic institutions.

At the local level, the lead organization hired a lawyer to support the local government, and HLP was placed on the agenda of subnational Cluster meetings.

EARLY RESEARCH AND ADVOCACY WORK

The early work of the group was to understand the HLP issues on the ground in the affected areas, along with the potential impacts and unintended consequences of response activities from government or humanitarian actors. This was done by a combination of desk research and interviews in the field with authorities and affected people, including a survey and collection of documents supporting land possession.

The group also undertook research into existing national legal frameworks, to have solid and informed advocacy to the government. It also relied on extensive research of past international experiences in response, such as Chile, Philippines and Haiti, which could help to inform the group's activities, guidance and advocacy positions for the Shelter sector.

The inclusion of local actors and links to local networks were extremely important to help triangulate information, give guidance on important points of law, and also to offer assistance in researching and reviewing the reports and recommendations that were sent to the authorities.

During the initial research by the group, Shelter and Protection actors were still supporting the government to deliver emergency assistance. Relief distributions of emergency shelter kits and tools – plus technical assistance – were being implemented, as these were seen as very temporary solutions.

Two months after the earthquake, the group developed a concept note to analyse possible legal strategies to support the affected populations and complement the Shelter Cluster strategy. This note, endorsed by the Deputy Minister of Housing, detailed HLP considerations in national legislation and in international experience, with the intention of influencing the post-earthquake reconstruction strategies at the national level. For instance, these included recommendations to the national government to implement regularization processes as part of the reconstruction; recommendations to local government to adopt general regularizations for neighbourhoods by municipal decrees; and suggesting conflict resolution mechanisms, such as mediation, in case of land disputes.

GUIDANCE AND TRAINING

The group worked with Cluster partners to continue developing guidance and advocating on issues such as relocation processes and vulnerability prioritization, to support the humanitarian response. Between July and September 2016, guidance notes on relocation, HLP principles and potential HLP issues were compiled and shared.[1]

The group worked closely with national and municipal governments in the affected areas, identifying priority areas and affected groups, building awareness of HLP rights of affected persons and highlighting potential vulnerabilities.

The group also trained staff from NGOs, local and national authorities on HLP issues. This, in turn, supported communities themselves in understanding their HLP rights and responsibilities. As of October 2016, a total of 250 legal officials and 40 humanitarian actors had received training.

PROJECT OUTCOMES

The ongoing advocacy and collaborative approach with the authorities resulted in the government developing a regulation (adopted in June 2016) to recognize different forms of tenure as appropriate or relevant to the context. As an example, people who had occupied land for many years and did not possess legally recognized titles, but could nonetheless prove their link to the land, were granted tenure through "right of use". This new regulation granted a grace period of three months after receiving the permanent housing grant from the government, to provide all required documents. The government was also responsible for supporting families to obtain such documents.

The HLP Working Group also supported the Shelter Cluster in clarifying permissions from the government to allow Cluster partners to provide temporary shelter (without negatively impacting the future prospects of the recipients), as well as to be accepted as providers of permanent housing in rural areas. This enabled the construction of 3,559 temporary shelters and the repair of 1,774 houses.

DIRECT SUPPORT TO AFFECTED COMMUNITIES

The HLP Working Group provided direct support to communities to help them understand their rights and fulfil the administrative procedures required to establish security of tenure.

In the emergency phase, this was mainly through workshops and engagement at municipal level. As a direct result, many affected people became eligible to receive humanitarian assistance.

In the recovery phase, funding was also offered to affected people to help them pay the fees required for the legalization of land title processes, such as notary expenses and payments for the municipal governments.

Supporting the legalization process and jointly advocating to local governments resulted in the lead organization delivering the first legal title to an affected family almost one year after the earthquake. By March 2019, 420 families had benefited from the land legalization process, as part of the recovery programme of the organization. However, other actors did not conduct regularization projects.

[1] These are available on the group's page,at https://bit.ly/2Few3rU.

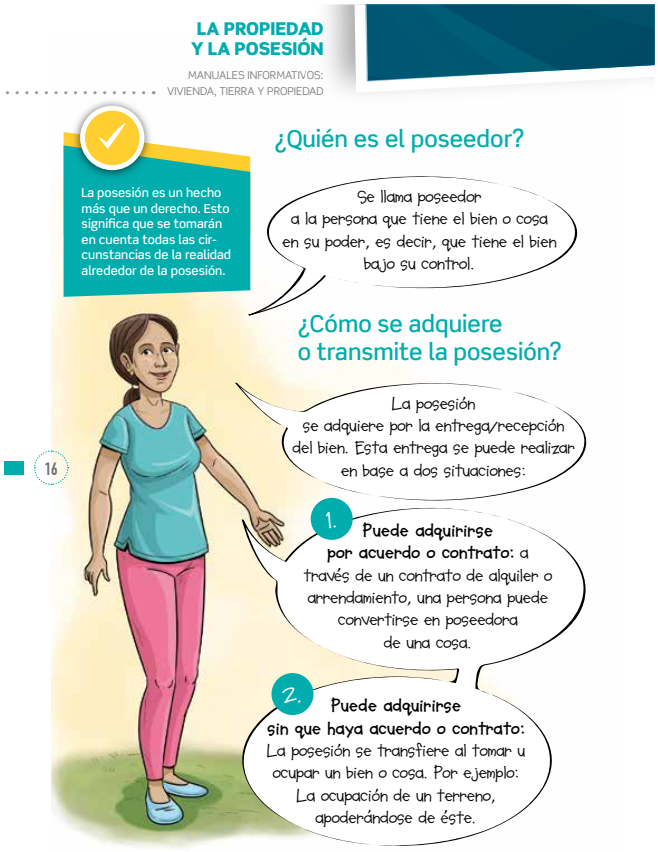
In the recovery phase, the lead organization of the HLP group provided support to families to access land titles.

MATCHING SHELTER AND HLP SUPPORT

All these activities supported the Cluster strategy and partners' interventions, and helped as well to protect the rights of affected people in the wider reconstruction process from an early stage.

The HLP support to the Shelter Cluster varied on what was required by the shelter actors at the time and was a multi-step process, informed by how the response was progressing.

SHELTER PHASE	TYPE OF HLP SUPPORT
Emergency shelter	Awareness raising and clarification of national laws
Transitional shelter solutions / access to government grants	Training and stronger advocacy at various levels, e.g. to influence change in regulations
Permanent housing solutions	Funding and technical assistance to secure land titles



Booklets were produced on key HLP concepts to inform communities of their HLP rights and responsibilities.

MAIN CHALLENGES

Influencing government systems and processes took time, but it was important to have sustainable systemic effects around HLP issues and identify opportunities. This link was made easier through the engagement of the Shelter Cluster co-lead (Vice Minister of Housing). Other links were also possible through local networks, including academia.

The complexity of existing land titles meant that any ongoing land occupation was difficult to understand and prove. For example, in one case, a complete neighbourhood was occupied by indigenous descendants, but they did not have land titles through many generations. To address this, the local government adopted a municipal ordinance which allowed the regularization of the complete neighbourhood, which included more than 400 families.

Communication and collaboration between humanitarian actors and lawyers was also challenging, as all had their own mandates and ways of working. To mitigate these challenges, the group worked with lawyers with a human rights background and lawyers from the local and national governments. The group's coordinator participated in the meetings of the Shelter and Protection Clusters and vice versa. These meetings were very useful for identifying shared priorities and common solutions.

WIDER IMPACTS OF THE GROUP

The advocacy of the HLP Working Group resulted in many improvements to the shelter response in Ecuador and to people's tenure security generally. The new government regulation not only improved the prospects for affected communities in this response, but also for future crises.

The experience of the group was shared at several international fora, at global meetings of the Protection and Shelter Clusters, as well as at a regional workshop in Ecuador. This not only enabled the group to share lessons, but also contributed to building capacity of humanitarian practitioners in this field. It also put greater focus on HLP preparedness, as well as the inclusion of more advocacy components in shelter programmes and beyond.

The workshop also served to institutionalize the lessons learned and tools developed in Ecuador for future use in other countries in Latin America.

This project inspired an initiative to develop HLP country profiles to help identify both potential vulnerabilities and in-country linkages before a crisis happens. This type of resource can be used to inform sector preparedness workshops, contingency planning with government, ongoing academic curricula and also build relationships in country.

EXIT AND NEXT STEPS

The group did not have any formal handover process, mainly because activities continued as part of the lead organization's programming. The other agencies left the group one after the other in 2017. This caused issues of sustainability of the project due to limited funding and uptake from national government, municipalities and other actors.

At the time of writing, the lead organization – in partnership with a local university – was planning a new project to influence public policy around land issues after disasters. As exit activities, the organization also planned to implement HLP workshops for community leaders.

As a direct outcome of this project, 420 land titles were distributed to earthquake-affected households. Support was provided in the form of funding and technical assistance in the process of land tenure regularization.

The project highlighted the need to advocate to national governments to include regulations and protections for people affected by disasters, and allow humanitarian actors to assist those without legal land titles.

STRENGTHS, WEAKNESSES AND LESSONS LEARNED

The project combined research and advocacy in the early phases, with direct support to communities to access secure land tenure in the recovery phase.

STRENGTHS

+ The group's work had a wide effect as it influenced government regulations impacting many earthquake-affected people, as well as any future responses to disasters in the country.

+ Good collaboration between international humanitarian organizations, local actors and national and local government meant that these actors shared an understanding of HLP issues and agreed on relatively quick policy changes to assist affected populations.

+ Effective partnership between the Shelter and Protection Clusters to achieve overall goals of assisting those most in need.

+ Awareness of the importance of advocacy in humanitarian response. Even when shelter actors were unable to implement activities, they could advocate for the rights of the affected populations through the HLP Working Group.

+ It was extremely beneficial to have a dedicated group working from the beginning on HLP issues alongside the Shelter Cluster to support coordination and advocacy activities, as well as helping shelter actors in the response and recovery phases.

Initially, receiving transitional shelters could have disqualified households from government reconstruction subsidies. This was avoided through advocacy.

WEAKNESSES

- Lack of wider buy-in and visibility of the project. Although it was a joint Cluster initiative, many NGOs were not part of the HLP Working Group, which relied on a core team of committed individuals who already understood and recognized the importance of the issues. The group could have worked harder on broader outreach and stronger advocacy messaging about the importance of tenure-related issues and subsequent vulnerabilities, through both the Shelter and Protection Clusters. However, due to the sensitive nature of HLP issues, outreach and advocacy should always be done carefully, especially with national governments.

- Even though tenure security was strengthened for many people, **there were still a number of land conflicts that were both difficult to understand and to support,** which the group was not able to assist.

- The project could not be sustained in the long term to continue supporting the granting of permanent titles. Most agencies responses lasted one year maximum (with many leaving earlier), while land related processes can take a long time. There was no plan to continue assisting the more difficult cases going forward. **The early closure of the Clusters** also impacted the ability to assist many affected families to achieve long-term outcomes.

- The activation of the group could have been timelier, and the involvement of academia and local legal practitioners should have been sought from the outset.

LESSONS LEARNED

- **Shelter response, advocacy and coordination activities after a disaster should include a focus on tenure security,** to avoid inadvertently doing harm or potentially excluding large vulnerable groups from post-disaster assistance. The 2018 edition of Sphere was updated to provide clear guidance on how to address this issue.
- **Local academia, legal offices and central and local authorities should be involved as early as possible,** not only humanitarian organizations and NGOs. This requires a multi-level approach that ensures national buy-in from the ministries involved in determining assistance packages and policies, local government understanding for those implementing the policies and assessing affected populations, and local practitioner awareness to guide on contextual issues. Involving these multiple levels of national actors early **would have sped up the work of the group,** providing useful support to response partners before plans had progressed too much. It would have ensured some groups were not excluded from initial assistance packages based on tenure status and **would have helped the response to be fully grounded in the local realities.**
- **Preparedness is essential.** A greater understanding of the context and the HLP issues affecting local communities helps moving quickly and anticipating challenges during a response to a disaster. Local organizations should be active before crises in supporting communities and local authorities in understanding HLP rights and potential issues. Going forward, the project showed **the importance of building strong relationships, frameworks and tools** in the preparedness phase.
- **HLP data collection.** The group should have provided inputs to initial joint needs assessments to capture data related to HLP issues and get a more comprehensive baseline to work from. If this type of information cannot be gathered through needs assessments, other sources could be explored, including engaging law school students in data collection.

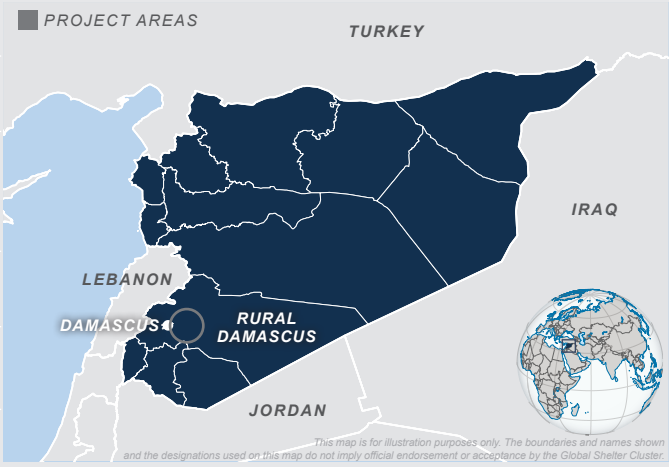
CASE STUDY

SYRIAN ARAB REP. 2018 / CONFLICT

KEYWORDS: Collective centre rehabilitation, Integrated programming, Timeliness, Scale and coverage

CRISIS	**Syrian conflict, 2011–onwards**
TOTAL PEOPLE IN NEED*	**13.1 million** (5.6 million in acute need)
TOTAL PEOPLE DISPLACED	**6.1 million** internally displaced in total* **Over 100,000** people displaced in East Ghouta after February 2018 hostilities
TOTAL SHELTER NEEDS*	**4.2 million** individuals within the country
PROJECT LOCATIONS	10 collective centres in East Ghouta, Rural Damascus governorate
PROJECT BENEFICIARIES	**11,500 households** (65,000 individuals) received multisectoral assistance (Over 7,800 households or 44,492 individuals received shelter assistance)
PROJECT OUTPUTS	**10 collective centres** rehabilitated (incl. shelter, water supply, sanitation, hygiene, health and maintenance activities **Shelter outputs:** 1,500 shelter kits installed, 125 family tents erected, 5 rub halls erected as multi-family shelters, 550 doors, 700 windows, internal partitions
SHELTER SIZE	**13m²** (using the shelter kits of 3.6x3.6m)
SHELTER DENSITY	**2.3m²** per person on average (acute phase)

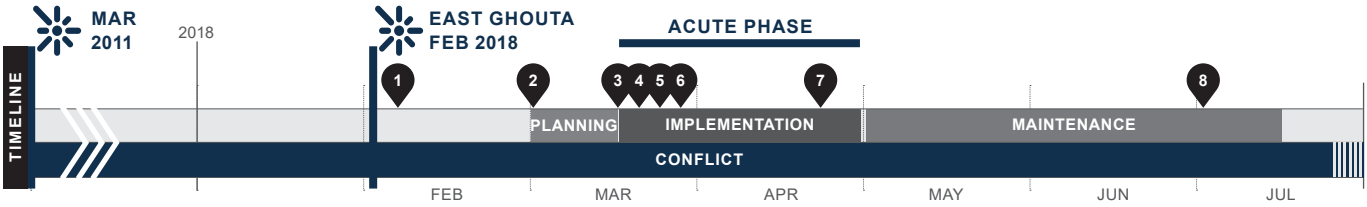
* Figures as of December 2017. Syria Humanitarian Needs Overview 2018.



PROJECT SUMMARY

This multisectoral project targeted 10 collective centres in Rural Damascus hosting displaced people fleeing from hostilities in East Ghouta through humanitarian corridors. It supported 65,000 people in a very limited timeframe, conducting rehabilitation works in 45 days and then following with maintenance activities. Interventions included shelter, water and sanitation, hygiene promotion, waste disposal and maintenance of the facilities. Prefabricated shelter kits and tents were used in and around buildings to set-up shelters or privacy partitions.

MATERIALS COST	**USD 77** per household (USD 78,600 per centre on average)
PROJECT COST	**USD 87** per household



1. Early-Feb 2018: **East Ghouta hostilities begin.**
2. 01 Mar 2018: **Two collective centres are prepared upon request of the national partner before the start of the crisis.**
3. 16 Mar 2018: **Start of the emergency interventions in four collective centres, after the sudden influx of 20,000 IDPs.**
4. 17 Mar 2018: **Construction of three temporary clinics completed.**
5. 19 Mar 2018: **Rehabilitation of two new collective centres.**
6. 23 Mar 2018: **Rehabilitation of three new collective centres.**
7. 20 Apr 2018: **Hygiene promotion campaign conducted. Additionally, maintenance activities, waste disposal and vector-control measures are carried out.**
8. 01 Jul 2018: **Post-implementation monitoring survey conducted.**

STRENGTHS

+ Gender and protection mainstreaming.
+ Collaboration across departments of the organization.
+ Social customs and minimum standards were met.
+ Targeting areas of origin supported early return and recovery.
+ Holistic approach through the integration of complementary sectors.
+ Speed and scale of the response.

WEAKNESSES

- Lack of feedback and complaints mechanisms.
- Poor communication with the affected community.
- Delays due to access constraints.
- Limited planning and coordination.
- The post-implementation survey was not representative and needed fine-tuning.

Over 100,000 people were displaced in less than two months from East Ghouta.

CONTEXT

For more information on the crisis and regional response, see A.29 in Shelter Projects 2015-2016.

SITUATION IN EAST GHOUTA

East Ghouta was considered the largest besieged area in the Syrian Arab Republic (Syria), with an estimated population of 400,000 people. The area was under siege since April 2013. Hostilities escalated in late 2017 and first targeted rural areas, forcing people to flee to other locations within the besieged areas. To allow humanitarian convoys to access and evacuate medical cases, in January 2018 a ceasefire agreement was announced but failed to come into effect. Hostilities resumed in February, with air strikes and a ground offensive in densely populated areas, causing massive destruction of infrastructure and civilian deaths. To allow the evacuation of civilians, humanitarian corridors were established and, between March and April, over 100,000 people were displaced.

RESPONSE TO THE 2018 EMERGENCY

To respond to the massive displacement, the authorities started identifying evacuation sites. However, the movements were too rapid to keep the pace, especially since there were no preparedness plans in place. Thousands of people were moving on a daily basis, requiring additional sites to be identified and the response plans to be continuously adjusted.

A total of 12 collective centres were identified by the Ministry of Local Affairs. These included hangars, industrial buildings, schools and other public buildings. Most were partially damaged or had been looted and were not prepared to host high numbers of people, lacking basic water, sanitation and waste disposal systems. Although nearly half of the total caseload left these sites for other locations, the number of people remaining still outstripped the capacities by over 200 per cent.

At first, little coordination was in place and only a few humanitarian actors were active in the area. All activities within the sites had to be approved by the authorities.

PROJECT LOCATIONS

10 different collective centres were supported by this project. These were allocated by the authorities, often after IDPs had started moving in. As sites were not known in advance, little to no planning and preparation could be conducted. This meant that works had to be done as quickly as possible, often in already overcrowded conditions.

Collective centres included industrial buildings and schools and were often in very poor conditions. Locations were selected by the authorities.

All sites were owned by the government and structural safety was checked by accredited engineers upon request of the authorities.

Prior to the East Ghouta offensive, the organization had also supported preparation works to increase the capacity of two collective centres within the besieged area, which were already hosting 1,500 people from other locations. However, in the event, people fleeing from the offensive were not directed to these sites.

PROJECT COMPONENTS

The main objective was to rehabilitate and adapt collective centres to increase their hosting capacity and improve living conditions for the IDPs. The project included activities spanning shelter, non-food items, water supply, sanitation and hygiene, health and site maintenance. A collective kitchen was also rehabilitated.

SHELTER COMPONENT

The shelter interventions consisted in light upgrades of walls and floors, installation or repair of doors and windows, erection of emergency shelters outside the buildings, and indoor partitioning to provide privacy to families. A total of 125 family tents were also erected and five large multipurpose tents used as collective shelters. Most of the shelter activities were conducted using over 1,500 standard shelter kits prefabricated by the organization and designed to be flexible enough to be used either as stand-alone or as components of partitions or walls. The standard unit that could be erected with a kit was of approximately 13m^2. Site levelling and preparation around the buildings were essential prior to the installation of shelters or tents, as well as water tanks, latrines and showers. Lighting (e.g. installation of lights and floodlights) and electrical works (e.g. sockets and generators) were complementary activities.

Little to no preparation could be done in the buildings, which soon became overcrowded due to the massive influx.

Shelter kits were used to build indoor partitions to increase privacy.

PROJECT IMPLEMENTATION

The project was implemented jointly by an international organization and a national partner who could count on hundreds of volunteers.

According to security procedures, access had to be requested one month in advance, so the international staff were not present during preparations and assessments, slightly slowing down the initial activities. Assessment and reporting were conducted using mobile technologies, which made the process more effective but were not always used adequately.

All works were implemented by contractors, partly due to the time available, partly as a decision not to engage families who had suffered years under siege and had recently fled a war zone. Because of the urgency, standard tendering and contracting procedures could not be followed. Contractors started work before signing agreements and worked around the clock to deliver the works as quickly as possible. Within each collective centre, activities took as little as 10 to 15 days. To speed up the delivery further, multiple contractors were employed at the same time. Some skilled IDPs were also hired during implementation.

In the span of 45 days, over 65,000 people were supported across all the targeted sites.

Continuous changes in context and requests from the authorities required constant adaptation of work plans after activities had already started. For example, one site was expanded three times due to the growing number of new arrivals.

As people started to return to their areas of origin soon after the acute phase of the offensive ended, the organization also targeted the water infrastructure in those areas, to support longer-term recovery.

OPERATION AND MAINTENANCE

Additional contractors were hired after the implementation phase to de-sludge latrines, maintain and clean the facilities and dispose of the waste, with the main aim of avoiding vector-borne disease outbreaks. Teams with shoulder sprayers were responsible of cleaning the latrines. There was no formal handover nor site management. The organization chose not to engage the IDPs for the operation and maintenance, either, due to their distressed conditions. Maintenance services and further assistance were provided throughout the existence of the centres, which by early 2019 were hosting only a few families. The plan was to phase out as soon as all the IDPs had voluntarily returned.

POST-IMPLEMENTATION FINDINGS

A survey was conducted in July 2018 to measure the impact of the project and the level of community engagement and accountability. As this survey was a pilot for the organization, only few questionnaires were carried out. The survey included questions on accessibility, quality and quantity of water, sanitation and hygiene, pest-control, shelter conditions, ventilation and lighting. In terms of shelter, it was found that only 38 per cent of respondents considered their living space as both adequate and comfortable, while the rest either considered it insufficient (25%) or adequate but not comfortable (37%). Lighting and ventilation was not available for 11 per cent of respondents, and only partially available for 52 per cent. IDPs suggested to install fans to improve ventilation and to increase the use of pesticides and the distribution of mosquito nets for pest-control.

PREPAREDNESS PHASE AFTER THE PROJECT

Based on the lessons from this project – where the lack of preparedness meant that thousands of people arrived daily to unprepared facilities – a contingency plan was developed to host over 40,000 IDPs from another area. The organization improved its preparedness activities, putting in place procedures and pre-positioning items to allow for a quicker response in future unforeseen events of this scale.

Works were implemented by contractors, who then were also hired for the maintenance phase.

Shelters were also set up outdoors using the materials in the kits.

Buildings were upgraded through the set-up of rooms, installation of doors and windows, general repairs, rehabilitation or provision of water, as well as lighting.

STRENGTHS, WEAKNESSES AND LESSONS LEARNED

To improve the overcrowded conditions, interventions were carried out very quickly.

The programme also included water, sanitation, NFI and health components.

STRENGTHS

+ Gender and protection were mainstreamed in the intervention. For example, protection cases were referred, lighting was installed in common WASH facilities, latrines were segregated by sex and designed to mitigate GBV risks.

+ The collaboration across departments of the organization was effective and allowed the post-implementation survey to be conducted for the first time in Syria.

+ Social customs on shelter and bathroom design were respected and minimum standards were met (e.g. distance between shelters and latrines).

+ Links with recovery. The project maintained the established collective centres but also targeted the areas of origin of IDPs with ad hoc interventions, to guarantee water supply and encourage safe return as soon as possible.

+ The project integrated several complementary sectors to enhance living conditions in the collective centres in a more holistic way.

+ Speed and scale. Over 65,000 people were assisted across multiple sites in a very short timeframe, covering almost the entire caseload in collective centres after the East Ghouta offensive.

WEAKNESSES

- Lack of feedback and complaints mechanisms. IDPs were often unable to convey their views to the implementing organizations. This meant that the organizations could not always address issues in a timely fashion.

- Poor communication with the affected community. Beyond awareness sessions, more efforts should have been made by the organizations to communicate with the IDPs, for instance on the issue of water consumption.

- Delays were generated as the international partner was not able to access the sites for the first few weeks due to security regulations.

- Limited planning and coordination. The organizations could not plan in advance of the influx, mainly due to not knowing where and when IDPs would arrive. This was caused, to a certain extent, by limited communication with the authorities. Coordination with other humanitarian actors should have also been improved.

- The post-implementation survey was not representative as it was conducted on a very small sample. Additionally, **many questions needed fine-tuning,** as it was not tested before implementation and this was the first time it was used.

SHELTER KIT ITEMS LIST

Items	Qty	Items	Qty
Tarpaulin, 4x5m	1	Metal handle	4
Plastic sheeting, 4x5m	1	Hinge	8
Rope	30m	Latch	2
Round wire nails with washers	1/2kg	Padlock	1
Concrete nails	1/2kg	Silicone caulk + gun	1
Tie wire	10m	Heavy-duty duct tape	1
Hammer	1	Carpentry handsaw	1
Jerry can (10 litres)	2	Metre tape	1

Items	Qty	Items	Qty
Hose	25m	Safety work gloves	1
Clip (Clamp)	2	Woven bag	1
Water tap	2	Solar light	1
Teflon tape	2	**Additional wood sub-kit**	
Screwdriver (flat and cross head)	1 each	Plywood board (1,200x2,400mm)	2
Pipe wrench	1	Timber (3m long, section size 25x50mm)	4
Pliers	1	Timber (3m long, section size 25x100mm)	4
Chisel for wood	1		

LESSONS LEARNED

- **Affected populations should be better engaged** both in the implementation and in communication activities.
- **Contingency planning and preparedness procedures are essential.** Based on lessons learned from this project, the organizations developed a contingency plan that built in risk assessments, stocks pre-positioning and high flexibility to adapt to constantly changing scenarios.
- **Pre-agreed and simplified assessment forms** would help reducing delays and issues during site assessments.
- **The adoption of mobile technologies** (i.e. online spreadsheets) made the reporting easier. However, staff should have been trained on their use directly on their phones, as these are time effective, reduce the risk of mistakes and provide readily available data.

CASE STUDY HUMANITARIAN TARPAULIN DEVELOPMENT

KEYWORDS: Plastic sheeting, Specifications, Cost-effectiveness, Quality control, Procurement and supply

CRISIS	**Humanitarian crises worldwide**
PROJECT OUTPUTS	The design of a standard tarpaulin for emergency shelter and the set-up of the appropriate system to guarantee quality in the long run
USES OF THE TARPAULIN	Emergency, temporary shelters, and multiple other functions
MATERIALS COST	**USD 12–20** per tarpaulin, including transport

PROJECT SUMMARY

By working with an inter-agency working group and by establishing clear quality control processes throughout the global supply chain for non-food items, the organization was able to improve quality, pricing and timeliness of a major relief item: the tarpaulin. Processes included research and development, active sourcing to identify manufacturers, factory visits to ensure that social and environmental conditions were adhered to, common specifications developed on an inter-agency basis, and scientific sampling. The organization's quality control systems have led to more than USD 1.5 million of penalties (for suppliers) and savings (for agencies). But more importantly, the focus has been on building relationships with manufacturers so that they better understand the needs, and that agencies can provide items of suitable quality and durability to vulnerable crisis-affected people.

1. 1993: **Organizations decide to collaborate to design the tarpaulin.**
2. 1994–1996: **One technical unit takes in charge the inter-agency research and development (R&D) project.**
3. 1996: **Final specifications are set for the inter-agency standard tarpaulin.**
4. 1996–2008: **Procurement takes over and a shift to the new product occurs.**
5. 2008: **Quality issues in procurement appear year after year.**
6. 2010–onwards: **Organizations decide to join their efforts to set quality systems. The QSE working group is formed.**

STRENGTHS

+ Inter-agency collaboration to develop shared processes.
+ Universal applicability of the standard specifications.
+ Cost-effectiveness and speed of production.
+ Improved product quality and factory working conditions.
+ Durability of the items better serve the needs of affected people.

WEAKNESSES

- Lack of research and development funding and capacity in agencies.
- Low capacity to retain product development history.
- Challenges in maintaining consistent quality control systems.
- Standard tarpaulins are not easily available in many countries.
- Different standards are still used across agencies and operations.
- Many agencies insist on branding, reducing stock interchangeability.

The project established joint standard specifications for the most commonly used relief item: the tarpaulin. Simple tests on size and tear strength can be easily conducted in the field. These ensure quality is up to standard, and to apply penalties to suppliers for non-conformities.

BACKGROUND TO THE PROJECT

When people's homes have been destroyed, using plastic sheeting is a fast and easy way to create an emergency shelter – a shelter that will shield them from the rain, the sun, the cold; that will protect them from disease outbreaks and offer them some privacy.

For humanitarian relief workers, plastic sheeting is indispensable – not just for shelters. It can be used to make fencing or walls for latrines; it can be spread on the ground when sorting out emergency food rations; it can be used to cover the food when fumigating against insects… It can even be made into guy-ropes to secure large tents, as it is extremely strong, with very high tensile strength.

But it was not always so dependable. When aid organizations first started using plastic sheeting in the 1970s, they used agricultural film, which was unreinforced and very fragile. There were also a diversity of products and qualities, making comparison and tendering challenging.

Moving on from polythene film, agencies began to purchase the kind of cheap plastic sheets that can be found in a supermarket. These cost just USD 0.20 per square metre, but tear easily and the polyethylene is very sensitive to the ultraviolet rays in sunlight. As a result, they degrade very fast. After just a couple of weeks in the strong sun of South Sudan, the plastic turns into powder.

EARLY HIGH-QUALITY PRODUCTS

Humanitarian agencies began to procure plastic sheets from one Danish company which was making very high-quality products out of thick plastic with braided reinforcement inside, with plastic eyelets every metre. But the problem was the price. These cost USD 1.5 per square metre – or USD 36 for a 4x6m sheet – which was expensive, particularly as agencies were purchasing tens of millions square metres every year. As the product was under patent, agencies were unable to find competitors, nor they could open tenders to get more competitive pricing.

Effective covered areas are smaller than plastic sheets themselves.

5x4m sheet: 13.5m² effective covered area (without walls).

6x4m sheet: 16.5m² effective covered area (without walls).

7x4m sheet: 19.5m² effective covered area (without walls).

(examples based on 30⁰ pitched roof allowing 25cm each side for fixings.)

© Joseph Ashmore

Poor-quality plastic sheeting in the field. This product can last just a few weeks when exposed to the elements.

© Stephane Huot-Marchand

Suppliers started producing the new tarpaulin in the late 1990s. The use of reinforcement bands instead of eyelets allows for mechanization, increasing quality and speed of production.

DEVELOPMENT OF COMMON SPECIFICATIONS

In the late 1990s, a consortium of organizations decided to start from scratch and write their own specifications, which they would take to the international market, so companies could bid to manufacture the product accordingly. Many tests were performed with different samples of plastic sheeting, including new and used tarpaulins from the field.

With support from laboratories and shelter specialists, technical specifications were designed based on standards from the International Organization for Standardization (ISO standards). The specifications included required parameters such as material composition (a black woven polyethylene with exterior laminations), strength in both directions, details of the reinforcement bands, etc. These allowed quality control testing in certified laboratories using standardized tests. In this way, manufacturers could know what was expected of their products, and agencies could control samples received. Field testing methodologies were also developed based on the ISO standards, as a way of conducting rapid quality control on samples in the field.

SOURCING

After the initial research spread over three years (1996–1998) and with a final specification, it was possible to identify companies to manufacture high-quality plastic sheeting in China and Korea, at the cost of USD 0.40 per square metre at factory door. This was a significant reduction. From the 2000s, the product was also produced in India, Pakistan and Kenya.

© Patrick Oger

A good-quality tarpaulin can resist up to a year or longer. It can be used for multiple purposes, such as covering older plastic sheets to provide waterproofing.

CONTINUAL REVISION OF SPECIFICATIONS

Over the years, the specifications were continually and incrementally revised, thanks to feedback from the field and laboratory testing. Changes were as diverse as weight or colour of reinforcement bands (from blue to grey, to prevent the tarpaulins being confused with national flags), based on improvements of manufacturing technologies.

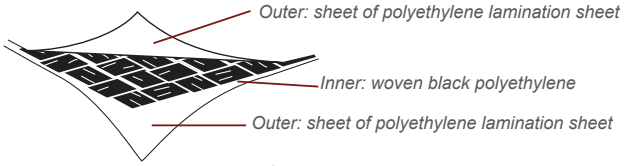
Initial specifications were for two types of tarpaulin: one with a black woven core and one braided, though with time the braided version was dropped. As issues arose, new tests were added. These included colour testing to ensure that the laminations are sufficiently thick.

These standards were adopted by many of the largest humanitarian agencies.[1] Further research was conducted on flame retardancy, which was going to be included in the next update of the specifications, scheduled for 2019.

QUALITY CONTROL

Quality control (QC) is implemented in multiple ways. Each line of the specification has corresponding tolerances and a grade to indicate whether shipments should be refused (a critical failure that compromises performance) or accepted (with or without penalties). Controls are made at factory door and in a network of agency managed QC centres in agency warehouses. The inspections are led by trained quality controllers and -- upon request -- with the help of external laboratories, in order to ensure compliance with the minimum requirements. If goods fail to match minimum requirements, financial penalties are imposed to suppliers and a corrective action plan is requested. A global network of 20 QC centres was established by four major agencies over the years using the same set-up. Agencies regularly meet and share findings.

[1] Updated specifications are available at https://bit.ly/2Wg2Z9f.



The illustration shows a section of plastic sheet with outer layers peeled away.

EXAMPLE OF STANDARD SPECIFICATIONS	
Material for the plain sheet	Woven high-density polyethylene (HDPE) black fibers fabric laminated on both sides with white low density polyethylene (LDPE) coating.
Tear strength in plain sheet at state of origin	Minimum 100N under ISO 4674-1B 2003, with a test piece of 200x200mm as described in ISO 4674 annex B, in plain sheet.
Width	4m ± 1% net width.
Length	6m minimum net length.
Weight, complete sheet including bands weight	Plain sheet specific weight plus 10% additional weight for the reinforcement bands under ISO 3801. Total weight from 187g/m² minimum and 231g/m² maximum. Specific weight of the bands from 150g/m² minimum and 200g/m² maximum.
Colour	White sun reflective on both sides of the sheet. Grey coating on the outside of the bands. Inner black fibers to ensure opacity.

FACTORY AUDITS

In recognition of variable working conditions and the potential for negative impacts both on the internal working environment and on external pollution by factories, agencies started conducting factory inspections. These, known as Quality, Social and Environmental (QSE) audits, were set up as part of the implementation of the lead organization's ethical purchasing policy. Audits are performed in partnership with external companies. Care is required to ensure that the factories visited represented the entire supply chain for each supplier. After each audit, the critically underperforming suppliers are blacklisted. All suppliers are presented with a list of recommendations, with the goal of promoting better performance.

INTER-AGENCY COORDINATION

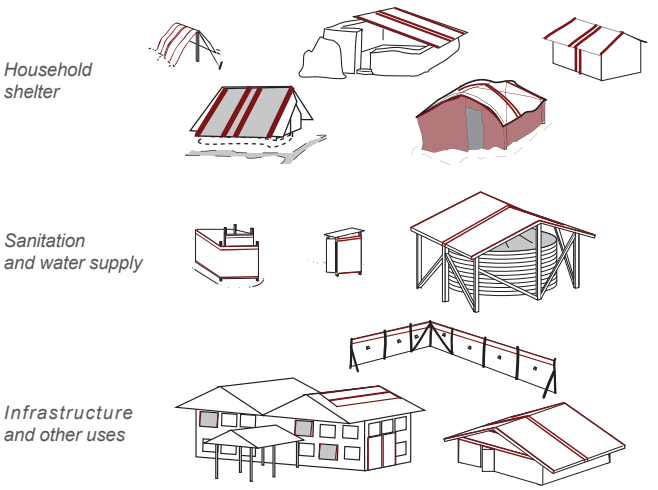
The QSE Procurement Group was created in November 2010 to promote inter-agency collaboration. Its aims at sharing information and best practices to develop synergies related to quality, social and environmental concerns regarding procurement of relief items. It acts in line with each organization's internal regulations and policies. In the long term, the group's purpose is to optimize quality management performance, as well as to define an ethical framework related to humanitarian procurement. One of the major products looked at by the QSE group is the tarpaulin.

MAIN CHALLENGES ENCOUNTERED

Throughout the years, with changes in the producing companies, the quality of the product had the tendency to decrease. The QC system described above enhanced the capacities of agencies to perform a continuous and reliable follow-up of all deliveries. This long-term action helped bring back the quality to the desired level.

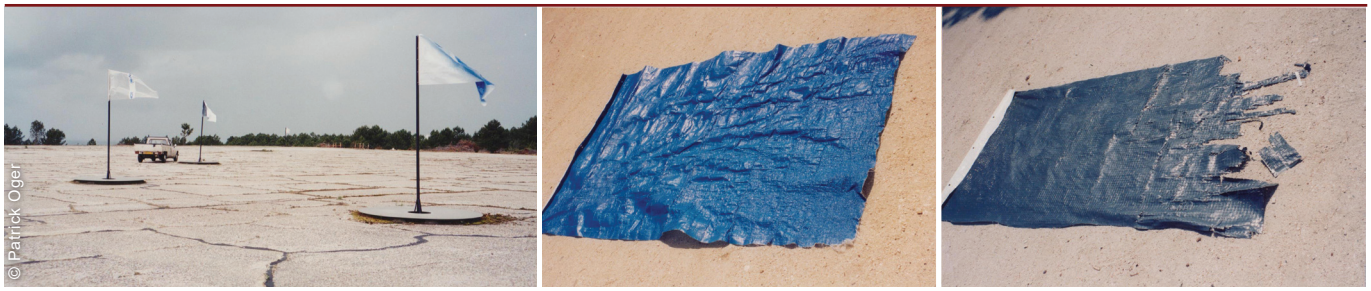
WIDER IMPACTS OF THE PROJECT

Whilst agencies recognize that plastic sheeting is far from ideal and is only one component in shelter solutions in emergencies, it remains the most practical and cost-effective material in terms of logistics and functionality. It can also be used for multiple purposes other than shelter, including for construction of medical and educational facilities. Plastic sheeting is one of the most life-saving of humanitarian products, reaching millions of people every year. For those in need of emergency shelter, there is a huge difference between a good-quality tarpaulin with a prospected lifespan of a year or longer, and a poor-quality one with a lifetime of just a few weeks or months.



Tarpaulins can be extremely versatile. Guidelines on their procurement, use and testing are available at http://www.plastic-sheeting.org/.

STRENGTHS, WEAKNESSES AND LESSONS LEARNED



Flapping tests showed how poor-quality plastic sheets degrade and tear extremely quickly, especially when exposed to strong sunlight, as in most field applications.

STRENGTHS

+ Collaboration and exchange of information from all major organizations to develop very similar specifications and quality control processes.

+ Universal applicability of the inter-agency standard specifications.

+ Common specifications and tenders across agencies allowed manufacturers to **produce larger quantities faster and at lower cost,** because of the decreased need to change production line set-up between orders.

+ Technical solutions improved items' quality and workers' conditions. For example, the use of reinforced bands with pre-punched holes in the tarpaulins, instead of eyelets, not only improves quality, tear resistance and is preferred by users, but also allows industrial processing, avoiding placing eyelets by hand in unacceptable working conditions.

+ The needs of crisis-affected populations can be met more effectively and consistently, with products that last ten times longer than poor-quality plastic sheets.

WEAKNESSES

- Lack of specific research and development funding and expert capacity within agencies, as well as low reactivity (variable in the different organizations), led to an extended time to implement.

- Low capacity to retain the history of products' development, in every organization.

- Challenges in maintaining a consistent quality control system for all shipments and for all details. Some details, such as ultraviolet resistance, are harder to test rapidly and without sending samples to laboratories.

- Shelter-grade standard tarpaulins are not a default product in many countries, meaning that they have to be imported at cost and often with delay.

- Not all agencies or operations use the standard tarpaulins. For example, some major agencies use 4x6m tarps, others use 4x5m.

- Many agencies insist on branding, making interchangeability of stock challenging.

Peeling and scratching tests can be conducted in the field after basic training.

Entire settlements for displaced populations use shelter-grade plastic sheeting. A high-quality and durable product means needs of affected people are better met.

LESSONS LEARNED

- **Dedicated capacity** is needed to continue improvements in the long term. This requires **advocacy with senior management** to support activities and ensure consistency of specifications is followed.
- **Inter-agency collaboration should be strengthened.** The Quality, Social and Environmental procurement project should receive top management endorsement, to push the products' evolution forward.
- **Quality assurance systems should be implemented,** including application of penalties. As most specifications can be verified with simple equipment, quality control centres should be installed and staff trained in as many locations as possible. This would reduce the amount of poor-quality plastic sheeting distributed in humanitarian responses.
- Need to maintain **diversity of suppliers** to ensure competition and availability of larger supply chain.
- Advocacy is required for more **support to research and development within the humanitarian sector** more broadly, and the shelter sector specifically.

CASE STUDY

BAHAMAS 2019–2020 / HURRICANE DORIAN

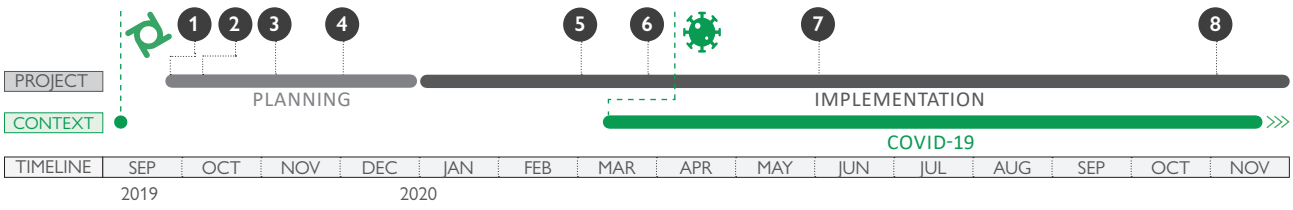
KEYWORDS: Conditional Cash Transfer, Government engagement, Rental assistance

CRISIS	Hurricane Dorian, September 2019
PEOPLE AFFECTED	Approx. **9,000 HHs** (29,472 individuals)*
PEOPLE WITH SHELTER NEEDS	Approx. **15,000 individuals****
PROJECT LOCATION	Grand Bahama, The Bahamas
PROJECT OUTPUTS	**232 HHs** received rental assistance (Grand Bahama) - 212 HHs received 6 months of assistance - 20 HHs received 9 months of assistance **3,055 HHs** assisted with Multi-Purpose Cash support (Grand Bahama and Abaco) **567 HHs** assisted with minor repairs support (Grand Bahama and Abaco)
SHELTER DENSITY	Approx. **15-20m² per person**
DIRECT COST	**USD 700 per HH/month** (rental assistance)
PROJECT COST	**USD 5,257 per HH** (on average, rental assistance program)

* Source: Assessment of the Effects and Impacts of Hurricane Dorian in the Bahamas (IDMB, PAHO, UN ECLAC, WHO)
** Source: The Caribbean Disaster Emergency Management Agency (CDEMA)

PROJECT SUMMARY

A rental assistance program was undertaken on Grand Bahama as part of a wider recovery effort (that included a home repair program, livelihoods support, and multi-purpose cash), in response to Hurricane Dorian which hit the Bahamas in September 2019, causing widespread damage. Rental assistance of USD 700 per month was provided to enable access to safe and adequate rental accommodation for households whose homes had suffered major damage or destruction. The purpose of the program was to "buy time" for recipients to enable them to recover their livelihoods, repair their homes or find alternative housing solutions.

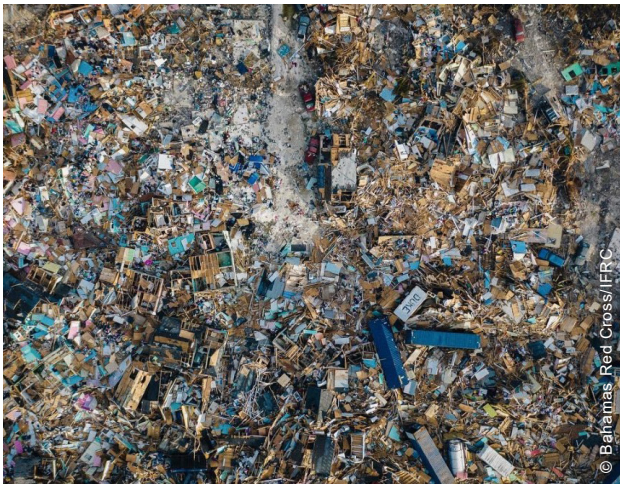


Sep 2019: Hurricane Dorian significantly impacted the islands of Abaco and Grand Bahama and the surrounding Cays.

1. **Late Sep 2019:** Multi-purpose cash (MPC) distributions started.
2. **Oct 2019:** Rental assistance program team set up and assistance modality finalized.
3. **Nov 2019:** Finalization of target household selection criteria, procedures, assessment and reporting tools.
4. **Dec 2019:** 1st month rental assistance payment made to the first cohort of 69 HHs.

11 Mar 2020: WHO declared the novel COVID-19 outbreak a global pandemic.

5. **Mar 2020: 219 HHs concurrently supported with rental assistance.**
6. **Late Mar 2020:** Switch in transfer modality from cheque to bank transfer.
7. **Jun 2020**: 13 new households enrolled.
8. **Nov 2020:** Rental assistance completed.



Hurricane Dorian significantly impacted the islands of Abaco and Grand Bahama and the surrounding Cays.

CONTEXT

The Bahamas is made up of over 700 islands and sits within the Atlantic Hurricane Belt. It is typical for the Bahamas to experience several high-speed wind events each year. Housing in the Bahamas is vulnerable to both high winds and storm-surge damage.

The Bahamas is highly dependent on financial services and tourism. It is a low-tax environment and a large number of wealthy individuals are based in the country. This means that the Bahamas has one of the highest average incomes per capita in the world, but this masks significant vulnerability amongst parts of the population, including undocumented migrants for example. The low-tax environment also has the potential to impact the capacity of the government to recover from widespread destruction such as that brought by Hurricane Dorian. The high average income per capita also limits access to international assistance funds.

SITUATION BEFORE THE CRISIS

The Bahamas has a high rate of home ownership with approximately 59% of homes owned and 35% rented. Within Freeport, the main city on Grand Bahama, housing stock mainly consists of single story houses with concrete block external walls, timber stud internal walls and timber-framed roof structures with asphalt or similar roof shingles. There are also small concrete frame and concrete block apartment buildings. Outside of Freeport structures are typically timber framed or concrete block single story structures.

Some homes had suffered significant damage from past hurricanes without adequate repair which may have caused water damage and weakened structures. The building codes in the Bahamas are considered broadly adequate for wind loading, however, the compliance with the codes by some builders and homeowners (when undertaking work themselves) can sometimes be lacking.

SITUATION AFTER THE CRISIS

Hurricane Dorian hit the Bahamas between the 1st and the 3rd of September 2019. It was the strongest documented Atlantic Hurricane to directly impact a landmass. The hurricane significantly impacted the islands of Abaco and Grand Bahama and the surrounding Cays. The official death count was 74 casualties (63 Abaco and 11 Grand Bahama) and 282 persons missing. The Caribbean Disaster Emergency Management Agency (CDEMA) estimated a total of 15,000 people were in need of food or shelter following the hurricane, with an estimated 5,000 people evacuating to Nassau, the capital. The Government stated Dorian caused USD 3.4 billion in losses and damage in the country. There was very limited official information on overall numbers of houses damaged. As with other contexts which are relatively dependent on tourism and foreign investment exact damage information was very sensitive.

NATIONAL SHELTER STRATEGY/RESPONSE

Due to the high cost of reconstruction, the national shelter response by humanitarian organizations was predominately aimed at households whose homes had suffered minor damage. Many organizations provided in-kind assistance for clean-up and repair. Conditional cash for repairs support was offered by humanitarian organizations and the government. The government response included the Small Home Repair Program, which offered cash grants from USD 2,500 for those with minor damage up to USD 10,000 for totally damaged houses. However, it was recognized that this was only a contribution to house reconstruction, since a fully damaged house could cost USD 60,000 to 100,000 to rebuild for a small 2-bedroom permanent house. The Department of Social Services (DoSS) also offered rental assistance of USD 2,100 for three months paid to the landlord for a number of families in need. This was later expanded to USD 4,200 for six months.

With respect to repair and reconstruction support there were gaps related to support for:

- Non-citizens (as government assistance was targeted at Bahamas Citizens);
- Households with totally destroyed homes;
- Households who were under-insured (government assistance eligibility criteria required households to have no insurance)
- Households with damaged houses residing on Crown land or Generational land where lack of documentation caused issues in accessing government assistance or deterred agency assistance.

PROGRAM STRATEGY

The organization provided shelter support through three projects:

- Multi-Purpose Cash (MPC) support of USD 3,620 over three months to assist with basic needs including those related to housing, utilities, transport, food and water, communication, furniture, education, clothing and health costs.
- Housing repair support - cash assistance of an average value of USD 6,000 to support repair to homes with minor damage.
- Rental assistance of USD 700 per month for 6 months.

Hurricane Dorian caused extensive damage to homes and infrastructure.

There was no overlap of targeted households between the MPC support, housing repair support and rental assistance. This case study focuses on the rental assistance project.

RENTAL ASSISTANCE

The purpose of the rental assistance project was to enable access to safe and adequate housing to "buy-time" while households recovered their livelihoods, repaired or rebuilt their homes, or found alternative housing arrangements.

As the Bahamas is a tourist destination, rental housing was available on the market. It was determined that the number of households being supported with rental assistance (both by the organization and by DoSS) could be easily absorbed by the rental market.

Initially the project was due to provide support for 3 months, but further funding becoming available meant this was extended to 6 months. This proved to be very important given the additional impact of the COVID-19 pandemic on recovery.

COORDINATION WITH DOSS

The rental assistance project was aligned with the DoSS rental assistance program and aimed to support DoSS with the surge in need for rental assistance. The organization took referrals from DoSS and at the end of the project referred very vulnerable cases back to the DoSS.

The rate of rental assistance provided – USD 700 per month – was consistent across the organization's project and the DoSS program. Through a design tweak, the organization provided rental payments to the tenant households rather than directly to landlords (which was the approach taken by the DoSS). Due to the onset of the COVID-19 pandemic, there was not the opportunity for advocacy to the DoSS on the benefits of potentially shifting their approach from paying the landlord directly, to making payments to the tenant households.

TARGETING

The rental assistance project focused on Grand Bahama only. There were three distinct ways that applications for rental assistance were received by the organization:

1. Direct applications for assistance were received through the organization's reception desk and helpline;
2. Applicants were referred through the organization's caseworkers; and
3. Households were referred by the DoSS.

Applicants were shortlisted based on eligibility criteria: that their home was destroyed or had sustained major damage and was uninhabitable. A vulnerability assessment was then carried out to prioritize eligible applicants, which included questions on demographic and socioeconomic characteristics, disability, and the impact of Hurricane Dorian. Washington Group questions[1] were used to ask about disability. A "light-touch" verification was undertaken for the households who were referred to the organization by the DoSS since it was believed households had already gone through a rigorous assessment by the DoSS.

PROJECT IMPLEMENTATION

IDENTIFYING SUITABLE RENTAL ACCOMMODATION

Households identified suitable accommodation to rent that met minimum safety and adequacy standards. Criteria included minimum space per person (for example at least 2 separate rooms for sleeping for a family for 4), and requirements for windows, ventilation, lighting, kitchen (with minimum appliances), bathroom, running water and electricity, in addition to the accessibility to jobs, markets, children's playgrounds and schools. Organization volunteers and staff verified that accommodation met the agreed criteria. Due to the housing market in Grand Bahama having significant rental housing stock it was not difficult for households to find somewhere adequate to rent at a suitable price.

WRITTEN AGREEMENTS

Based on the organization's existing understanding of rental practices in Grand Bahama it was decided that it was not necessary for the organization to check the rental agreement made between the tenant and landlord, as the risk of eviction in the context was low. An agreement between the organization and each tenant household was put in place to ensure that the household understood that the cash support was to be used for rental payments, and that they understood other conditionalities related to the project.

1 See www.washingtongroup-disability.com

Homes outside of Freeport, the main city on Grand Bahama, are typically timber framed or concrete block single story structures.

Rental assistance applicants were shortlisted based on eligibility criteria and prioritized through a vulnerability assessment.

PAYMENT PROCESS

The rate of rental assistance provided to each household was USD 700 per month, for a six-month period. Cheques were initially chosen as the transfer mechanism for the rental payment. The USD 700 was paid to the tenant household, who then paid rent to their landlord.

All households received the flat rate of USD 700 rental assistance regardless of whether the actual rental accommodation cost was lower. The approach of making the payment to tenants rather than directly to landlords was intended to empower tenants and incentivise them to negotiate rental costs, helping to minimize any potential inflationary impact on the market. This approach was based on learning from the Haiti earthquake response in 2010 where the organization had undertaken a large rental assistance program. Any saving was kept by the tenant household and was used to meet other needs. A review showed that the average rent paid was USD 688 per month.

MONITORING AND FOLLOW-UP

Each month organization staff and volunteers followed up with the household to check that they were still in the same accommodation – or if they had moved, a fresh minimum housing standards check was required – and that they were still in need of the rental support. Some households were able to leave the project early because they had repaired their damaged homes.

MAIN CHALLENGES

Adapting payment and monitoring mechanisms due to COVID-19. Cheques were initially used as the rental assistance transfer mechanism. To receive the next cheque, tenants would bring the receipt confirming their previous rent payment to their landlord into the organization's branch office. This helped with monitoring and ensuring there were no problems being encountered by the tenant family, and it also supported the organization's finance department with the documentation. To minimize in-person interactions in the context of COVID-19 the transfer mechanism was changed to bank transfers. The information management and monitoring processes also had to be revised. This involved repeated requests to households for the required documentation. Towards the end of the project the COVID-19 risks and restrictions had reduced so it was decided to make the final payment by cheque to ensure the households had provided all the documentation required by the organization's finance team prior to the final payment.

Remote monitoring due to COVID-19. Remote working made follow-up and monitoring more difficult, especially with the elderly and those with certain impairments. Due to COVID-19 restrictions the physical inspections of the accommodation for adequacy, and in person interviews with tenants and landlords had to be replaced by virtual approaches.

LINKS WITH RECOVERY

The rental assistance allowed the "buying of time" post-disaster, where households instead of needing to concentrate on finding the money to pay for rent, were instead able (as described by many in the post-distribution monitoring) to invest in the recovery of their livelihoods, which then had a significant impact on the households' overall recovery. During the period of rental assistance many households were able to recover their livelihoods, access assistance from other humanitarian organizations or the government, or arrange financing through banks or informal (family) means. This allowed them to repair their previous homes to make them habitable and leave the rental accommodation, or through the recovery of their livelihoods to continue paying rent at the end of the assistance. 12 households left the rental assistance project early and moved to their homes after repairing them.

In June 2020, a review found that 60 households would need further rental assistance beyond the six-month support period. Some addition budget meant that the organization was able to extend rental support for 20 extremely vulnerable households for a further three months, while the remaining 40 households were referred to the DoSS.

The organization ran parallel livelihoods and house repair projects. Further consideration could have been given to involving households receiving rental assistance in these other projects to help catalyze their recovery. This was not opted for because the organization determined it was better to help more recipients when needs were high and there were limited resources available.

WIDER IMPACTS

Using much of the learning from this response and others in the region (such as rental assistance in response to the Americas migration crisis) the organization has developed a global step-by-step guide to rental assistance programming which has received positive feedback from the humanitarian shelter sector.

Rental assistance aimed to "buy time" while households recovered their livelihoods, repaired or rebuilt their homes, or found alternative housing arrangements.

STRENGTHS, WEAKNESSES AND LESSONS LEARNED

STRENGTHS

√ **The organization's pre-crisis knowledge of the rental market and rental practices in the Bahamas** (specifically knowledge of risks related to eviction) allowed the response to move quickly into the implementation.

√ **High standard of accommodation.** The project used existing permanent housing stock for temporary accommodation, which provided a high standard of accommodation.

√ **Payment made to the tenant rather than the landlord.** This approach helped to empower tenants in negotiations on cost and in the relationship more generally with the landlord throughout the tenancy period, and enabled tenants to retain any saving made. The negotiation may have also had an impact on reducing the potential for inflationary effects on the rental market.

√ **Aligned approach with the Department of Social Services (DoSS).** The rental payment amount was consistent between the organization's project and the DoSS rental assistance program. A joined-up approach between the organization and the DoSS enabled the organization to receive referrals from DoSS, and at the end of the project to refer households with ongoing needs to the DoSS for further support.

WEAKNESSES

x **No undocumented migrants received rental assistance.** Undocumented migrants are one of the most vulnerable groups in the Bahamas. It was seen that undocumented migrants were likely to come forward to receive MPC support (which provided 3 months of support) as this was given to all those evacuated, but were unlikely to come forward for more visible types of assistance that required a greater level of follow up. Although undocumented migrants were eligible to apply for the rental assistance project, all households who received rental assistance were Bahamas citizens.

x **More reflection on the exit strategy from the outset would have been of benefit.** Stronger linkages with other programs supporting repairs or livelihoods could have been made to help catalyze recovery. Options for referral for particularly vulnerable households could have been built into the project strategy from the start.

x **Stronger verification of DoSS referrals needed.** At first, the organization only did "light-touch" verification of households referred by the DoSS. It was later found that far more rigorous verification was required as a small number of referred households were found to be ineligible.

x **Stronger information management system needed.** The project experienced information management issues as a comprehensive system was not in place from the beginning of the project.

LESSONS LEARNED

- **Where adequate existing rental accommodation is available, rental assistance should be considered** so that a high standard of temporary accommodation can be made available during the emergency phase.
- **Better learning from Multi-Purpose Cash (MPC) support could have improved wider strategy development.** Collecting more nuanced Post Distribution Monitoring data from the MPC program – on housing expenditure, housing conditions, and the ability of households to continue payments for housing once the MPC assistance ended may have led to a different balance of the types of support provided (rental assistance, shelter repairs) or may have impacted the targeting or duration of the rental assistance project design.
- **Ensure appropriate information management systems are in place from the beginning of the project,** considering all processes and activities associated with the project, since it can be difficult to make substantial changes to systems part way through a project.
- **Barriers to inclusion in rental assistance need to be identified and addressed.** In addition to referral mechanisms, direct application routes are needed (as was in place in this case). Relying on referrals could risk excluding specific groups from receiving assistance. In this case other barriers prevented undocumented migrants from applying for rental assistance.
- **The exit strategy needs to be considered and monitored from the outset of the project.** This needs to be considered both in relation to linking to wider programming to support recovery, reducing the need for rental assistance, and in relation to the potential for referral of households who may still require rental assistance when the project comes to an end.

CASE STUDY

IRAQ 2018–2021 / CONFLICT

KEYWORDS: Housing reconstruction, Housing rehabilitation, Integrated programming, Returns

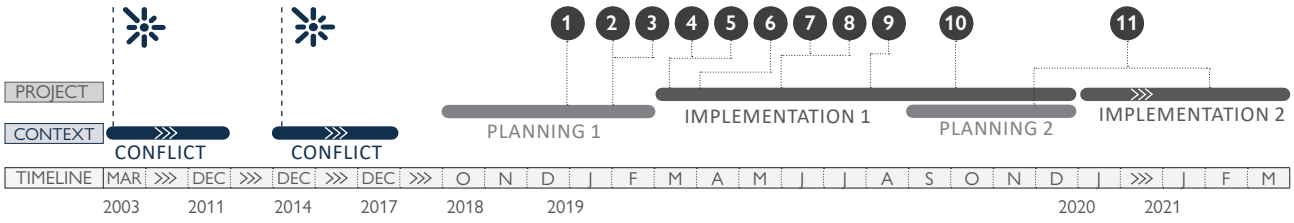
CRISIS	Iraq war, 2003-2011, Iraq conflict, 2014-2017
PEOPLE AFFECTED/ DISPLACED	1.2 million IDPs 4.8 million returnees*
HOMES DAMAGED/ DESTROYED	Approx. 240,000 damaged and destroyed homes**
PROJECT LOCATION	Kirkuk and Salah Al Din Governorates
PEOPLE SUPPORTED BY THE PROJECT	Full program 948 HHs Shelter support 457 HHs
PROJECT OUTPUTS	457 war damaged homes rehabilitated, retrofitted or rebuilt 900 HHs received unconditional multipurpose cash 406 livelihoods grants distributed 6 settlement level community projects
SHELTER SIZE	33m², 55m² or 72m² (dependent on household size)
SHELTER DENSITY	Minimum of 5.5m² of covered space per person
DIRECT COST	USD 3,500 – USD 8,500 per HH (dependent on household size and level of damage)
PROJECT COST	USD 4,900 – USD 11,900 per HH (dependent on household size and level of damage)

PROJECT SUMMARY

The objective of the Durable Returns Program was for families who had returned following displacement to be able to rebuild their lives in safe conditions, with access to essential services, and livelihood opportunities in a revitalized local market. To do so, the program addressed underlying protection concerns, repaired key public infrastructure and disbursed cash grants for shelter rehabilitation and reconstruction.

* Source: IOM Displacement Tracking Matrix (Dec 2020)

**Source: The status of housing rehabilitation programs in Iraq in the post-ISIL conflict: an abstract by the Shelter Cluster and UN-Habitat in Iraq, Oct 2020.



2003-2011: Iraq war.

2014-2017: Iraq conflict.

1. **Jan 2019:** Selection of locations.
2. **Feb 2019:** Formation of Community Working Groups.
3. **Feb 2019:** Socio-economic vulnerability assessments.
4. **Mar 2019:** Identification and feasibility analysis of community projects.
5. **Mar 2019:** Shelter Validation assessment (technical).
6. **Apr 2019:** Selected households signing of construction related documents and agreements.
7. **Jun 2019:** Distribution of the shelter grant first installment.
8. **Jun 2019:** Implementation of community projects.
9. **Aug 2019:** Distribution of the shelter grant second installment.
10. **Oct 2019:** Distribution of the shelter grant third installment.
11. **Dec 2019 - Jan 2021:** Points 1 to 10 repeat in Implementation phase 2.

CONTEXT

For more background information on the crisis and response in Iraq see A.17.

Some of the main obstacles preventing displaced people from returning to their homes include: a lack of adequate shelter because of conflict-related damage or destruction, lack of services (water, electricity, health and education), insufficient livelihood opportunities, and insecurity and protection issues. Many of those who remained displaced following the end of the conflict had no homes to return to and were not able to carry out their previous livelihood activities, much less raise the financial means to begin reconstruction. The same applies for those who have returned and are forced to live with relatives, in part of their damaged house or in rented accommodation.

PROJECT APPROACH

The organization developed a Durable Returns Program - of which shelter support was one component – to enable households who had returned to their areas of origin to be able to rebuild their lives in safe conditions, with access to essential services and livelihood opportunities in a revitalized local market. This required buy-in and committed engagement from the local authorities and security forces.

The program took a holistic approach, focusing on six main pillars to facilitate durable returns: shelter, livelihoods, relief (through Multi-Purpose Cash Assistance), essential services and infrastructure, mine action and weapons decontamination, and Protection. The use of cash transfers were prioritized to stimulate market recovery. Through an interlinked series of interventions, the program's aim was to help communities to come back to life.

Cash-based Interventions were prioritized in order to create a multiplier effect of cash injected into the communities recirculating, and thereby stimulate local market recovery. Before cash grants were distributed to families to rebuild their homes, the organization invested in local construction-related craftspeople and businesses (electricians, welders, carpenters, masons, hardware shop-keepers and ironmongers) to ensure that they had the necessary tools, equipment and materials to restart their work. Once the cash grants were distributed to families to repair their homes, they hired these skilled laborers and purchased items from their shops, creating a virtuous cycle of supply and demand, reviving the local economy.

Part of the organization's rationale for using a Cash-for-Shelter approach was that they believed it would increase the value-for-money of each grant due to the money going directly to households who could then engage contractors. Households also saved on labor costs by soliciting support from relatives and neighbors. Additionally, providing cash resulted in households having much greater choice and flexibility to address their priority shelter needs. The downsides were risks around the quality of construction or the misuse of cash, which needed to be carefully counter balanced thorough monitoring and the provision of continuous technical support.

TARGETING

Four main locations of operation were selected based on multidisciplinary criteria. All targeted locations were areas classified as rural or peri-urban, had a significant number of returnees, were safely accessible, and had sustained a very high level of damage to housing, infrastructure and main utilities and facilities. Furthermore, the locations were selected in areas where the organization had an ongoing dialogue with the local authorities and security forces, enabling the team to respond to protection concerns.

Families with a certain degree of socioeconomic vulnerability were confirmed to participate in shelter technical assessments that validated the level of damage of their home. Through household visits, team members classified the level of damage of the house based on the Iraq National Shelter Cluster Criteria, and verified the ownership of the house and land, either by checking the land deeds (common in urban and peri-urban areas), or by triangulating the information via trusted community members or the Community Working Groups whenever ownership documentation was unavailable (common in rural areas).

Homes and businesses sustained significant damage during the conflict.

COMMUNITY ENGAGEMENT

A key theme that ran through the program was its community-based approach, with a focus on investing in people's capacities, supporting empowerment to capitalize on opportunities. The guiding question for the organization was: 'How can we enable people to be active participants in their own and their communities' recovery?' To do so, once a community was selected, analysis of market chains and availability of skilled labor was carried out, participatory decision-making processes were put in place and Community Working Groups (CWGs) were established. These CWGs were involved throughout the program design and implementation, including in consultation on targeting criteria, identifying program priorities, assisting in community mobilization and day-to-day follow-up. The approach aimed to enhance community engagement, communication with communities and feedback channels, to minimize tensions, identify issues early and mitigate them, and maximize ownership and acceptance of the program within the community. Where the inclusion of women proved challenging in more conservative locations, the program considered the establishment of women only working groups which had a similar role to the standard CWGs, particularly in program design and consultation.

CASH-FOR-SHELTER

Once these preparatory stages had been completed, the vulnerability and capacities of each household in the community was assessed. The organization developed a model similar to one used by the Cash Working Group. On the basis of the results, several types of cash-based support were available to households, depending on their degree of vulnerability and their specific priorities.

With Cash-for-Shelter grants for the reconstruction of damaged or destroyed houses, priority was given to households currently residing in sub-standard living conditions and with the lowest capacity to independently change their situation. To be eligible, households needed to have a certain vulnerability score, and their housing damage needed to be classified either Category 2 (major), Category 3 (severe) or Category 4 (destroyed), based on the classification developed by the Iraq Shelter Cluster. The Cash-for-Shelter grant amount depended on the degree of destruction and size of family, and was paid in several installments as a conditional cash grant.

CASH FOR SHELTER GRANT PER HOUSEHOLD			
FAMILY SIZE / LEVEL OF DAMAGE	**33m² Family size 1 to 6**	**55m² Family size 7 to 10**	**72m² Family size 11+**
CATEGORY 2 AND 3 (Rehab or retrofit)	USD 3,000 (+- 500)	USD 3,500 (+- 500)	USD 4,500 (+- 500)
CATEGORY 4 (Rebuild)	USD 5,000 (+- 500)	USD 6,500 (+- 500)	USD 8,000 (+- 500)

Cash-for-Shelter grant per household.: Based on the classification developed in 'Shelter Cluster Iraq – Emergency repair of war-damaged shelter guidelines', Version 2.3 – 11.03.2019.

Following the identification of eligible households for a Cash-for-Shelter grant, a fully customized package of construction documents for each household was developed. This package served as a reference and a guiding document set for both the household and the project team. A typical construction documents package included:

- Agreement: stipulating the terms and conditions, responsibilities of both the organization and the household, grant value and tranches;
- Bill of Quantities: made simplified and comprehensible for households;
- Layout plan: to show which areas of the house were within scope of works and which were not;
- Ownership declaration form: used for data triangulation, usually signed by the household, Community Working Group members, and two community members; and
- A simplified scope of work.

With each household, once the agreement was explained and signed, the first tranche of the grant was distributed. For logistical and pragmatic reasons, the cash transfer modality was done via traditional hawala transfer networks.

The rehabilitation, retrofitting or construction was accompanied by technical assistance to the households. This was via weekly or biweekly field visits by the organization's engineers to each household to provide guidance and supervision on the quality of works, and in parallel, the team monitored and documented the progress for reporting and archiving.

Once a household substantially completed each construction phase, the subsequent installment of the grant was disbursed, and once substantial completion of the scope of works was reached the household received a very small amount that was retained from the overall grant (around 5% usually) and signed a final completion certificate.

Community Working Groups (CWGs) were formed and were engaged in all staged of the project.

COMMUNITY PROJECTS

The program also included community projects which aimed to enhance access to communal spaces, essential services and utilities through the rehabilitation of community spaces, preferably delivered through Cash-for-Work. Depending on the priorities in each specific location, this involved for example the rehabilitation of a pumping station to supply water for either domestic consumption or for irrigation; the repair of schools or primary health care centers; or the restoration of power supply.

SECURITY AND PROTECTION CONCERNS

To support the continued return process, the organization monitored and addressed a wide range of Protection issues facing IDPs and returnees. Potential security and Protection concerns (restrictions of movement, discrimination and violence, presence of unexploded ordnance or human remains, etc.) faced by individuals or communities who had returned to their area of origin and who were part of the program, were identified through a Protection dialogue with the authorities, mine action partners, armed groups, security forces and community leaders before, during and after the implementation phase.

MAIN CHALLENGES

Perceptions of adequate living space. Traditionally, Iraqi communities have been accustomed to living in spacious houses. For financial feasibility reasons the program pursued the minimum covered living space standard recommended by the Iraq Shelter Cluster, 5.5m² per person, which is often perceived as cramped. Good communication helped in mitigating misunderstandings, yet dissatisfaction was sometimes expressed.

Going beyond the agreed upon scope of works. Linked with the previous point, households sometimes decided to expand the reconstruction or rehabilitation beyond the agreed scope of works at their own expense (usually by going into debt). This risked jeopardizing households' abilities to meet subsequent tranche thresholds or even finish the works due to inflating the construction budget. Several mitigation measures were put in place to avoid this, such as assisting households in designing the expansion and estimating its costs. However, in future programs the organization plans to limit the allowance of expansion that is supported i.e. by 30%.

Availability of construction workers. One of the preliminary activities of the program was conducting a rapid market assessment and a price monitoring exercise. Although the outputs indicated that the workforce (skilled and unskilled labor) were available and abundant, it was observed that sometimes the local workforce became overwhelmed during implementation, mainly because some households reached the same construction milestones simultaneously (i.e. concrete mixing and casting all needed to be done at the same time).

WIDER IMPACTS

In addition to the outcomes for households directly supported by the program, there were also indirect positive outcomes, with many people in the wider community reporting for example an **increase in work linked to the shelter and small business components**.

More broadly, the program presented an opportunity to engage with these communities and authorities in the longer term and delve into and jointly address some deeply entrenched protection concerns. While difficult to measure, **community-based projects and the sense that the village or neighborhood as a whole benefited** from the program appear to have **strengthened ties between neighbors**, even though the picture here remains mixed.

The scope of the project included the reconstruction for homes that were too severely damaged to be rehabilitated.

STRENGTHS, WEAKNESSES AND LESSONS LEARNED

STRENGTHS

√ **Multi sectoral integrated approach.** The shelter support was part of a broader integrated program, which included community projects, protection programming, and market-based approaches. Prioritizing support to construction-related small businesses and skilled laborers prior to shelter interventions supported the recovery effort.

√ **Owner-driven reconstruction and Cash-for-Shelter approach.** This proved to be cost-efficient, safe and popular amongst affected communities. While close monitoring and technical follow-up was crucial, the owner-driven Cash-for-Shelter approach had multiple advantages in comparison to a traditional contractor-led approach, enabling households to drive the reconstruction process.

√ **The development of community representation structures,** through Community Working Groups enhanced communication with communities significantly and facilitated community engagement and consultation, as communities were mobilized from the onset of the program and throughout.

√ **Scope of project included all levels of damage and destruction.** The scope of the project included all levels of housing damage, including reconstruction for homes that had been totally destroyed, as well as repair and rehabilitation of damaged homes.

WEAKNESSES

× **Inclusion of households who have not yet returned in the program.** The program only included households who had already physically returned to their area of origin. However, a considerable proportion of such communities face challenges in returning prior to receiving support and remain displaced, yet within the program design, they were not mapped out as being possible target households. This was mainly due to complexity in understanding households' intent to return and the program's ability to determine their level of vulnerability in the location of displacement. However, this is being mitigated for future iterations of the program by registering returnees and possible target households on different cycles (or phases), enabling people to express their willingness to return, and enabling people to enter the program at later stages. Other methods are also being tested to resolve this challenge.

× **Gaps within the numerical quantification of socio-economic vulnerability of returnees remains a challenge.** The program came a long way in identifying vulnerable families within a community and adopted a very structured and comprehensive tool. However, the methodology is not perfect and some results had to be reconsidered later on in the project.

Shelter interventions were part of a broader integrated program of support.

LESSONS LEARNED

- **Investing in early planning activities of the program is pivotal** for the alignment and smooth integration of the different project components and the efficiency and effectiveness of implementation. For example, a proper understanding of the community's context and environmental conditions sets a base of how to roll out the required assessments and data gathering exercises in an efficient manner that mitigates assessment fatigue.
- **Proactive and early involvement of community members in project design, methodology and execution** will enhance the general communication with communities, their overall understanding of the project, acceptance and buy-in while ensuring that the activities remain relevant to their needs and priorities.
- Being **part of a multi sectoral integrated program,** the shelter component has proven to be more relevant and impactful when interlinked and complemented by other household and settlement level interventions that also address the needs and priorities of returnees, comprehensively facilitating a durable return for families.
- In considering **timelines of construction activities** across multiple households in the same location, pinch-points where multiple households may be undertaking the same construction activities (i.e. concrete mixing) at the same time need to be considered and spaced out if possible, so as to not overwhelm the local construction workforce capacity.

OVERVIEW

MADAGASCAR 2022 / TROPICAL CYCLONES

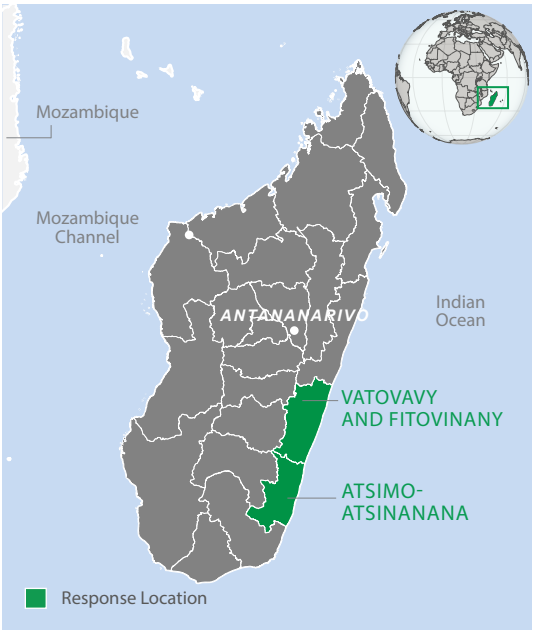
CRISIS	Madagascar Tropical Storm and cyclone 2022 Batsirai (Feb 15) and Emnati (Feb 22) cyclones
PEOPLE AFFECTED AND DISPLACED	423,800 individuals affected* 61,489 individuals displaced*
HOMES DAMAGED/ DESTROYED	11,163 homes destroyed** 33,226 homes damaged**
PEOPLE WITH SHELTER NEEDS	35,000 HHs (210,000 individuals)
PROJECT LOCATION	Atsimo Atsinanana, Vatovavy and Fitovinany regions
PEOPLE SUPPORTED BY THE RESPONSE	18,356 HHs (82,606 individuals)
RESPONSE OUTPUTS	9,786 HHs supported with emergency shelter materials and essential household items 17,564 HHs supported with Cash-for-Shelter assistance to repair, retrofit or rebuild 14,736 HHs supported with technical support, safe shelter and building back safer awareness 1,693 HHs supported with in-kind house reconstruction 71 HHs supported with Cash for Rent Shelter assistance**** 3,333 HHs supported with emergency assistance in evacuation centre

*BNGRC – National Office for Risk and Disaster Management, Madagascar

**Multisectoral Rapid Assessment February 2022

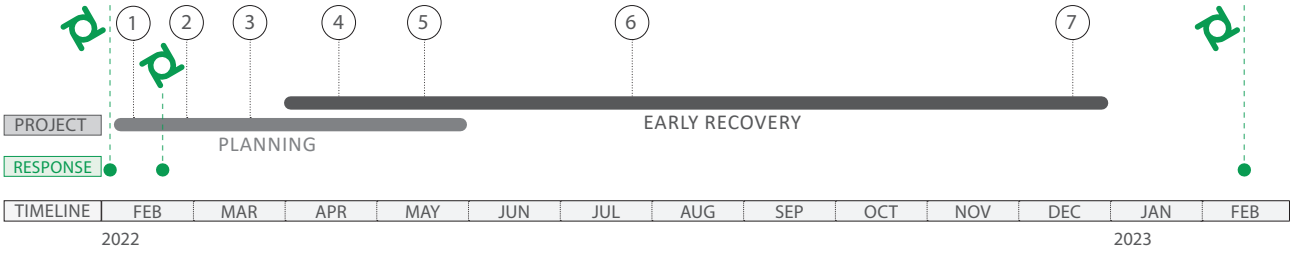
***Flash Appeal 2021-2022, revised version June 2022, p.14

****Dashboard, Madagascar Tropical Storm and Cyclone 2022, Global Shelter Cluster



SUMMARY OF THE RESPONSE

Madagascar has been hit by six tropical weather systems from January to April 2022. Two category 4 Tropical Cyclones Batsirai and Emnati in February impacted three regions on the east coast. This overview refers to the response implemented at sectorallevel,especiallyaroundtheconditionalCash-for-Shelter, that was implemented at scale in peri-urban and rural areas. The coordinated inter-agency response supported shelter self-recoverythroughowner-drivenrepairandreconstruction,while disseminating safe shelter awareness and building back safer principles at community level. Moreover, the tools developed, and the experience gained on Cash-for-Shelter programming aimed to allow faster and more effective assistance to the communities affected by Tropical Cyclone Freddy that landed in the same regions one year after Cyclones Batsirai and Emnati.



- 05 Feb 2022: Tropical cyclone Batsirai; landfall on East Coast.
- 1 Feb 2022: National Shelter Cluster meeting; Decision to host discussions around CCCM and NFIs within Shelter Cluster coordination structure.
- 22 Feb 2022: Tropical cyclone Emnati, landfall on East Coast.
- 2 Feb 2022: First reported distribution on NFIs.
- 3 Mar 2022: Presentation of the National Shelter Response Strategy.
- 4 Apr 2022: Validation of the Cash for Shelter Strategy by BNGRC and Shelter Cluster Lead and co-Lead.
- 5 May 2022: Validation of the Cash for Shelter implementation modalities by BNGRC and Shelter Cluster Lead and co-Lead.
- 6 Jul 2022: First reported cash for shelter and in kind reconstruction.
- 7 Dec 2022: Last reported Cash for shelter distribution.
- 21 Feb 2023: Tropical cyclone Freddy, Landfall on same area than Batsirai.

CONTEXT

Madagascar is the world's fifth largest island, situated in the Indian Ocean off the coast of southern Africa and prone to various shocks such as earthquakes, cyclones, floods, droughts, epidemics, fire, malnutrition, and locust infestation. The country boasts a unique ecosystem, with many species of plants and animals found nowhere else. Tropical cyclones are common in the southwest Indian Ocean region, and Madagascar often experiences multiple landfalls each year with up to Category 4 events like Tropical Cyclone Enawo in 2017 – when the National Shelter Cluster was activated for the first time.

The country has faced challenges to its socioeconomic development, and in recent decades, it has experienced stagnation in per capita income and a rise in absolute poverty. The country has the fourth-highest rate of chronic malnutrition, and its nascent social protection system covers only six percent of the extremely poor. Safety net spending is extremely low – only 0.3 percent of Madagascar's GDP – compared to the average 1.2 percent across sub-Saharan Africa.

SITUATION BEFORE THE CYCLONES

Coupled with the socio-economic impacts generated by the COVID-19 pandemic, the fragility of households was exacerbated. By December 2021, more than 1.6 million people in southern Madagascar were estimated to have been suffering from high levels of food insecurity, with hundreds pushed to leave their homes and migrate in search of more secure livelihoods. Environmental degradation and climate change have aggravated prolonged drought consequences, which in combination with other complex social drivers, pushed the region into a humanitarian crisis.

In Madagascar, the government leads response operations through its national disaster risk management agency (BNGRC) in close collaboration with humanitarian partners. The Shelter Cluster is led by the Ministry of Population, Social Protection and Women (MPPSPF) and co-led by one national humanitarian agency with the support of one of the two Global Shelter Cluster Leads.

SITUATION AFTER THE CYCLONES

Six tropical weather systems hit Madagascar from January to April 2022. In January, Tropical Storm Ana brought heavy rainfall and flooding that affected approximately 131,500 people and killed 55 – primarily in the central and northern parts of the country. Subsequently, Tropical Cyclone Batsirai made landfall near Mananjary city on 5 February – affecting the regions of Atsimo Atsinanana, Vatovavy, and Fitovinany. These were the same areas that were later impacted by tropical Cyclone Emnati, which made landfall in Manakara town on 23 February. According to Meteo-France, the cyclonic impact in this area of the island had not reached this level for over 25 years.

Shelter assessments were carried out for the houses damaged by the impact of the cyclones, March and August 2022.

The two Category 4 cyclones (Batsirai and Emnati) affected 423,800 individuals, including 136 people killed. It is estimated that 11,163 homes were destroyed and 33,226 were damaged. Assessments conducted at the regional and national level sidentified enormous damage to basic infrastructure, especially within rural and peri-urban communities. This led the Malagasy government to declare a "state of national disaster" already on January 28, 2022, when the two cyclones were yet to arrive.

NATIONAL SHELTER STRATEGY

The collective impact of the 2022 storms left 21,922 people displaced across 68 emergency relocation sites. While Camp Coordination and Camp Management (CCCM) was not formally included within the national cluster's mechanisms, it was decided to host collective center management issues and discussions within Shelter Cluster coordination, as there were high-level needs for both displaced and non-displaced populations.

The Shelter Cluster strategy was adapted from the one implemented for the response to Tropical Cyclone Enawo (2004), with three key objectives:

1. To ensure the health, safety, privacy, and dignity of women and men, girls and boys affected by the Cyclone by providing emergency shelter and NFI assistance.
2. To support sustainable solutions for protracted displacement (while avoiding the creation of camps and facilitating the exit of families in collective centers).

3. To promote rapid self-recovery through a community participation approach integrating WASH, health, livelihoods, and protection, with support for owner-driven recovery processes and standardization of partner approaches.

Key response activities were defined, with targeting criteria:

- For emergency: Standardized NFIS kits for people displaced in relocation sites and not displaced people with houses damaged or flooded, with two installment of 100,000 AR (23 USD) unconditional cash, to be coordinated through the Cash Working Group according to the Minimum Expenditures Basket.
- For recovery for the most vulnerable non displaced people living on site of their damaged or destroyed house: Assisted reconstruction in line with guidance from the Secretary of State in charge of New Cities and Housing (SEVNH), and support to self-reconstruction including training, distribution of difficult material to find on market and distribution of cash grant with light conditionality for products easily available.
- To assist recovery of most vulnerable tenants: Cash for rent support for 3 to 6 months and for an amount not exceeding the cash for shelter one, linking with other sectors to identify complementary assistance as for income generating activities.
- For all affected communities: Appropriation and awareness raising of construction techniques at the local level (community and authorities), and training for masons, carpenters, authorities and community members involved in support to self-reconstruction programs.

Response options were established with an agreed vulnerability and selection criteria scorecard for households targeted by NFI distribution, with a minimum score to be included. This approach aimed to address transparency in accountability to the affected population and equity in an under-resourced response.

NATIONAL SHELTER/NFI RESPONSE

The first phase of the response focused on providing emergency shelter and household items to displaced people in emergency relocation sites and for non-displaced communities that started to recover. A total of 8,901 households received shelter assistance in July 2022. The Conditional Cash for Shelter (CCFS) response option was the most suitable to meet the affected shelter recovery needs at scale for the second phase of the response – to support communities that have started to repair or rebuild. A "Cash Strategy for the partial reconstruction of homes following the cyclones Batsirai and Emnati" was finalized and validated by the BNGRC. Implementation modalities were developed through the dedicated shelter Cluster technical working group and were validated by BNGRC and all partners involved.

To help ensure that recipients used cash for agreed-upon purposes, payments were made in several installments and monitoring activities occurred between each. As traditional homes can be built in five to seven days, a distribution in two installments supported this rapid approach. The first condition for support was the attendance of an awareness session on Building Back Safer (BBS) principles and a cash book training on registering and monitoring expenditures. The second condition was the verification of the use of the first installment to purchase materials, tools, and/or labor commitments in addition to the application of housing improvements presented during the BBS training.

The maximum amount of AR 350,000 (USD 80) for the partial reconstruction per household was decided in agreement with the BNGRC, the MPPSPF, and the shelter sector partners. This amount was calculated as approximately 25 percent of the materials needed to build a house of 3x4m plus labor. The improved dwelling hut proposed would resist cyclones according to the SEVNH guide. The amount corresponds to the minimum amount necessary to start essential elements of the house and has been calculated on the assumption that the households that will benefit from this amount, following the BBS sensitization given, will be able to support part of their reconstruction.

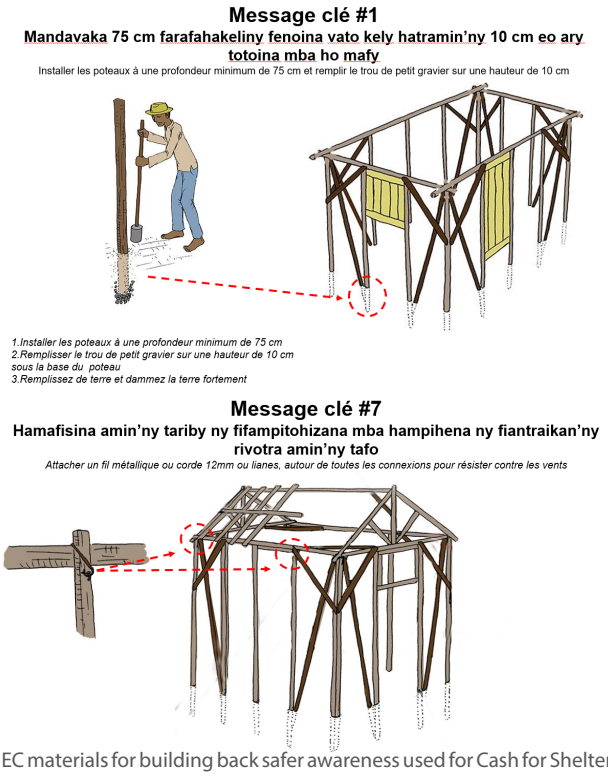
Shelter partners' training on Build Back Safer, March 2022.

Safer building awareness, Cash for Shelter program, August 2022.

A complete set of programming, management, and monitoring tools were developed and circulated to support partners and participants in their programming. Tools were made available in both French and Malagasy languages so that each document could allow for a common understanding between all interlocutors.

The seven BBS principles were identified through the capitalization of past projects in Madagascar, with graphic support to ensure equal awareness through all self-reconstruction (through CCFS) projects implemented for this response.

Key messages included in the improved construction awareness session: Introduction to improvements to traditional houses in south-east Madagascar	
#	Build Back Safer Messages
1	Install the posts at a minimum depth of 75 cm and fill the hole with small gravel to a height of 10 cm
2	Fix diagonal bracing at all corners
3	Fix horizontal bracing between the bottom and top rails at the 4 corners
4	Install trusses on each side of the house
5	Attach diagonal braces between the truss spike and the ridge purlin
6	Nail purlin supports to the rafters
7	Tie a 12mm wire or rope or vines around all connections to resist the wind



IEC materials for building back safer awareness used for Cash for Shelter programme.

The initial vulnerability and selection criteria scorecard for households was adapted to CCFS, understanding that it could be adapted in consultation with communities where the approach would be implemented. For community mobilization and participation, a targeting and reconstruction committee was developed with appropriate complaint mechanisms through various channels. To support BBS principle dissemination for the entire community, at least one model house was built for each project, and community carpenters were trained for households involved in CCFS projects.

It was recommended to create groups of ten to fifteen eligible households based on their location to support each other by electing a skilled treasurer and a chairperson to mitigate high levels of illiteracy within targeted communities. Through this methodology, households would supervise each other and would be more likely to support each other to ensure collective progress during reconstruction and repair works. The grouping also allowed participants to jointly track expenditures against funds received or jointly order and purchase the necessary materials to reduce transportation costs. It also aimed to encourage and nurture community solidarity mechanisms, and to ensure that the most vulnerable were helped by others.

CCFS projects were implemented by most partners, with some to repair or rent through CERF funding. Ten months after the cyclone impact, approximately 17,564 households received Cash for Shelter assistance to repair, retrofit or rebuild their homes, 1,693 households were supported through in-kind house reconstruction, and 71 households were provided with Cash-for-Rent shelter assistance.

MAIN CHALLENGES

Access to affected communities was often difficult due to logistic constraints, as some villages were only accessible by sea or river with no road to reach the most dispersed and remote settlements. This also caused delays in delivery and implementation. The response was also under-resourced, with only 26 percent of the required funding received and only seven active humanitarian partners. Initial assessments and monitoring of needs were challenging due to resources and access issues.

The first phase of the response was delayed due to the succession of cyclones. The CCFS approach's implementation also suffered from delays in decision-making from authorities regarding an agreement to raise the initial amount from AR 100,000 to 350,000 (USD 23 to 80) and the validation of strategy and implementation modalities, which put partners funded through the CERF allocation, particularly under pressure. While this approach supported households in repairing damaged or flooded homes, the amount was not sufficient to enable total support for those who lost their homes entirely.

It was also challenging to define fair targeting criteria and scoring benchmarks, due to the high level of extreme poverty of affected communities, exacerbated by the low level of resources available to respond to their shelter needs.

WIDER IMPACTS

The CCFS approach used to rebuild or repair traditional housing considering BBS principles improved the knowledge of the community and local workers on safer construction techniques. Participants sensitized could cascade knowledge within the community. Because some households started to repair homes before CCFS activities started, the new inputs assisted them in retrofitting efforts.

knowledge, but instead were aimed to reactivate, replicate and improve local construction practices and indigenous knowledge. The CCFS approach was also used for rental assistance in some urban settlements. Tools, experience, and learning from this part of the response should be helpful to meet urban shelter needs for other parts of the country.

The CCFS approach was culturally adapted to affected communities, as most settlements were homogenic in the typologies of homes built. These structures followed a mortise and tenon joint type of structure. None of the BBS disseminated messages contradicted local traditional knowledge, but instead were aimed to reactivate, replicate and improve local construction practices and indigenous knowledge. The CCFS approach was also used for rental assistance in some urban settlements. Tools, experience, and learning from this part of the response should be helpful to meet urban shelter needs for other parts of the country.

"We learned many things, including how to choose wisely in terms of where to rebuild our houses and how to make them resistant to strong winds, while also using local materials. The shelter we built together confidently withstood the strong winds we heard last night!," said Tsoto. "Now, the community can see that our techniques are working. I am willing to encourage and support them with the actual rebuilding of their homes." - Tsotso, a carpenter involved in a 'build back safer' shelter programme in Madagascar interviewed after the impact of TC Freddy in February 2023.

Shelter kit received by household, repacked to allow transportation for long distance walk.

The community is trained on the use of tarpaulin for the shelters.

House repairing process with Conditional Cash for Shelter approach.

Training of the community carpenters.

Building of a model house with trained carpenters, Conditional Cash for Shelter program.

STRENGTHS, WEAKNESSES AND LESSONS LEARNED

LESSONS LEARNED

- Conditional Cash for Shelter programming, on top of emergency shelter assistance, was an appropriate approach to support the self-recovery of affected populations while enhancing Building Back Safer message dissemination. The amount of cash distributed should be re-assessed each time to reflect the actual budget needed to repair or rebuild homes without hampering the implementation of BBS measures. Further advocacy to authorities would be necessary to increase the amount, with an additional 25 percent as the baseline for future responses to allow reconstruction at scale.
- Cash for shelter programming might have an adverse impact on the environment, as the timber used to repair or rebuild homes was often purchased in areas close to the project's locations from landowners who were not registered as official suppliers. This was notably due to transportation costs that were unbearable for targeted communities too distanced from markets. Additional supply chain support for timber should be explored for the next response.
- Literacy levels and the absence of participant documentation such as identity cards, birth certificates, or land certificates in rural areas created challenges in participant capacity to receive cash installments. An analysis of alternative means of identification should be explored, if possible, to fast-track access to this type of cash assistance.

RECOMMENDATIONS MOVING FORWARD

- The coordination of the response benefited from enhanced participation of authorities at the national and regional level, with strong engagement of humanitarian partners for standardization of response modalities. The capitalization of the CCFS experience, tools and methodology during this response would allow for a faster response in future post-cyclone and other relevant contexts.

Model house build at the centre of main settlement to enhance safe shelter awareness at community level. It was used for training of volunteers before assisting eligible households.

FURTHER READING ON SHELTER PROJECTS

On Madagascar: A.18 / MADAGASCAR 2012 TROPICAL STORM;

On tropical cyclones/hurricanes: A.8 / BAHAMAS 2019–2020; A.21 / PHILIPPINES 2016–2018; A.5 / DOMINICAN REP. 2012

On capacity building: A.19 / NEPAL 2017–2018; A.11 / DOMINICA 2017–2018; A.21 / MALAWI 2015–2016

Spanning over a period of 15 years (2008-2023), this flagship publication has become a significant milestone for the humanitarian sector and stakeholders involved in implementing shelter programs. Originally a collaborative effort between IFRC, UNHRC, and UN-HABITAT, Shelter Projects evolved into a Global Shelter Cluster initiative with the primary goal of documenting and sharing lessons from past responses to enhance current and future practices.

In a world where global humanitarian shelter needs far surpass the capacities and resources of agencies to support those in need, it is evident that we must learn from the past to respond more effectively in the future. This special edition focuses on the projects implemented by the Red Cross Red Crescent (RCRC) network. It contains 33 case studies that vary greatly in scale, cost, duration, response phase, and project design, while all addressing the life-saving needs of displaced and non-displaced populations affected by crises and disasters.

Each case study has been written by shelter practitioners and managers of the RCRC and has undergone thorough review through a collaborative and consultative process, with academic support from Oxford Brookes University. Every year, a Shelter Projects Steering Committee, composed of IFRC and international shelter experts from various humanitarian organizations and institutions, leads the effort to identify, select, analyze, and distill the strengths and weaknesses of each project.

Global Shelter Cluster
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Case studies selected and published in Shelter Projects
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