

ECUADOR

Locally Produced Pre-fabricated Transitional Shelters for Remote Communities



PROJECT DESCRIPTION

Country: Ecuador

Project location: Esmeraldas & Manabí provinces

Disaster: Earthquake

Disaster date: April 16, 2016

Project duration: April 2016 - October 2017

Target population: 3,500 people

Cost per household (latrines, Shelter, water kit, labour) (USD): \$2,500

Cost per household for one shelter + labour (USD): \$1,500

Project Budget (USD): \$830,200

Donors: OFDA, ECHO, CRS Private funds

Partners: Mercy Corp, Cooperazione Internazionale, Caritas Portoviejo



720,000 people were affected by the earthquake

“The beneficiaries were living in unhealthy conditions with bad hygiene habits and lack of knowledge of vectors that can cause diseases. After receiving the shelter and training workshops about personal hygiene, safe water, hand washing and learning about their rights, now you can see how their living conditions have improved with a major community leadership and union.”

– Carlos Moreira, Shelter & Wash technical specialist

Background

On April 16, 2016, a powerful 7.8 magnitude earthquake struck Ecuador causing serious damage and loss of life in cities and villages located along its central and northern coastal region. The earthquake killed over 600 people and injured more than 230,000. The UN Office for the Coordination of Humanitarian Affairs (OCHA) estimated that more than 720,000 people were affected by the earthquake, and that at least 140,000 people were left without adequate housing. At least 22,000 were forced into makeshift camps after their homes were destroyed. Dozens of towns along the southern coast of Esmeraldas and Manabí with populations of 5,000 or fewer were severely crippled by the earthquake.

Problem Statement, including core questions

The two provinces of Esmeraldas and Manabí are known areas of high social and economic vulnerability and low institutional presence, leaving communities in extreme poverty and highly vulnerable to long term effects of the earthquake. Due to the remoteness of the communities and a poor coordination mechanism, many communities were left without assistance for a long time after the earthquake. Government programs of response focused on immediate permanent housing solutions, while many agencies focused on cash-for-shelter programs. In 15 assessed communities, CRS found that over 25% of homes were destroyed and 30% significantly damaged by the earthquake. In addition, water supplies had been destroyed or severely damaged in many communities and existing inadequate toilets and latrines were also damaged posing a major health hazard.

What did CRS do?

- Construction of 425 Latrines
- Construction of 700 shelters
- Building toilet blocks in 2 schools to serve around 2140 students
- Writing and distributing one Build Back Better Manual
- Door-to-door protection monitoring in 500 households
- Training for 1,553 people on protection
- Distribution and installation of 485 water tanks (220L) with metal stands
- Distribution of 200 water filters
- Training in hygiene promotion for 6,950 people



Due to heavy rains, access to the communities was challenging.
Photo credit: CRS



CRS Staff are training construction crews in the community of Agua Clara. Community: Agua Clara, Esmeraldas. Photo credit: Rocío Contreras / CRS

Shelter Project Process

Emergency Phase 1

Simple emergency shelters were constructed using bamboo and tarpaulins. Delays to implementation meant that other agencies began to build transitional shelters while CRS was still implementing emergency shelters.

Phase 2

Transitional Shelter construction funded by the U.S. Office of Foreign Disaster Assistance (OFDA) used a concrete foundation design that initially was intended as an upgrade to existing emergency shelters. However, the delay to the transitional shelter implementation meant that many families who had received emergency shelters had received upgrade assistance from other agencies, so new beneficiaries who had received no prior support had to be found, thus increasing the cost and the time required. In total, CRS constructed transitional homes for 243 households.

Phase 3

Following the challenges and delays experienced in Phases 1 and 2, CRS undertook a market assessment to evaluate the feasibility of cash-based interventions to support community reconstruction. The assessment concluded that a cash-based option was not feasible, as local markets and small businesses were still struggling to provide construction materials at scale. However, CRS' purchase of accessories, equipment and tools from local businesses would help stimulate the market.

The CRS team therefore took the opportunity to re-design the shelter approach, and adopt an innovative, locally produced pre-fabricated Transitional Shelter design. CRS teams then established a depot from which panels were constructed from local bamboo and wood, and later sent to the construction location for assembly.

CRS engineers designed the prefabricated Transitional Shelter with input from CRS experts, which ensured high quality, and alignment with Sphere standards. Target communities gave feedback on the construction through the community engagement team.

PHASE 1 APRIL-MAY 2016

April 2016

- 16th: Magnitude 7.8 Earthquake hits in Muisne, Ecuador.
- 19th: First needs assessment.
- 22nd: First OFDA project begins.

May 2016

- CRS begins applying for funding focused on programs in emergency shelter & WASH concentrated in Manabí rural and peri-urban areas (Pedernales). Tarpaulins arrive from Dominican Republic.

PHASE 2 MAY 2016-MARCH 2017

June 2016

- 6th: Second OFDA project begins.
- CRS expands geographic coverage to include Muisne Canton. CRS switches to a medium range strategy that includes protection mainstreaming with more focus on rural areas.

July-August 2016

- CRS establishes a second field office in Esmeraldas Canton (Salto). Several small projects end and CRS concentrates more on shelter. First major challenges in the original design become apparent.
- 15th: ECHO project begins.

September-October 2016

- Esmeraldas office moved to Tonchigüe. Manabí office moved to Jama.

January 2017

- Re-start of building latrines and shelters. The revised strategy is approved.
- HRD conducts cash transfer study and determines it is not feasible to implement cash transfers.

March 2017

- Proposal to consider new technical designs.

PHASE 3 MARCH-OCTOBER 2017

April 2017

- Construction of shelters begins at the workshop in Same.

June-July 2017

- ECHO program finishes.

August 2017

- OFDA program finishes.

October 2017

- CRS Ecuador Emergency Learning Event



Emergency Response timeline
Credit: CRS

"Now I am happy because I have a place where to live and sleep with peace and privacy for my three kids and for me. We feel more secure in our house and really thankful to God and CRS for this new home that they have provided to my family."

- Narcisca Del Carmen Zambrano, El Salto Community

Technical Design

The pre-fabricated kit construction method addressed various challenges posed by the context:

- Use of materials that the community were familiar with meant that families could maintain them and add to them themselves, thereby ensuring medium-term sustainability.
- Materials could be purchased in bulk at a central location and stored at the warehouse, meaning that a constant flow of materials to the field could be maintained.
- At the workshop, a construction crew was able to build up to nine shelter kits per day. Most of the work was done in the workshop and was not impeded by heavy rains.
- Once delivered to the field, the prefabricated shelters kits could be assembled by community groups formed and trained by CRS.
- In addition to being earthquake resistant, the shelters were elevated 1.30 meters from the ground to mitigate the risk of flooding. The foundation columns treated with black asphalt and covered plastic wrap to prevent termite damage and keep them dry.

The structure of the shelter uses a bolted system that joins the panels of wood and bamboo. The columns of the prefabricated panels are made with double bamboo that makes the structure more stable and easier to adapt for extension. The dimensions of shelter are of 3x6m, giving a total of 18m², with a central internal panel division.

Delivery

During all project stages and in all locations, CRS trained community mobilizers in capacity building, protection and human rights so that they could advocate within the community during and beyond the end of the project. The community mobilizers and leaders were the CRS focal points for all activities developed and implemented in the communities. They were involved in participant selection and the organization of all community meetings and training.

CRS also established a participant feedback mechanism to collect, document and respond to participant concerns. In each community, CRS installed a suggestion box to collect feedback. Overall, the intervention was positively perceived by the participants, partners and donors who recognized the quality of the construction despite the major delays faced.

Participant Selection

In collaboration with community leaders and mobilizers, CRS conducted a selection of the participants for the project using a household survey on tablets which included general demographics of the family, an initial damage assessment and flood level risk. CRS engineers then conducted a second technical verification of the damage assessment and water table level for each family.



Adan Mendoza and his spouse in front of their new Transitional shelter, in Bigua in the province of Manabí. For this family, CRS built a 10-cm elevated shelter to improve their access. Project OFDA, Community Bigua, Manabí.

Photo credit: Fernando Sollis / CRS

Due to the late start of the project, some of the original beneficiaries were assisted by other agencies and CRS had to constantly review the list to avoid duplication. Also, migration of beneficiaries for work was common in the communities throughout the project and resulted in the frequent need to survey and technically verify new beneficiaries. With the support of the community mobilizers and the beneficiary feedback boxes, CRS was able to overcome these challenges and ensure proper targeting.

Learnings & Recommendations

After the implementation of the activities, CRS organized a three-days workshop in Quito with implementation staff and management. The objective was to identify major lessons learned from the project, which included the following:

1. In a remote context, a strong local partner is essential to drive the implementation of the activities and bring skilled human resources.
2. A strong social mobilization component helps to drive community cohesion, bring multi-sector approaches in the same community, and work towards sustainability.
3. More resources should be budgeted for monitoring systems and personnel in such a program. Credibility comes from the ability to measure and verify across a wide geographic expanse requires investments in staff and time.
4. A stronger supply chain should have been designed at the beginning of the implementation, including a procurement plan, human resources need and in real time follow up.

Where can I find out more?

[ECHO final Report](#)

[OFDA final Report](#)

Acknowledgements

Anna Hrybyk, Technical Advisor II, PQMQ LACRO focal point, HRD
Denisse Solis, Ex - Shelter & WASH Coord, Ecuador
Anais Garcia, Technical Advisor I
Cover photo credit: CRS Staff