

# Remote Programming for Resilient Shelters

Case from Madagascar, 2012

Humanitarian  
Response  
Case Study

SHELTER AND  
SETTLEMENTS







Trained members of community shelter committees assessing the quality of construction of shelters. Photo credit: CRS/J.E. Andrianambinina



Before



After



Before



After

Shelters of the vulnerable (disabled/elderly) project participants before and after the implementation of the shelter program. Photo credit: CRS/J.E. Andrianambinina



**Location:** East and South East Madagascar—District Brickaville and District Farafangana  
**Disaster/Conflict:** Intense Tropical Cyclone Giovanna and moderate Tropical Storm Irina  
**Disaster/Conflict date:** February 2012  
**Project timescale:** 3 months  
**Houses damaged:** Approximately 45,500  
**Affected population:** More than 330,000  
**CRS target population:** 598 households  
**Material cost per shelter:** \$128 per shelter/household  
**Project cost per shelter:** \$250 per shelter/household  
**Project budget:** \$237,147 from CRS OverOps reserve, Caritas International

## WHAT IS REMOTE PROGRAMMING?

In contexts where regular access to the program sites are limited or restricted, remote programming methods are a way in which one can continue to ensure accountability of program implementation. In this case from Madagascar, regular access to the program sites was difficult due to the isolated areas and lack of funds to employ field staff. Thus, in this situation, a remote monitoring system was set up involving the communities and program participants themselves. When program participants can play a central role in Community Based Disaster Risk Reduction (CBDRR), the impact of the project became larger.

***“I am confident for the next hurricane season. My shelter is of a quality that is resilient to cyclones. I know the need to strengthen every part of the house. I attended and participated in all the monitoring sessions and I am totally satisfied!”***

—project participant

## WHAT DID CRS DO?

- Adapted vernacular shelter designs and technologies to create a disaster-resilient shelter design.
- Trained local artisans in the construction of hazard resistant shelters.
- Purchased and arranged delivery of material that could not be afforded by the program participants.
- Trained program participants and committees on monitoring the shelter construction.
- Provided for the construction of 598 shelters.
- Trained program participants on the maintenance procedures of the shelters.

## BACKGROUND

On February 2012, Madagascar was hit by two cyclones: The intense Tropical Cyclone Giovanna hit the east coast of the island, and the moderate Tropical Storm Irina hit in the north and southeastern coast. The official death toll from the BNGRC (National Bureau of Disaster and Risk Management), dated March 16, indicates 111 people dead, 299 injured, three missing, 332,204 affected, and 55,060 displaced.

The two cyclones caused significant damage in the areas of housing, agriculture, livelihoods, health and education. Households left their usual place of residence and sought refuge in welfare centers or accommodation with their families or neighbors. Less than 15 percent of households were able to rehabilitate their shelters one month after the passage of the cyclone. Households headed by women or the elderly or disabled were not able to rehabilitate their homes within the next six months. Local materials necessary for the rehabilitation of shelters were hard to come by, expensive and beyond the financial capacity of vulnerable households.

## PROJECT PRINCIPLES

The purpose of the shelter project was to build houses with a strong DRR integration for community-led recovery. All the shelters were built with local materials, mainly derived of a local Malagasy plant named “Ravinala” or Travelers Palm. The target program participants were the most vulnerable who had lost their houses after the two storms: the disabled,

elderly and pregnant women. The budget covered the construction of 598 houses to be completed with the Food for Work method to pay the artisans.

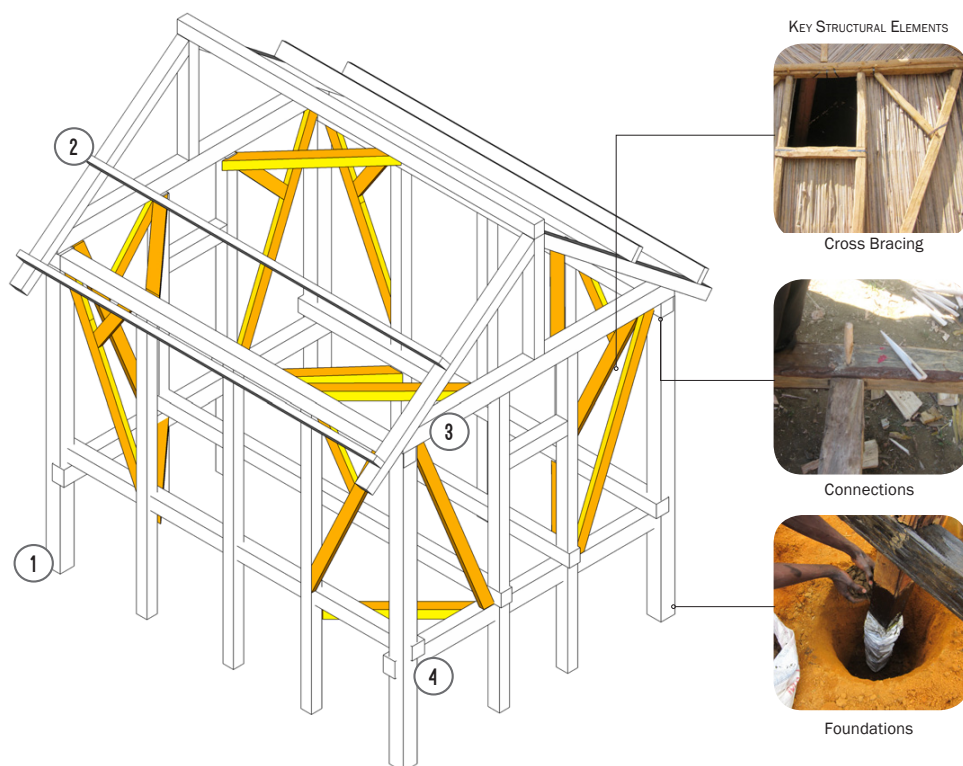
The success of a project depends on two conditions: the involvement and ownership of the program participants, and an effective quality monitoring and evaluation (M&E) system. This project combined these two conditions. More precisely, the effective participation of program participants and local authorities in M&E can be done at a lower cost and provides a sense of ownership to the participants, which in turn improves sustainability.

## DELIVERING A REMOTE PROGRAM

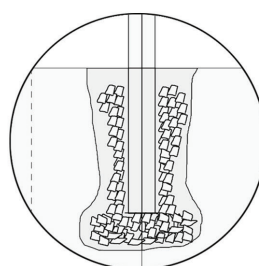
In Madagascar, the team was composed of one DRR & emergency specialist, one M&E officer, two DRR project officers, three technicians and eight community mobilizers from CRS and Diocesans partners. The shelter project duration was three months, aiming for a production rate of 12 houses to be built per week at each site.

In order to make the best use of specialist technical staff, program participants were given responsibility for construction and monitoring aspects of the program. The following mechanisms were put in place to ensure the efficient delivery of safe and strong shelters:

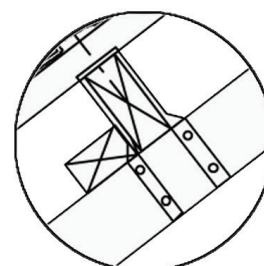
- In each village, a program participant targeting committee was established. It included one or two members from the village (either a school teacher or educated individual), who were in charge of monitoring the housing construction.
- In each district, a focal point or community hub was set up, where information was disseminated and materials distributed. Participants could also report any problems to staff members or community mobilizers here.
- The village M&E committee worked together with one community mobilizer (AMS) and the local government/ mayor's office in charge of facilitating the emergency response process.
- Targeting committees assessed quality of construction and provided additional support to community mobilizers. This system optimized CRS' technical specialists' time as well as strengthening the technical capacity of local staff, community and program participants.
- CRS provided a detailed work plan for staff members of the project.
- CRS provided an M&E checklist to the targeting committee and to each homeowner to allow them to monitor the progress of their own house.
- CRS worked with local suppliers to deliver shelter materials to the villages.
- CRS put in place a contingency plan for vital material supplies.



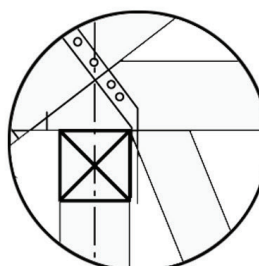
Axonometric 3D diagram showing improved structural components to shelter. Photo credit: CRS/Amanda Rashid



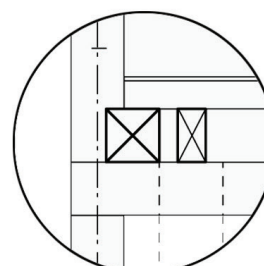
1 Columns Buried 100mm below grade in a gravel footing



2 Metal hurricane straps wrapped and nailed around connections for extra strength



3 Diagonal cross bracing in all planes



4 Mortise and tenon joints between members

Details of joints and connections, key to the structural integrity of the shelter. Photo credit: CRS/Amanda Rashid



Structural members are treated with used engine oil, or similar to preserve and to prevent termite infestation. Photo credit: CRS/J.E. Andrianambinina



## Storage and Quality

1. Are all the materials stored safely from storm, rain and flood and securely from theft?
2. Are the quality of materials good?

## Foundation

3. Is the wood dry?
4. Is oil used to preserve the wood?
5. Have you buried the footing 10 cm deep?
6. Have you used broken rocks before burying the foundation and columns?
7. Are corner bracings at the floor platform connection present?

## Structure

8. Diagonal bracings used at four corner columns
9. Diagonal smaller corner bracings used at corners to connect the diagonal bracings
10. All column connections with beam used appropriate parts and not nails
11. All connections with beams and columns using metal straps and nails

## Roof

12. Corner bracings used at all corners
13. Metal straps are used to connect the Truss/Triangle with beam
14. All connections between members made with mortise and tenon joints
15. Diagonal technique used to connect the ridge with truss
16. Four corners of beams has corner bracings

## Improvement Items

17. Metal straps are used for wooden connections
18. Ropes are used for connections
19. Wood is preserved at the foundation level with oil and petrol mixture

Checklist used by the targeting committee to ensure shelter construction was carried correctly and to ensure DRR features were fitted correctly. Photo credit: CRS/J.E. Andrianambinina

## PROGRAM PARTICIPANTS

The program participants must meet the following criteria: homeless due to the storm and unable to rebuild themselves; the disabled, the elderly and pregnant women; and households with large families. The selection of program participants was verified by the targeting committees. The targeting committee was a combined group of village chiefs and selected household representatives.

## CHALLENGES

- Because CRS relied on villagers to monitor progress remotely, it had to adapt systems accordingly. CRS simplified the checklist with supporting photographs so illiterate participants understood the key points of monitoring. In addition, monitors were assisted by at least one targeting committee member at the village level.
- Different shelter programming approaches between NGOs operating in the same district created some challenges. The communities tended to make a comparison between the designs and the empowerment approaches. This had repercussions on the coordination of the project.
- Increases in the cost of materials due to high demand forced the CRS team and its partners to reduce the targeted number of structures from 680 to 598.

## MONOLOGUE QUESTIONS

- How can we design the monitoring checklist for illiterate program participants?
- Do we have good access to the project sites? If not, what remote monitoring systems can we put in place to ensure accountability? Can we set up village committees and project participants to monitor?
- Who else works in the zone of intervention and how can we better coordinate with those stakeholders to provide better service to the program participants?
- Do we have an alternative strategy or contingency plan for sourcing construction materials?



Shelter committee inspecting timber poles to ensure they are of a suitable quality. Photo credit: CRS/J.E. Andrianambinina



CRS staff running a material distribution point in the centre of the village. Photo credit: CRS/J.E. Andrianambinina

Cover: Tsaby, 79, stands between the home he was provided by Caritas Madagascar and CRS and his home that was flattened by Cyclone Giovanna. The new homes included modifications that help protect them against cyclone damage including ties on the support structure and the roof and y-shaped support beams. The homes are all made with different parts of the locally grown traveler's palm. Photo credit: CRS/ Sara A. Fajardo

## Acknowledgements

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Edited by: Amanda Rashid (consultant)

Case studies project managed by CRS Humanitarian Response Department: Seki Hirano, Donal Reilly, Bill Canry, Driss Moumane and Ephra Graham.

Catholic Relief Services  
228 West Lexington Street  
Baltimore, MD 21201 USA  
Tel: (410) 625-2220

[crsprogramquality.org](http://crsprogramquality.org)