

**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:**15m<sup>2</sup>**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 15m<sup>2</sup>.

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.

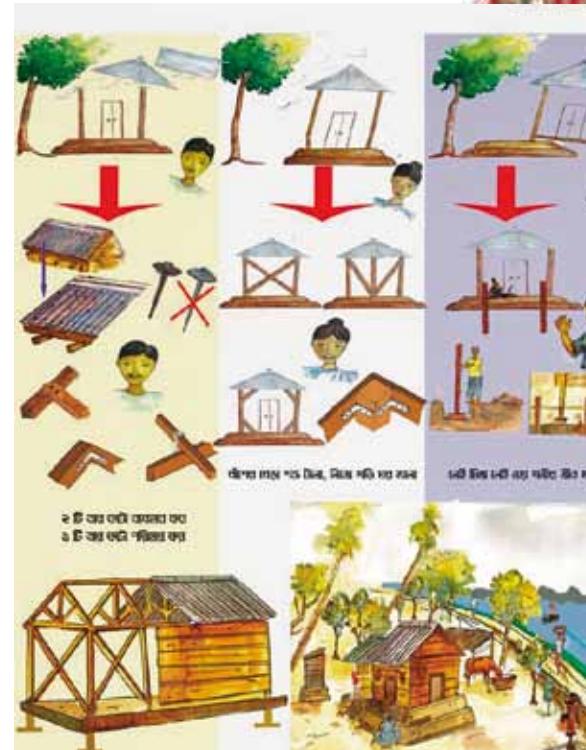
### Logistics

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.

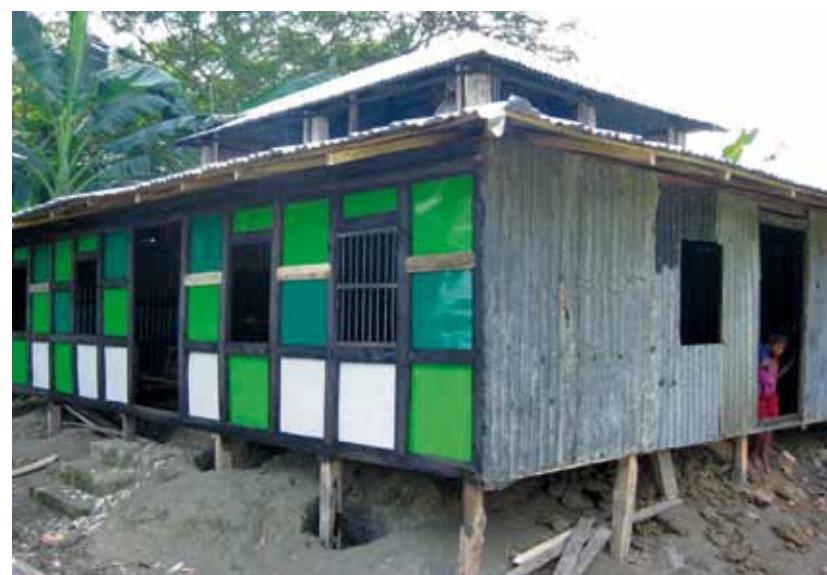
The core shelter design kept the use of wood to a minimum. Timber quality and delays in delivery were one of the most critical parts of the project.

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