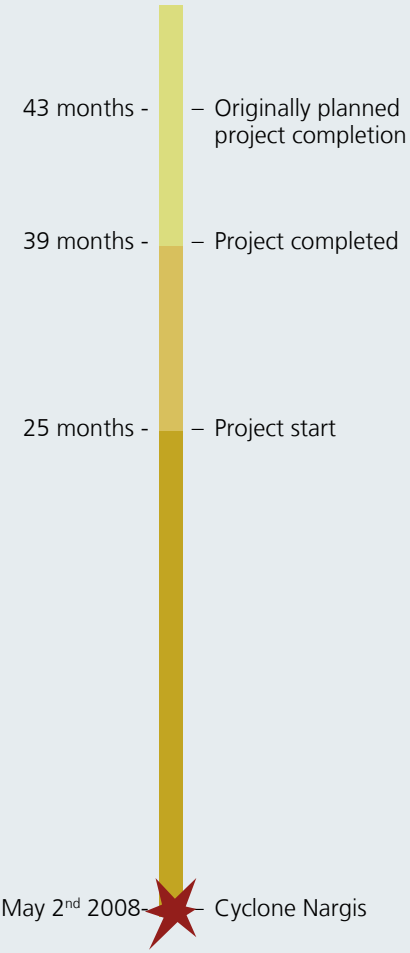
A.19 Myanmar - 2008 - Cyclone Nargis

Case study:

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

Project timeline



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

Strengths and weaknesses

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

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

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

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

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

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

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

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

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

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

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

After the disaster

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

Village selection

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

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

Village recovery committee

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

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

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

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

Selection of beneficiaries

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

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

Training of carpenters

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

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

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

Community contracts

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

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

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

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

Women's participation

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

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

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

In all village reconstruction committees, the treasurers were women.

Environmental mitigation

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

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

Complementary activities

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

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

Hygiene education had previously been given to all communities.

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

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

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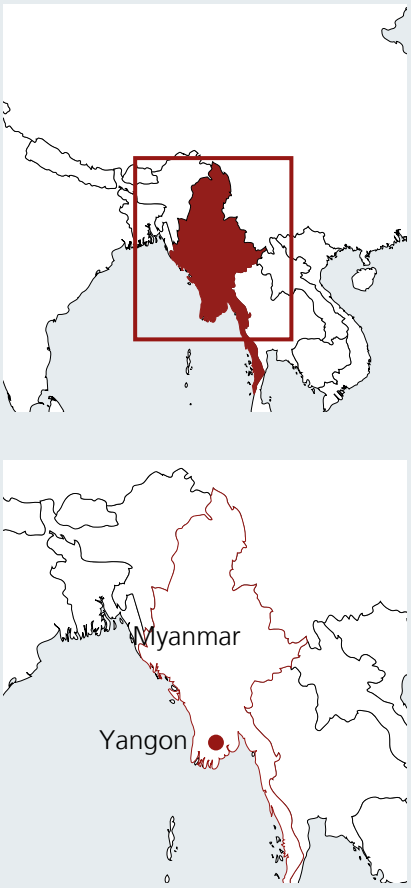
Country:
Myanmar
Disaster:
Cyclone Nargis
Disaster date:
2nd May 2008
No. of houses damaged:
172,000
No. of people affected:
2,433,300
Project target population:
533 households
Shelter size:
20m²
Materials cost per household:
600 USD
Project cost per household:
970 USD approximately



Project timeline

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

Strengths and weaknesses

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

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

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

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

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

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

× The bill of quantities should have been better defined.

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

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

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

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

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

Before the cyclone

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

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

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

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

After the cyclone

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

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

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

Implementation

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

Institutional setup

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

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

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

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

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

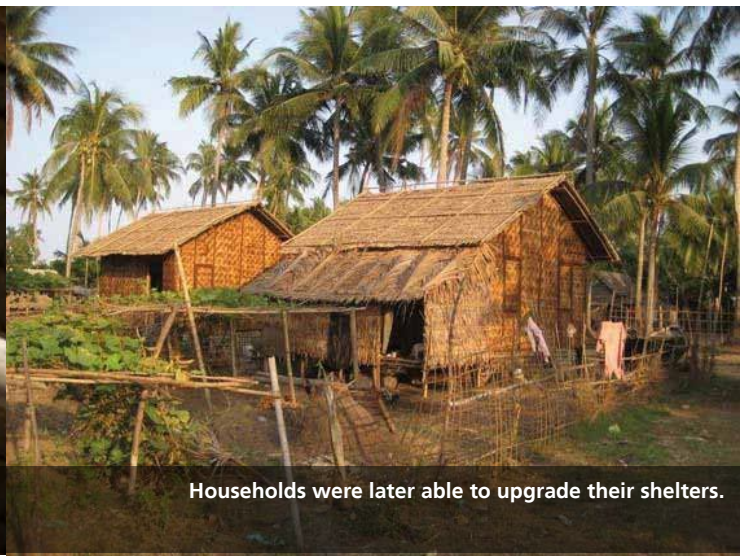
Training

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

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

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

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



Households were later able to upgrade their shelters.

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

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

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

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

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

Tools

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

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

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

✓ Strong enough

☑ Acceptable quality, needs to be improved

✗ Poor, needs more attention in future