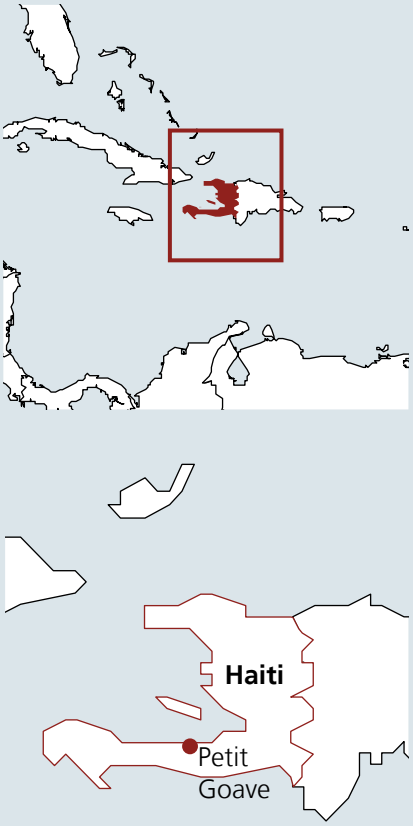
A.12 Haiti – 2010 – Earthquake

Case Study: **Keywords:** Dispersed, Construction materials, Housing repair and retrofitting, Training, Guidelines and training materials .

Country:
Haiti
Project location:
Rural south-eastern Haiti
Disaster:
Earthquake
Disaster date:
12th January 2010
Number of houses damaged / destroyed:
180,000
Project outputs:
500 completed houses
Occupancy rate on handover:
More than 90 per cent
Shelter size:
22 m² reconstructed houses
22 - 42 m² repaired houses
Materials cost per household:
US$ 3,190 (Including US$ 740 local contribution)
US$ 1,000 (including US$ 300 local contribution) for repairs
Project cost per household:
US$ 4,000 reconstruction
US4 2,000 for repairs



Project timeline

- 31 months – Phase 2 starts
- 29 months – Completion of 300 houses
- 22 months – Phase 1: 28 houses repaired
- 17 months – Repair project starts
- 7 months – Starting of the re-construction project
- 7 months – First prototype for repair
- 5 months – Feasibility study, local assessment
- 4 months – First prototype for reconstruction
- 1 month – Partners request support
- 1 month – Pilot phase started
- 12 January 2010 – Disaster date

Project description

This project worked in rural areas of Haiti beginning with an in-depth assessment of local building practices. Builders were then trained in improvements to existing construction. This was followed by building assessment and repair construction programme resulting in the construction of 500 houses to date. The overall project goal was to improve local communities' resilience to hazards and to improve living conditions through housing improvements and construction-based economic stimulus.

Strengths and weaknesses

✓ The project was designed to be replicable by Haitians without external support.
✓ A detailed assessment of cultural practices meant that social structures were enhanced instead of ignored by the project.
✓ Good ownership by local stakeholders.
✓ The project strengthened the capacities of existing local organisations and created jobs linked to local market.
✓ Construction skills training enhanced livelihoods opportunities and has improved the general safety of construction.
× Detailed assessment of local capacities meant that the construction phase started relatively late.
× Slow to demonstrate impacts. There was no significant impact in the first years of the project on housholds which were not provided with construction support.
× There is a low visibility of improvements as they are difficult to identify by a non-professional.
× It was difficult to persuade local partner organisations to repair more houses as they considered repaired houses to be less safe than new houses.
× Technical, management and administrative capacities of partner organisations were not properly assessed.
- This project is ongoing and has received some interest from other organisations following positive impacts on other projects and national strategies.
- The Ministry of Public Work, Transport and Communications gave its agreement for the use of the designs and technical recommendations for housing reconstruction in Haiti.

The project approach was adopted by other organisations. Left: shelter built by the project, Right: An adaptation by another organisation in an urban area of Port au Prince.
Photo: Left: PADED / MISEREOR Right: CRAterre.

Before the earthquake

(See the overview section A.10, Haiti – 2010)

In many of the rural communities in south-eastern Haiti incomes are low and there is no access to power or running water. The public infrastructure that existed was in a poor state of repair.

Most people in the region owned their own houses, grouped or dispersed over a large territory. Many houses were in a poor condition, and homeowners often lacked the knowledge and resources to maintain them. Regular damage was caused by cyclones.

After the earthquake

In south-eastern Haiti, more than 50 per cent of rural houses were partially damaged by the earthquake. However, very few people were injured or killed by building collapse As the affects of the earthquake were relatively less severe in rural areas compared to urban areas, there was a migration to rural areas immediately after the earthquake.

Selection of beneficiaries

Project areas were selected according to level of damage and whether partner organisations had a presence before the earthquake.

Lists of affected people were drawn up by the local organisations immediately after the earthquake. A community meeting at the start of the project was attended by 200 people from all the project areas, and the following selection criteria were decided upon:

Compulsory:

- The house of the beneficiary was damaged by the earthquake.
- The beneficiary is the owner of the house plot.
- The beneficiary agrees to the rules of the project.

Preferred:

- The household hosts displaced families.
- The household head is female.
- The household head is a widow.
- The household includes many children and the adults have limited income-generating opportunities.
- Households are committed members of the local organisation (this was a condition of the partner organisations).
- The beneficiary is regarded as having a good behavioural record.

Land issues were resolved by the local partner organisation.

Approach

Affected people were involved as much as possible, and five partner organisations implemented the project.

The following steps were followed:

- Local organisations defined and managed the reconstruction projects.
- Specific designs and technical solutions were developed depending upon the context.
- An external expert was embedded in each local organisation for one month to build up their training capacity.
- Building models were monitored and evaluated. If necessary, changes and adaptations were made.

Implementation

Households were put into groups of 5 or 6 households. These groups had to work together to repair their houses.

Existing administrative staff from partner organisations worked on the project. A social mobiliser was hired to assess up to 50 households. Two engineers were hired per partner organisation.

House owners bore part of the responsibility for monitoring on-site construction.
Photo: PADED / MISEREOR

There were two monitoring and evaluation missions each year, and the project was managed by a full time foreign expert based in Haiti.

During the house repairs, the inhabitants were given a guided tour of a damaged house to point out defects and reasons for failure. With this new knowledge, people were able to take on part of the responsibility for the quality of construction and repairs to their own houses.

A registration card was completed for each household. This included: identification details; reason for their selection; ownership of the land; access to water; proposed repairs; beneficiary contributions to the shelter and construction completion dates. An agreement was then signed with the householder.

Households selected a builder, paid for by the organisation, from a list of craftsman who had completed the training programme. Local site supervisors made technical checks on each building.

New houses were constructed in groups, while repairs were made on a house by house basis.

Technical solutions

As many of the families were poor, technical shelter solutions had to ensure low maintenance costs.

The core technical criteria was that shelter failure would not lead to further injury and death.

Traditional local houses were built on wooden posts dug directly into the ground which were quickly weakened by rot. The new design added a proper foundation.

Masonry skills were very basic in the area and filling this knowledge gap was an important part of the construction training.

Cross-bracing was used in the walls. This reduced the risk of the wall collapsing in cyclones and earthquakes.

The project included repairs and had a strong social mobilisation component. Photo: PAPDA/ VEDEK / Secours Catholique.

To resist high winds, houses were built with a low profile, and households were encouraged to grow high vegetation surrounding the house to reduce potential impacts of cyclones.

Houses were built with four roof slopes to prevent there being a weaker gable end. In some areas, people preferred a traditional roofs design with two slopes as they could use the space under the roofs for storage.

Training

The project involved three stages of training: a training of trainers, a training of artisans and a more basic training for house owners.

Participants were trained on the different ways hazards can affect buildings.

As part of the repairs programme, each household group was given training on water and sanitation issues and provided with a community water tank.

Trainings materials included printed illustrations of best practice in Créole.

Artisans were trained in groups of 20 for 2 to 4 weeks, during which they constructed a prototype house. Payment for participants to attend trainings depended upon the partner organisation. In some case, only food was provided, in other case, full salaries were paid.

Logistics

Each partner organisation procured construction materials from local suppliers, though these suppliers imported part of their materials.

In some cases the partner organisations formed a procurement collective in order to negotiate better prices.

Broader impacts

Most of the newly built houses in the project area that were not funded by this project had small improvements to bracing, stone masonry, and stone foundations. Although it is too early to really understand the broader impact of this project, it is hoped that it has led to a change in construction culture.

Other organisations have adopted this project approach and are conducting their own trainings in other areas.

Materials list

Materials	Quantity
Repairs (for 100 houses)	
Corrugated iron sheet (34 guage)	2,000
Cement Bag	1,500
Local wooden pole	1,500
Roofing nails	100 lbs
Reconstruction (for 100 houses)	
Corrugated iron sheet (34 guage)	3,000
Cement Bag	1,100
Wooden rafter imported	4,600
Wooden plank imported	1,500
Roofing nails	700lbs