

SHELTER PROJECTS

Haiti 16 Case Studies

CASE STUDIES OF HUMANITARIAN SHELTER AND SETTLEMENT RESPONSES IN HAITI



Global Shelter Cluster
ShelterCluster.org
Coordinating Humanitarian Shelter

Shelter Projects - Haiti: 16 Case Studies

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© Amelia Rule, construction of pathway by residents with the support of the organisation, Haiti.

© Mandy George, residents identified their own problems and the actions needed to address them, Haiti.

© Nathan Jayne, camps were slowly turning into permanent shanty towns and many had poor sanitary conditions, Haiti.

© Joseph Ashmore, Terrain de Golf site in Port-au-Prince three weeks after the earthquake of 2010, Haiti.

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* Note that the original case study codes from past Shelter Projects editions are retained on each case study.



Le Marron Inconnu (the unknown slave) statue surrounded by shelters in the Champ de Mars camp in early 2012.

INTRODUCTION

This special edition of Shelter Projects is dedicated to the commemoration of 10 years since a major earthquake struck Haiti. It contains a collection of 16 case studies published in previous editions during the last 38 years and written by practitioners who have been involved in the field during implementation of humanitarian shelter recovery responses after major natural disasters. The book includes a case study of a shelter project after Hurricane Allen in 1982, a case study on the 2008 flooding, two detailed overviews and eleven case studies dedicated to the 2010 earthquake and finally, a case study related to Hurricane Sandy in 2012.

Each case study is composed by an overview of the strengths and weaknesses related to the programme and a brief analysis of the context focusing on the different phases of project implementation. This includes beneficiary selection, technical solution and other relevant aspects, such as coordination,

disaster risk reduction components and the resulting impacts in the communities of implementation.

The historical view reminds us that many lessons and themes from past responses still apply today. Given the challenging context in which the included projects have been implemented, both good and bad practices will be highlighted, and for each case, lessons learned will be pointed out. These lessons learned can be found at the beginning of each case study. In order to allow strengths and weaknesses of projects to be openly shared, the case studies are not directly attributed to individual organizations. From these learnings, the objective of this publication is to encourage the learning process, advocate to strengthen the use of good practices and avoid “reinventing the wheel”.

If you wish to find out more about the specific projects, please contact info@shelterprojects.org



Projects were implemented with the common goal of encouraging affected families to stay in their communities of origin to depressurise formal or informal camps.

Haiti - 10 YEARS LATER

On January 12th, 2010, at 4:53 p.m. local time, a magnitude 7.0 earthquake struck Haiti. Beyond the enormous human tragedies of injury and loss of life and possessions, over 1.5 million people were displaced. Whilst the first responders and primary drivers of post-earthquake recovery were the Haitians themselves, there was also a significant humanitarian effort to support people in displacement sites and in return and recovery.

Immediately after the disaster, a data collection system was established in 1,555 displacement camps in order to consistently monitor people's displacement through regular field assessments which conducted for the following years. As of November 2019, 22 sites continue to host around 34,000 displaced people across Port-au-Prince's metropolitan area. This number represents a reduction of 99 per cent of sites and 98 per cent of IDPs in 10 years from the displacement. Whilst many people found housing and left camps of their own accord, support was required for those without the means to do so. For those unable to relocate on their own accord, the relocation of over 62,000 IDPs households in 319 camps of the metropolitan affected area was a big challenge. After 10 years, the impact of the quake is still visible in some areas of West department and in the capital, Port-au-Prince.

Since then, great importance has been given to the preparedness systems from the Department of Civil Protection of Haiti. A national policy on a short-evacuation centres has been developed and according to it, several earthquake proof evacuation centres have been built or rehabilitated. Nevertheless, a number of existing evacuation shelters are still in need of rehabilitation and an effort to address accessibility to people with specific needs should be enhanced.

The 2010 earthquake destroyed or damaged more than 300,000 houses and millions of people became homeless in Haiti. Shelter and land issues in urban areas posed particular challenges to humanitarian organizations, many of which had their existing programmes, institutional memories, protocols, and expertise focused in rural areas. All the more so in Haiti, where extreme poverty, environmental degradation and recurrent natural hazards are coupled with the very limited

capacities of a complex network of regulatory, political, community, and market actors. As a result, highly vulnerable settlements have proliferated throughout the years adding more challenges and complicating the response to the needs generated by the earthquake.

To implement effective programmes, in the heavily affected urban areas of Haiti, humanitarian actors need to consider the settlements as a whole and not just individual shelter units. Shelter is more than four walls and a roof, instead it is a process – building on resources and capacities of affected people to ensure better shelter outcomes. Shelter projects in Haiti needed to use “neighborhood approaches” with several actors working together to integrate multi-sector, area-based programming. Organizations needed to collaborate with other humanitarian agencies, civil society organizations, the private sector, and local and national government offices.

For many organizations, the 2010 earthquake shelter response was known for its “transitional shelter” response, where many agencies opted to build timber framed structures as a relatively rapid shelter response. There are various opinions as to the effectiveness of these in response, but the reality is that faced with time constraints of funding and annual hurricane seasons, technical and skills constraints in relation to building in more durable materials (concrete and burnt block) and land issues, options for many organizations to ensure a roof over people's heads, whilst recovery was under way, were limited. Furthermore, the risks to life posed by timber framed structures are lower than poorly built masonry structures. Several of the case studies in this book include various projects for which these “transitional shelter” designs. 10 years later, there is still no emergency master plan, and this represents an open challenge to sustain the efforts to address shelter needs. However, a number of key questions formulated in 2010 have only been partially positively addressed. Back in 2010, major questions existed: Who would take the lead in addressing clearance of the enormous rubble pile generated by the earthquake? Which donors would fund planning and clearance of rubble and reconstruction programmes? Which organizations would actually do the clearance work? While the case studies dedicated to the 2010 earthquake reflect extraordinary and laudable efforts, they also suggest that the questions remain only partially answered, to the detriment of



Hillside showing transitional shelters built on small plots of land.

those living in – and out of – camps, and there is still now an urgency to address all these issues before the next disaster. A devastating category 4 hurricane named Matthew struck in three departments in 2016. Visible consequences remain in 2020, 4 years later. Two years later, in October 2018, a minor earthquake happened in the north of the country in one of the most abandoned areas with accessibility difficulties. Several lessons learned are available for the humanitarian community and the government to tackle challenges on how to intervene in the aftermath of a disaster. The most recent lessons learned workshop conducted in 2019 highlighted the following findings and reflection to improve the effectiveness of the post-disaster response.

The first lesson is that good coordination and collaboration between involved actors is possible, both at local and central level. When collaboration is effective, it brings tangible returns in the field allowing for an inclusive response to strengthen communities and local authorities leading to aid delivery that not only meets minimum standards of quality, but aid that is also locally adapted. The use of local construction materials adapted to the local context, the involvement of the beneficiaries, local authorities and women in the response process enable a more effective, responsive and cost-efficient response. Where coordination and collaboration among the actors in the response is not effective, they will generate dissatisfaction among the actors as well as the among the target populations, resulting in a sub-optimal allocation of emergency resources. In this case, the most vulnerable can be excluded from aid and the lists of beneficiaries can be instrumentalized in favour of some political actors, the needs of women would not be taken into account and indeed, projects implemented would not respond to emergency priorities.

The elements that foster this good collaboration are based on sharing information, transparency in projects, and a common understanding of the role and responsibilities of each actor, whether local, national or international. Moreover, the role of state actors and local authorities is crucial in order to orientate trainings, skills, materials and resources towards the needs. Finally, response must seek a good balance between minimum quality standards and respect for local specificities. The main elements that hamper this good collaboration are the use of aid and response for partisan and political

purposes. The limited flexibility of some actors in adapting their programmes to the realities of the field have also caused major problems in disaster affected areas. Interventions are less effective where they are bound by inflexible indicators and where programme planning lack the smooth transition from emergency through recovery to development.

After a deep reflection with all actors involved in an emergency, including humanitarian organizations, governmental actors, development actors and civil society, the need to develop new tools and adapt existing ones have been pointed out. These tools include:

- A harmonization of vulnerability criteria should be shared with all stakeholders. These criteria should mix standardized criteria with local and contextual criteria.
- An elaboration of a conceptual scheme of collaboration that presents the steps to be followed and the responsibilities of each actor for the implementation of a repair/reconstruction project as well as adaptation of governmental protocols and standards to the realities of the field would also enhance the quality of the response.
- Specific needs assessment tools to better take into account the needs of women and marginalized groups is crucial in response programmes.
- The creation of a database for beneficiaries of multi-sectoral aid would reinforce the quality of a multisectoral response.
- In terms of response coordination and implementation:
- Decentralized coordination meetings at the municipal level should be established to complement meetings at the departmental level (central coordination). Protection aspects in delivering shelter response need to be strengthened.
- Core houses models should be adapted according to family sizes and contexts.
- Technically, among other aspects, rainwater harvesting systems that should be integrated into architectural design to be ready for climate change and the distance from the toilet to the house should be reduced for protection reasons. An appropriate communication strategy that should be understood widely and adopted by all actors and implemented expeditiously.

A range of interventions are required as a natural disaster leaves behind a complex environment to maneuver. Issues that range from already vulnerable families left in camps, limitations in land availability to complex land tenure issues and limited land resources, thus exposing the need to find innovative solutions, that go beyond rebuilding or repairing damaged houses. Among others, cash-based interventions, such as cash for rent and cash for hosting have been experienced in 2010 and they opened paths to improvements and innovations till today.

Every single disaster is a challenge for communities and as humanitarian actors our role is to be at their service in the most effective manner. Humanitarian actors need to recognize their role in supporting the efforts of affected people, who are the first responders and leading agents in recovery.

“Goudou Goudou, Nou pap janm bliye
Goudou Goudou, Tankou you mapou
N’ap rebay vie
Rebâti
Pou lespwa fleri” *

*A song track composed by a group of Haitian women artists to commemorate the 10- year anniversary of the Haiti earthquake of January 12, 2010. “We will bring life back, rebuild. So, hope can be reborn”.



Houses in informal settlements are often vulnerable due to poor locations (marginal sites), poor materials (here we have river stones for foundations) and poor construction.

C.6 Haiti - 1982 - Shelter report

Case study: Report on shelter capacity

Country:

Haiti

Disaster:

Hurricane Allen

Disaster date:

1980

Number of houses damaged:

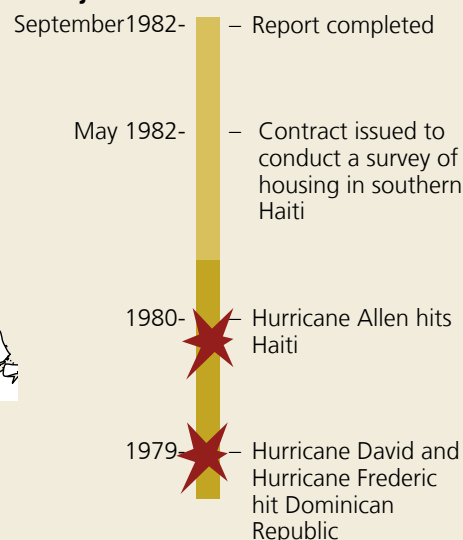
Relatively limited damage

Occupancy rate on handover:

No shelters were built or repaired in this programme. Concerns were raised about limited preparedness for future disasters in Haiti.

Shelter size:

Various


Project timeline

Summary

This report was written by Fred Cuny / Intertect in 1982. It summarises the different types of housing in southern Haiti. It goes on to suggest low-cost improvements that can be made to the houses in southern Haiti. Although the suggested housing upgrade programmes were not implemented, the suggestions remain relevant today. Illustrations from the document were copied for public information literature following the 2010 Haiti earthquake.

Report highlights

- Identified some simple messages for safer construction. Some of these have been copied and re-used following the Haiti Earthquake in 2010.
- Highlighted the impacts of deforestation on housing lifetime, strength and affordability.
- Outlined the threats to housing (wind damage, tidal surge, flooding, landslide fire and earthquake). It suggested hazard zoning to prioritise sites for intervention
- Classified rural housing types and suggested simple improvements and retrofitting that was possible for each type of housing.
- Identified some key messages for those constructing houses to improve the safety and quality (e.g. house shape and location, hurricane strapping, small eaves).
- Outlined programme approaches to improve housing quality, as well as looking at the capacities of various organisations to implement them. The approach suggested was:
 - Identify implementing organisations and a coordinator.
 - Develop strategies to reduce the cost of housing improvements through the involvement of local cooperatives (where families work together to construct their houses). This would increase financial assistance (through mechanisms such as subsidised and soft loans) and would reduce materials and tool costs through subsidies or establishment of local manufacture.
- Establish a training programme for builders.
- Develop public awareness about the need to improve housing and how it can reduce household costs.



Housing patterns in southern Haiti
Illustrations: A. James Viet. and Juliana Marek



The report analysed risks to buildings and which projects could best reduce them.

Context

Between 1950 and 1982, eight hurricanes and numerous tropical storms hit Haiti. In August 1980, hurricane Allen passed the coast of Haiti, killing at least 200 people, and causing significant but localised damage.

Two years later, concerned by the potential for a large scale disaster in Haiti, Oxfam contracted Intertext, an American firm specialising in housing reconstruction and disaster preparedness, to write a study on hurricane risk to housing in Haiti. This was presented to the Haitian Disaster Preparedness Committee, which had representatives of the Red Cross, Catholic Relief Services (CRS), Caritas and CARE).

In 1982 Haiti was already suffering considerably from deforestation. There had been limited reforestation projects, although there were some questions asked about the appropriateness of the species of tree being used. The species planted were fast growing to promote soil stability and work as fuel sources, but were generally



Risk of strong winds can be increased by topology



Risk of storm surge.

not good for construction.

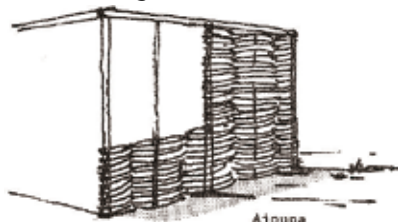
Risks in Haiti

The report discussed the following threats to housing, which remain the major concerns in Haiti today:

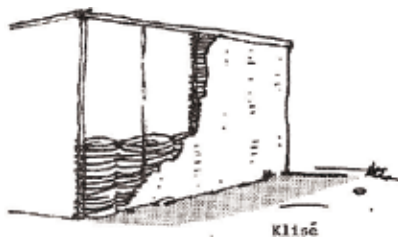
- Hurricanes and tropical storms threaten housing in four ways:
 - High winds can lead to damage or collapse
 - Storm surges (known as tidal waves) flood low-lying coastal areas
 - Rain fall during the storm can cause flooding or can cause land slides, mudslides or other land displacements.
- Earthquakes
 - The most susceptible houses are heavy, low-quality masonry buildings. These were exactly the types found in the south.
- Fires
 - The risk was highest in urban areas, and dense squatter settlements with inadequate cooking facilities and no electric lighting. It was noted that one recent fire in Port-au-Prince had left thousands homeless.
- Termites and other insects
 - can weaken timbers

Housing typologies

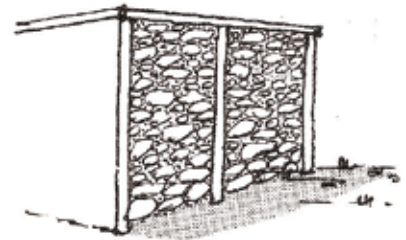
Materials commonly used in rural housing:



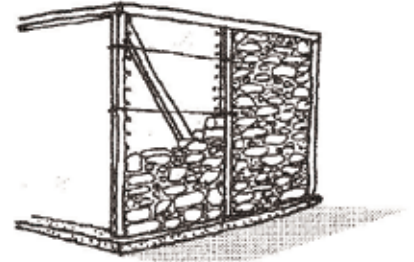
Kay Ajoupa (wattle or reed houses). Wood pole frame with woven cane or sticks as walling. Lived in by the poorest Haitians.



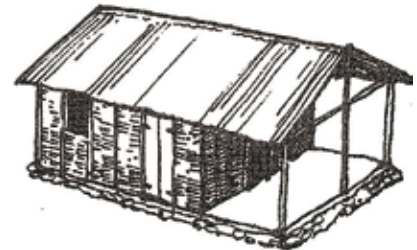
Kay Klise (wattle and daub house): Wood pole frame with woven cane or sticks and mud render as walling



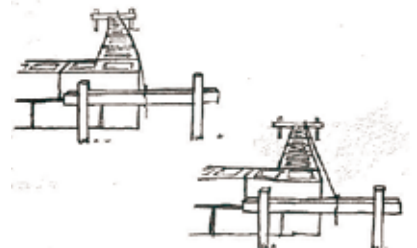
Kay Mur (stone nog): Small stones are cemented between a wooden frame. This was the most popular type of housing found in the south of Haiti.



Kay Melange (spanish wall): Similar to Kay Mur, (above) but stones are smaller and a board is used as a guide during construction. Illustrated here with a suggested improvement of cross bracing



Kay an Planch (wood house): Wooden houses made of locally available timber or wood salvaged from urban construction sites. Deforestation had made wood scarce, so more houses were using palm wood.



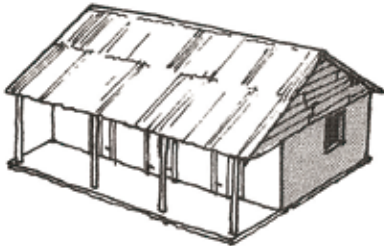
Kay an Bloc (block house) Houses made of cement block. These suffered from poor quality blocks and mortar as well as poor quality construction

The document noted that wooden houses tend to be more heavily damaged by hurricanes than other types of construction. Many of them, including those built by development agencies were poorly anchored to the ground

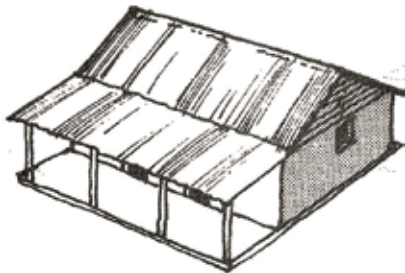
Housing layouts

Different configurations of roofing and veranda lead to differing strengths of shelter. The designs with highest risk are where the veranda allows wind to get underneath, damaging the entire roof.

Safer designs are those where the veranda roofing sheets are separate to the main roof—damage to the veranda will not affect the main roof.



The arrangement below is preferable to the one above. If the verandah (above) was damaged by hurricanes the entire roof would be compromised, whilst in the verandah below damage to the verandah would not affect the rest of the roof



Technical proposals

The vast majority of existing buildings, could not be economically retrofitted or modified at a cost anywhere near affordable to homeowners. The report focussed on emergency measures to make buildings safer, even though they would be unlikely to survive windstorms.

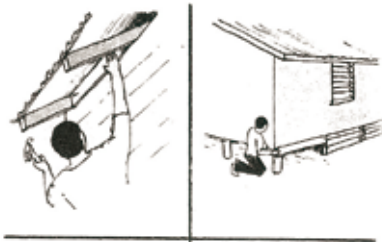
Emergency repairs

Specific recommendations for different types of housing were made. In general, the recommendations (for buildings with timber structures) are as follows.

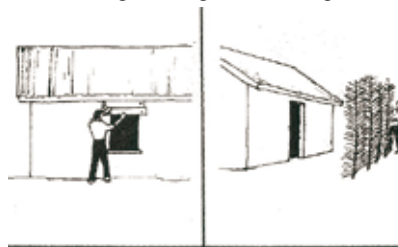
- Increase the number of nails to fasten the roof.
- Add diagonal bracing to the framing.
- Strengthen connections between the roof and the wall by using metal straps or wire
- Board-up windows when a

hurricane approaches

- Place heavy objects on the roof to reduce suction.
- Seal areas below houses on blocks or piers with stones and mud to prevent air from entering underneath houses and lifting them off their foundations.
- Seal openings between roof and walls to prevent wind from entering the eaves.



Hurricane preparedness: blocking gaps in the eaves and under shelters, securing walling and roofing sheets



Hurricane preparedness: shuttering windows, building protective screens in front of openings and bracing corners of buildings



For new-build

Use timber treatments for timbers in contact with the ground

- Bury primary columns a minimum of 24 inches (60cm)
- Cross-brace the structure with galvanised wire or timber (depending on the building type).
- Use diagonal bracing in roof structures.
- Place diagonal braces on top of frames in each corner.
- Use hipped roofs.
- Design verandas to use separate sheets from the rest of the roof.

Programme proposals

The report noted that extreme poverty in Haiti meant that for many families, housing was a low priority. Most families recognised that their houses would not survive a hurricane, but did not have the means to improve them and had not prioritised housing upgrade. In order to improve housing, cost reduction strategies should be implemented. These could include:

- cooperative activities – to share the workloads and inputs of skilled workers
- increasing financial assistance to improve houses; this could include loan guarantees, subsidised loans, soft loans and revolving loans
- reducing costs of materials through payment of subsidies, collective purchases, local manufacture, material trade-ins and support with transport costs

It also encouraged training prioritising young people, those moving to towns, and families participating in rural development programmes. It also promoted contractor training to improve construction quality. These various types of training would include:

- Theoretical training
- Hands-on practical training
- Construction of model houses
- Follow-on practice with supervision to ensure that new skills are learnt

Risks of doing nothing

The report warned that without housing improvement activities and corresponding changes in reforestation policies:

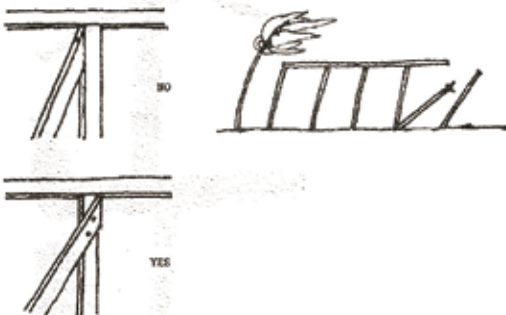
- housing would continue to deteriorate
- the number of people in vulnerable buildings would increase. As a result there would be a greater loss of life in future disasters
- houses would have a shorter lifetime and will need to be replaced more frequently
- low income families would need to increase the proportion of their income spent on housing repair and maintenance.



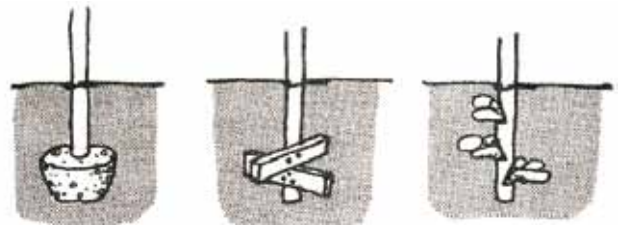
Risk of roof damage



Trees can help protect houses from wind damage



diagonal bracing can reinforce structures but should be correctly attached



Different foundation details

KI KOTE NOU PA DWE KONSTWI

MEN KI JAN NOU DWE KONSTWI

NON **WI**

KAY KI GEN FÒM KARE REZISTE PLIS ANBA GWO VAN

ASIRE W KE TOUT LOT KOTE KAY LA MARE YO SOLID TANKOU FONDASYON AK POTO

RANFÒSE TRIANG KAY LA

A KOTE GWO VAN KA PASE

ASIRE W TOUT KOTE TET KAY LA MARE SOLID

FÒK PANT TÈT KAY LA MEZIRE 30 RIVE 45 DEGRE

SEPARÈ TÈT KAY LA AK TÈT GALERI A

B KOTE KI KA GEN INONDASYON

PYE BWA PWOTEJE KAY LA KONT GWO VAN

FENET YO DWE MENM GWOSE POT YO DWE MENM GWOSE

PÒT AK FENÈT JALOUZI PI REZISTANZ

C NAN REN MÒN

...POU AYITI, REKANPE!

Logos for COTE, CONCERN, Kiviworks, Cardale, and other organizations.

Top: illustrations by: A. James Viet. and Juliana Marek from the 1982 report
 Bottom: Shelter cluster technical guidance following the 2010 earthquake in Haiti. There are many similarities between the two sets of drawings.

B.6 Haiti - 2008 - Flooding

Case study:

Distribution, cash and training

Full case study

Disaster:

Hurricanes and tropical storms

Disaster date:

1st September 2009.

Number of people displaced:

165,337 families; half of the population of Gonaives were displaced.

Project target population:

Initially 60,000 people in collective centres. Later programmes targeted smaller numbers of those who had not returned
1000 family cash distribution
1222 families in timber framed shelters (735 half kits, 487 full kits) and cash to cover transport

Shelter size:

Cash was provided to support families to rent a room for six months.
Transitional shelter kits provided materials for an 18m² shelter

Occupancy rate

Unknown



Project timeline



Summary

These shelter projects were in the complex urban environment of Gonaives, Haiti. Multiple approaches were used to support families living in collective centres and temporary sites to return. Initially programmes focussed on distributions of shelter items and toolkits. Later programmes diversified to include cash to support families that were renting, and shelter materials and support for those who had identified land.

Strengths and weaknesses

- ✓ Programmes were able to adapt over the course of the emergency, taking into account changing conditions and learning from previous programme successes and challenges
- ✓ The programme ensured that families living in collective centres had options for return.
- ✓ Use of different sized transitional shelter kits allowed for support to be scaled according to needs
- ✓ Cash for those who rented shelters allowed families without land to be supported by the programme.
- ✗ By supporting families in collective centres and camps early on in the response, people were encouraged to remain displaced.
- ✗ Shelter tool kits were found to be of limited use for families who previously rented houses or whose houses remained buried.
- ✗ When distributions of return kits were made, it was

not clear that those who received them would not qualify for future support in displacement locations. As a result, many families took the return kits but did not return.

- Despite prolonged negotiations, it was not possible to identify safe land on which to relocate those families whose houses remained at risk from future flooding.
- The funding was extremely limited for the response. This limited options and reduced the capacity of international organisations to provide support
- As the result of challenges in beneficiary identification, the project was not able to support host families to provide much of the shelter. However there were separate food distributions, cash for work, clean up programmes and water and sanitation programmes in the host communities within Gonaives.



Damage in Gonaïves
Photo: Joseph Ashmore

Before the flooding

In 2004, the city of Gonaïves was hit by tropical storm Jeanne. The ensuing flooding killed over 2000 people.

By 2008, the city of Gonaïves, had an estimated population of 300,000 people

After the flooding

In 2008, hurricanes and tropical storms Fay, Gustav, Hanna and Ike led to severe flooding. Eight percent of the Haitian population, were affected, 793 people were killed and crops were destroyed.

The town of Gonaïves was most severely affected. 80 percent of the city was submerged under two metres of water. Although the death toll was lower, the damage was greater than in the floods of 2004. The receding flood waters left more than three million tons of mud.

Over half of the population of Gonaïves was displaced, finding refuge with friends and family or in over 200 collective shelters in schools, churches and warehouses.

Major clean-up operations ran for many months. Many families were not able to return to their houses until the mud was cleared.

The response was significantly underfunded; the United Nations appeal reached only 40% of its target.

First return kits

In the first months after the flooding, relief items were distributed, with a focus on families living in collective centres.

The government kit consisted of one foam mattress, one sleeping bag, one blanket, one hygiene kit, and one jerry can.

The organisations involved agreed to distribute return kits which were intended to support

families to repair their houses. These kits contained one reinforced tarpaulin, five corrugated iron sheets, and a tool kit (one saw, a hammer, a shovel, a trowel, 1kg of nails and two polypropylene sleeping mats).

Unfortunately, a significant number of families who received return kits remained in the collective centres. The kits proved to be of limited success because:

- Many families did not own a house that they could repair
- The kits were distributed unconditionally so that families were able to receive them and remain in collective centres awaiting further relief distributions
- The kits were suited to timber frame construction. In the city many of the shelters were built with blocks or masonry.

Collective centres

The need to restart schools and further pressure by the owners of the buildings that were being used as temporary accommodation lead to pressures to evict the affected families, but many had no other options. The closure of the first collective centre lead to the establishment of temporary sites with tents for shelter.

The implementing organisation supported the families on these tented sites by improving the site layout, and improving the drainage.

Finding a solution for those living with host families was a lower operational priority due to reduced risk of evictions, as well as significant challenges in identifying families.

As the programmes took place in an urban environment, identifying who actually lived where was challenging. Many families left a single family member in displacement sites to receive additional dis-

tributions. In some cases families had members in several sites.

Registration

Two months after the disaster, a survey was conducted to gain a better understanding of what was preventing families from returning home. All of the major organisations operating in Gonaïves took part in these surveys, and registered the families. Teams surveyed families in the collective centres between 3am and 4am to ensure that those surveyed were in fact resident in the shelters.

Once families were registered, additional families would not be added to lists and would not be able to receive support.

Exact address and mobile phone numbers of those in collective centres were collected and houses were visited one by one to assess damage. Houses were assessed as being either destroyed or damaged.

When it was not possible to verify property titles through paperwork, ownership of houses was verified by discussions with those in the neighbourhood

The transparency of the process was a key part of it being accepted by the displaced families.

Implementation

After the registration, just over 2000 families were found to be remaining in the collective centres and sites. For these families two approaches were adopted. Depending



Hotel used as a collective centre
Photo: Joseph Ashmore

upon their circumstances, families would either:

- receive cash for rental or
- support with transitional shelter materials and construction.

Cash distribution

Approximately 1000 families remaining in collective centres received cash, up to an agreed value. This value was equivalent to a one year rental of a room for a family. To qualify for this, families living in collective centres either:

- were tenants prior to the disaster, and hence did not want to repair a houses belonging to someone else, or
- were owners whose home was still flooded or covered in mud or they lived less than 10m from a main city canal.

The distribution was conducted in partnership with another international organisation who distributed to approximately half of the families, using identical distribution and verification systems. The process for cash distribution was:

- Once assessed, families had a maximum of four days to rent a room for one year. People did not have any problems in finding somewhere to rent.
- The families would bring a signed a pre-agreement with landlord stating the rental rate. From this the maximum amount that the organisation would pay was agreed. The organisation would only pay rent up to an agreed maximum.
- The organisation would visit the house and verify with the landlord.
- The organisation would give agreed lists to the banks for the rental allowance to be paid direct to beneficiary.

Transitional shelters

Two types of repair or reconstruction kits were developed. These included materials to build an entire timber framed shelter (full reconstruction kit) or a reduced set of materials to repair damaged shelters (half repair kit). These kits were combined with technical assistance, and some cash for transport.

1,222 families (54% of the targeted families) living in non-school temporary shelters and tent sites received repair kits. Of these, 735 families received the smaller (half repair) kits and 487 received full reconstruction kits.

All kits were purchased by the implementing organisation and distributed with the assistance of partner organisations in three different sites in the city. Some of the materials were distributed through vouchers that the families could redeem for agreed shops within an allotted timeframe.

Given the various constraints, including budget deadlines and limitations it was decided that materials would be distributed in a one-off distribution rather than with a phased approach. This led to several families not building or completing shelters with the materials.

There were several cases where vouchers and distribution cards were faked. The organisation noted that harder-to-copy vouchers would be required for future programmes. The short time periods in which they could be redeemed helped to reduce the risk of forgeries.

The distributions were conducted in conjunction with one partner organisation provided technical support. There was additionally follow up and monitoring of families who had moved.

Closure

The programmes had proven very labour intensive, with multiple processes depending upon on previous processes. This did lead to delays but proved largely effective in offering families options away from collective centres.

Following the cash and materials distributions as well as public information, the numbers of people remaining in camps and collective centres was very small. Targeting the final families was then very easy.

As a result of the cash programme, rents did rise, but not excessively.

With the closure of collective

centres, the organisation began a programme to rehabilitate them. This was followed by a nationwide assessment of building that could be used as collective centres in case of other disasters. Of these 40 were targeted for use as hurricane shelters. These buildings were repaired and upgraded to improve preparedness for future disasters.

Materials list

A full repair kit given to each family, allowed for construction of a floor slab, a frame and a roof of approx 18m². It was not enough for rendering the walls,

Material	Quantity
Wood (roof) (1" x 3" x 16')	10
Wood (frame) (2" x 4" x 12')	4
Wood (roof) (1" x 4" x 12')	6
Nails (3" 75mm x 3mm)	0.5kg
Nails (roofing) (3" 75mm x 3mm)	0.5kg
Cement	4 bags
Corrugated iron (1.8x0.9m)	16
Flat sheet for roof ridge	1

Families were responsible for masonry and sand. If rocks were not available they need 240 construction blocks (30x20x15 cm).

Tool kit to be shared between 5 families:

Material	Quantity
Spades	2
Wood saw (750mm)	2
Claw hammer	1
Bucket	2
Roll of wire	3
Tape measure	1
Trowel	2
Pick axe	2
Pliers	1
Sack	1



Prototype transitional shelter
Photo: Joseph Ashmore

A.4 Haiti - 2010 - Earthquake - Overview

Sheltering in Haiti:

Looking forward while looking back

In August 2010, seven months after the devastating Magnitude 7.0 earthquake near Port-au-Prince, a think tank made the following key shelter-related recommendation¹:

"The Haitian government, together with the donor community, should accelerate removal of rubble. This is the single most important step toward reconstruction of housing and infrastructure that the Haitian government and donors can take."

The study went further:

"For housing to be reconstructed, sites have to be cleared... Unless rubble is cleared expeditiously, hundreds of thousands of Haitians will still be in tent camps during the 2011 hurricane season."

That hundreds of thousands of Haitians still face the very real prospect of remaining in camps during the upcoming 2012 hurricane season, and perhaps beyond, speaks volumes about the challenges of delivering humanitarian shelter assistance and housing reconstruction in Haiti - and elsewhere.

The difficult, dangerous, and generally thankless task of clearing rubble is viewed largely as a means to the end of enabling the recovery of lives, communities, and societies in the wake of disasters. Clearing rubble, then, is a critical precursor to recovery; it can't be overlooked or sidestepped. Perhaps more so than any previous natural disaster since the adoption of the UN cluster system in 2005, the Haiti earthquake challenged that system significantly with the profound issue of ownership: which cluster would take the lead in addressing clearance of the enormous rubble pile generated by the earthquake? Which donors would fund the planning and clearance of rubble? Which organisations would actually do the clearance work?

While the case studies that follow reflect extraordinary and laudable effort, they also at least suggest that the questions remain only partially answered, to the detriment of those living in - and out of - camps.

As central as the rubble issue has been to recovery, the more important issue, and underlying rubble both literally and figuratively, is the land that was the locale of the homes, shops, schools, neighbourhoods, and other features of a primarily densely populated urban area affected by the earthquake. The rubble and broken buildings littering settlements after the earthquake effectively decreased the size of those settlements, and thus the supply of land available for sheltering people and recovering economic, educational, governance, and other activities. The land and housing markets in those settlements, constrained by myriad tenure, infrastructure, service, and hazard risk issues prior to the earthquake, were exacerbated significantly by its impacts, making it extremely challenging to respond to widespread shelter needs, while also affecting the longer-term process of recovery.

Shelter and land issues in urban areas pose particular challenges to humanitarian organisations, many of which have their genesis, institutional memories, protocols, and expertise in rural areas. Confronting rubble, land, and related issues in dense urban areas anywhere would thus be a challenge to even the most experienced humanitarian organisations. All the more so in Haiti, where extreme poverty, environmental degradation, and a host of hazards, coupled with the limited capacities of a complex network of regulatory, political, community, and market actors, combined to create the highly vulnerable settlements that sustained such overwhelming destruction, and making it all the more difficult to respond to needs generated by the earthquake.

¹ RAND Corporation. Building a More Resilient Haitian State, 2010. Available from <http://www.rand.org>



Dealing with the rubble has been a central issue to recovery.
Photo: Joseph Ashmore

Many of the case studies that follow contended directly with land and related settlements issues, bringing both reaffirmation of and new meaning to the phrase “shelter and settlements” (S&S) sector that has been used increasingly by humanitarian actors in recent years to reflect a recognition that sector activities entail not just the four walls and roof of a shelter, but also its contextual setting. A focus on the settlements side of the sector will likely remain a feature of continuing efforts in Haiti, as well as future sector responses elsewhere, particularly those in urban areas. To do otherwise would only further increase the vulnerability of populations in hazard-prone settlements.

Perhaps the zenith of shelter and settlements sector programming in Haiti has been the “neighbourhood approach” adopted by several actors to plan and integrate multi-sector, area-based programming, often in collaboration with other humanitarian agencies, civil society organisations, the private sector, and local and national government offices. This settlements-based approach to shelter provision was identified early on after the earthquake as a means of both working in rubble-strewn areas to provide humanitarian assistance and establishing a platform for subsequent reconstruction. Although initial results of the neighbourhood approach are promising, there are still more earthquake-affected neighbourhoods than actors to work in them. Further, a macro-level, city-wide complement to the neighbourhood approach, which could link currently disparate and distant efforts, is still very much a work in progress in Haiti, despite the intensive and concerted efforts of UN-HABITAT and others. Finally, it must not be overlooked that the neighbourhood approach, if adopted and implemented early in the response effort, is an effective means of promoting inter-cluster coordination, lending critically important on-the-ground support to the cluster approach, which is, after all, the primary means of guiding humanitarian action.

One very large “lesson learned” of the Haiti earthquake is that both the neighbourhood approach and its macro-level complement, an emergency master plan,

are fundamental to any effort to address shelter needs. No less important than these foundational elements of sector strategy is the communication of strategy, for even the best of strategies are less than effective if not understood widely, adopted by key actors, and implemented expeditiously. The strategic communications outputs of humanitarian actors in urban areas must be disseminated early and repeated often in order to inform and guide response activities. Messaging also needs to be creative, visible, and pervasive to compete with the multiple and voluminous messages received daily by those living in urban areas. Although this was and remains a challenge in Haiti, as it is anywhere, the rapid emergence of numerous forms of social media enabled not only delivery of strategic messages, and much needed feedback, but also actual implementation of shelter programmes, with “mobile money” initiatives to pay for rent and other necessities a good example.

Finally, the following case studies reflect considerable innovation and flexibility by humanitarian actors in response to numerous constraints, an awareness that risk reduction is paramount to “Building Back Better” and a recognition that “one-size-fits-all” approaches, if they ever were effective in rural settings, are most definitely inappropriate in urban settings. Moving ahead, a focus on the neighbourhood approach will likely remain a feature of continuing efforts in Haiti, as well as future Shelter and Settlement sector responses elsewhere, particularly in urban areas. In Haiti, the range of interventions will have to expand, as impoverished families in camps, limited land supplies, complex land tenure issues, and limited resources will likely conspire to produce not just more transitional shelters and more repairs of damaged housing, but also greater resort to hosting support, rental housing production, and rental subsidies. It is hoped that the effort going forward will feature the continuing quest for clarity on the seminal issues that confound and define the sector, perhaps the largest alluded to in the study quoted above: what is shelter, what is housing, and what is meant by “toward reconstruction”?

Charles A. Setchell

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A humanitarian response to urban context: Two-story transitional shelters, part of a project to apply a “neighbourhood approach” in central Port-au-Prince. Photo: USAID/OFDA.

A.4 Haiti - 2010 - Earthquake - Overview continued

Overview:

Summary

The earthquake of 12 January 2010 resulted in over 222,000 deaths and over 300,000 people injured. Over 180,000 homes could no longer be occupied, the majority in densely populated informal settlements, generating a large scale challenge in terms of debris and increased pressure on space. Spontaneous and planned camps were established throughout the affected area, accommodating at peak 1.5 million people.

The international response was large scale and well funded. It used a wide range of actors, with varying degrees of experience of humanitarian response, urban crises and coordination.

The shelter sector recovery strategies evolved from meeting emergency needs to addressing a range of shelter solutions including T-shelter and housing repairs. The Shelter, Camp Coordination Camp Management, and Early Recovery Clusters were mobilised to address these needs.



Background

Prior to the earthquake, Haiti was the least developed country in the region, ranking 145th of 169 countries in the United Nations Human Development Index. More than 70% of the population lived on less than 2 USD per day.

In the cities people lived in crowded neighbourhoods with poor infrastructure and without access to basic services. Living space in Port-au-Prince's permanent housing was reported at just 1.98m² per person before the earthquake.

The urban context, with high proportions of tenants, needs for urban planning and challenges of engagement with the government contributed to the complex operating environment.

After the earthquake, thousands of non-government organisations with varying levels of experience appeared in Haiti. At times this undermined an already weak government sector that had lost infrastructure and personnel. Recovery was further challenged by political

uncertainty, annual risks due to rain and hurricanes and an outbreak of cholera at the end of 2010.

Emergency Response

During the first three months, many affected families moved from damaged neighbourhoods onto available spaces, establishing spontaneous camps. Some of these were subsequently formalised and serviced by various supporting agencies. In less damaged areas, many stayed with host families. For the first months, many people slept outside damaged houses afraid to go back in.

An estimated 500,000 people left the earthquake affected area in the first month but the majority returned by mid 2010.

The initial response provided emergency shelter support through provision of basic materials, tarpaulins, fixings and other non-food items to a maximum number of people. This was to supplement and weather proof the large number of self-made shelters built from salvaged materials.

In the first four months, 560,000 tarpaulins, 62,000 tents and 130,000 kits containing tools and fixings were distributed by 80 organisations.

As per the initial plans, distribution data showed that 100% of households received emergency shelter items by 1st May 2010.

T-Shelter and early recovery

Many donors and agencies developed projects to provide transitional shelters (also referred to as T-Shelters) to agreed standards. Given the need for large scale material imports, pressure for land and other challenges, it took two years to build over 100,000 planned shelters, missing the initial planning target of 18 months - the start of the hurricane season of 2011.

Repairs to damaged houses were slow to start but accelerated from the end of 2010 to almost 14,000 houses repaired by agencies by the end of 2011. This figure does not include the houses repaired by people themselves without support.



Many earthquake affectees found themselves living in temporary settlements through the rains.

Photo: Joseph Ashmore



Over 630,000 plastic tarpaulins were distributed, allowing people to protect themselves from the sun and rain. However there was a risk that many of the spontaneous settlements would become the slums of the future.

Photo: Joseph Ashmore

Initial strategies also made provision for host family support, but in general projects were not able to scale up to quickly meet these needs on any scale. Two years later over 6,000 households had received rental subsidies.

Housing and neighbourhoods

A strategy was developed during 2010 to promote support in the areas of origin to accelerate return from camps and reconstruction in rehabilitation. This was not adopted until the beginning of 2011 and formed the basis of the majority of neighbourhood based recovery programmes.

At the end of 2011 there were still over 500,000 people in camps. This included both people directly affected by the earthquake but also reflected a pre-existing housing deficit and urban poverty.

Official permanent reconstruction assistance shows limited progress with approximately 5,200 houses built within two years, and limited support for host families. However, the rate of self recovery and formation of spontaneous new settlements by Haitian families themselves is significantly higher. Support programmes including information and training have been limited, and much of the rubble has yet to be cleared.



There were major shortages of land - in this settlement, families built in the central reservation of a major road.

Photo: Joseph Ashmore

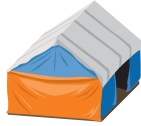


Many families built their own temporary shelters using reclaimed materials.

Photo: Joseph Ashmore

SHELTER IN HAITI

188,383 DESTROYED OR SERIOUSLY DAMAGED HOUSES IN HAITI
1.5 MILLION PEOPLE NEED SHELTER ASSISTANCE



EMERGENCY SHELTER consists primarily of tarpaulins and fixings such as ropes, nails, a hammer etc. Tents can also be used for emergency shelter but, because they are less versatile than tarps, their use is limited. Emergency shelter can be distributed quickly but offers only limited protection against heavy rains.



TRANSITIONAL SHELTERS are simple timber or steel frame structures that provide better protection, more privacy and more space. Transitional shelters will often have a concrete foundation and can last years. Once people have found permanent homes, transitional shelters can be put to other uses. They take longer to build but can be dismantled and moved if necessary.

THE ACHIEVEMENTS

AS OF 6/25/10

MEMBERS OF THE SHELTER AND NON-FOOD-ITEMS CLUSTER have delivered vital aid to the estimated 1.5 million people who were directly affected by the earthquake. Despite a destroyed port, a severely damaged airport and a lack of infrastructure, cluster members reached an average of 100,000 people per week in the first four months of the response operation. Each family received two tarpaulins or one tent.

TRANSITIONAL SHELTERS

Today, shelter cluster agencies are increasingly focusing on transitional shelters. These are simple structures that provide better protection than tents or tarps but take longer to build.

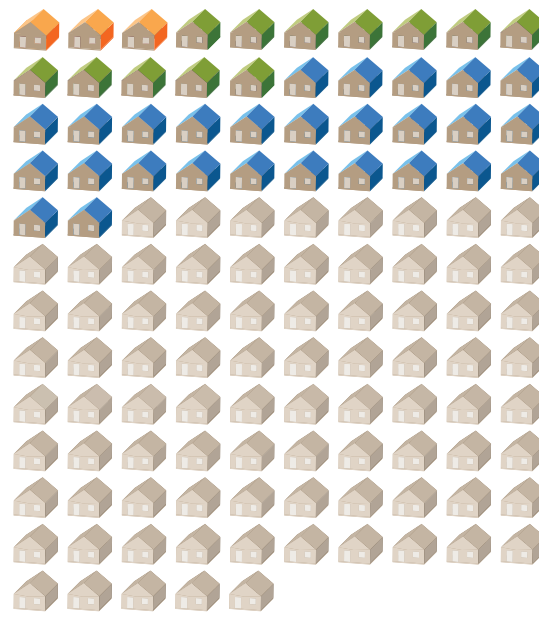


OF TOTAL **125,000** PLANNED

3,264 COMPLETED

12,175 IN COUNTRY

27,214 IN PIPELINE

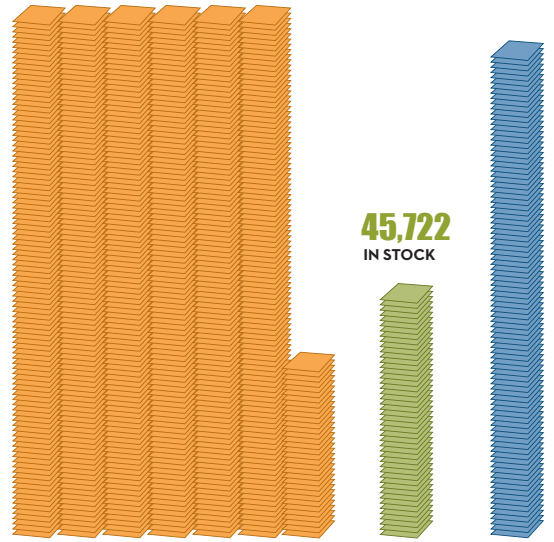


HEAVY DUTY TARPULAINS

633,052 DISTRIBUTED



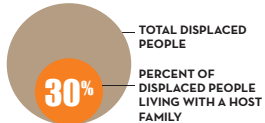
93,287 ON THE WAY



HOST FAMILIES



500,000-600,000 PEOPLE LIVING WITH A HOST FAMILY

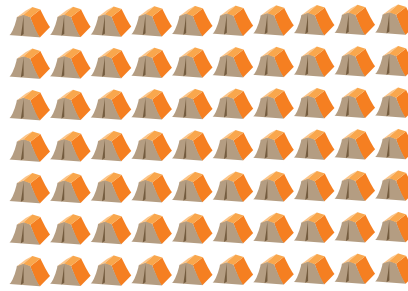


TENTS

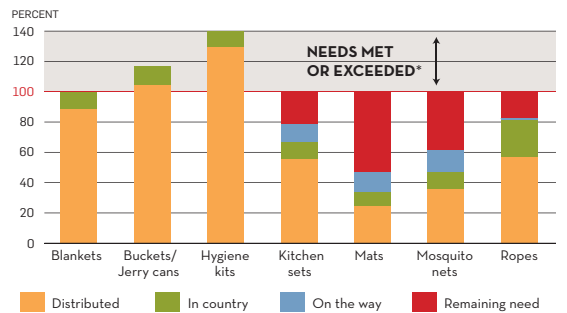
70,279 DISTRIBUTED



Tents are less versatile, need more space and do not last as long as tarpaulins. For that reason fewer tents than tarps were distributed.



HOUSEHOLD NFI'S COVERAGE AND GAP



*Needs are often exceeded because items are lost or destroyed by weather or used up.

THE CHALLENGES

Because most people were renters or squatters and don't own land, all aspects of shelter are very complicated. All steps have to be agreed with the tenant and the land owner.



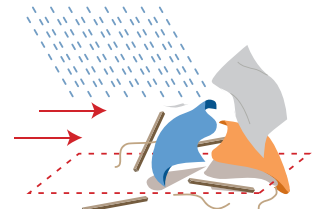
1 OWNERSHIP OF LAND IS OFTEN UNCLEAR BUT OWNERS HAVE TO GIVE PERMISSION BEFORE ANY WORK CAN BE DONE.



2 SITES ARE BLOCKED BY DEBRIS. EVEN WITH HEAVY EQUIPMENT IT WILL TAKE YEARS TO REMOVE IT.



3 MANY ROADS ARE TOO NARROW FOR HEAVY EQUIPMENT. MULTI-FAMILY BUILDINGS CANNOT BE EASILY REPLACED.



4 HURRICANE SEASON: EMERGENCY SHELTERS CAN BE DESTROYED BY HEAVY WIND AND RAIN.

THE WAY FORWARD

The provision of transitional shelters is gaining momentum, particularly in rural areas where more land is available. It is essential that the identification of additional, safe relocation sites, debris removal and the required planning processes are urgently addressed by the authorities to enable the large scale construction of transitional shelters and ultimately the provision of permanent housing solutions.



EMERGENCY SHELTER → TRANSITIONAL SHELTER → PERMANENT SHELTER

A.5 Haiti - 2010 - Earthquake

Case study:

See A.4 "Haiti - 2010 - Earthquake - Overview", p12 for background.

Country:

Haiti

Disaster:

Earthquake

Disaster date:

January 12th 2010

No. of houses damaged or destroyed:

180,000

Project target population:

10,000 emergency shelter kits distributed

20,000 reinforcement kits distributed.

2,550 T-shelters installed

Materials Cost per shelter:

T-shelter: USD 1,700 per unit

Project cost per shelter:

T-shelter: USD 2,800 per unit (materials and project costs)



Project timeline



Project description

This project provided different forms of support for people with differing needs. In the emergency phase the organisation distributed 10,000 emergency shelter kits. It went on to provide 2,550 transitional shelter kits, 20,000 reinforcement kits for those did not have land to build upon, 500 rural repair kits and over 1,000 tool kits. These kits were accompanied by trainings and posters on staying safe during hurricanes. The organisation also actively supported inter-agency coordination and had a strong advocacy role.

Strengths and weaknesses

- ✓ Multiple approaches were taken to shelter provision, allowing projects to match the evolving context.
- ✓ The organisation was able to deploy several experienced shelter team members, who were able to influence national strategy and programmes beyond the organisation.
- ✓ The organisation carried out extensive advocacy on land rights and access to land.
- ✗ Procurement and logistics caused significant delays to the transitional shelter projects. Recognising that logistics capacity within the organisation was weak, attempts were made to establish partnerships for supply with other organisations. These were not all successful, and three months were lost trying to establish a working partnership.

- ✗ The quality of non-food items and tents procured and imported by the organisation was variable.
 - Immediately after the earthquake, there was an apparent "equality of vulnerability" as everyone has lost their home. However, it quickly became apparent that who, prior to the disaster, had the power, identity, connections and resources – in particular housing, land and property assets – were able to reassert these networks and recover more quickly;
 - A given neighbourhood was likely to need an array of services and it was not always clear whether it is more efficient for a single, non-specialist agency to deliver all services or for specialist agencies to provide a single, specialist service across several neighbourhoods or indeed the whole city.



Hillside showing transitional shelters built on small plots of land.
Photo: Mildred Beliard, CARE

Before the earthquake

(See A.4 "Haiti - 2010 - Earthquake - Overview", p12.)

Before the earthquake the organisation in Haiti had concentrated in poor rural areas and on smaller scale projects. The organisation was not focused on shelter or construction.

Many of the organisation's experienced staff were directly affected by the earthquake. The country office had very few staff, no partners and little experience in areas directly affected by the earthquake. Scaling up the capacity of the country office was also difficult because many non-government organisations arrived – all trying to recruit locally.

Emergency shelter kits

The organisation initially responded by distributing emergency shelter kits. These contained plastic sheeting, mattresses, hygiene sets and kitchen sets. These materials were delivered to affected people within the first three months after the earthquake and before the major rains arrived.

It was difficult for any agency to identify the neediest geographic areas in terms of the highest number of the most vulnerable people, highest levels of damage, and zones most likely to be neglected by responding agencies in the first 3-6 months. The organisation decided to deliver emergency shelter kits to:

- Spontaneous camps in highly damaged zones close to the epicentre of the earthquake (Leogane).
- Dense spontaneous settlements along roads to Leogane, that were likely to be neglected by other agencies (Carrefour).
- Spontaneous settlements close to the office and warehouse (Port-au-Prince).

Neighbourhoods

Following the emergency distributions, the organisation shifted target to neighbourhoods rather than camps. The main reason for this was to push to more durable shelter solutions than could be found in camps.

Although massive shelter needs remained, the organisation decided not to continue providing shelter assistance in spontaneous settlements in Port-au-Prince. This was due to the large number of other actors working there, and also to allow them to focus activities.

All families with destroyed housing in the most vulnerable neighbourhoods were targeted.

Transitional Shelter Kits

Kits were developed to protect people from the imminent rains and hurricanes. 2,550 transitional shelter kits (6 million USD of materials), 20,000 reinforcement kits (3 million USD of materials) and 500 repair kits for timber-frame houses were distributed. Half of these transitional shelters were built in partnership with another organisation.

Transitional shelter kits required that people had access to a space to build a shelter. These were not necessarily the most vulnerable families.

Reinforcement kits targeted families who were unlikely to receive a transitional shelter kit and who would remain in self-built shelter during the hurricane season. Training sessions were held on how to use the kits and printed fliers were distributed. Trained carpenters also supported families to reinforce their makeshift emergency shelters.

Toolkits were given to agencies that were training technicians, but who had limited resources.

Land tenure

The organisation's approach to tenure was to:

- Record reported tenure status during registration.
- Develop a Memorandum of Understanding (MoU) with beneficiaries in coordination with other agencies. This highlighted that beneficiaries will own the shelter but that tenants must take responsibility for seeking the consent of their landlord to erect a transitional shelter for 3 years.
- Engage the municipality in a similar agreement which outlines the approach and puts the onus on municipalities to resolve disputes.

Shelter Design

The following are the seven key stages in the transitional shelter programme:

- Assessment and beneficiary selection: visit dwelling and complete assessment form.
- 1st verification: visit destroyed house, and plot. Check with neighbours. Fill in verification form.
- 2nd verification: visit proposed plot to check that it is ready.
- Explanation and 1st MoU signature: explain and sign the MoU to clarify that the beneficiary has consent to use the plot and that the roles and responsibilities are understood.
- Delivery and 2nd MoU signature: sign MoU to confirm that the shelter has been received.
- Installation: teams install the shelter (2 carpenters, 5 helpers from the beneficiary's side, supervised by a technician).
- Final handover and 3rd MoU signature: sign the MoU to confirm that the shelter has been installed.

Kits and the accompanying information campaign were developed in partnership with other agencies using a commonly agreed transitional shelter brief. Shelter designs were checked by qualified structural engineers from partner organisations both in Haiti and Europe, who offered their services to check the designs.

Daily labour on construction sites was supervised by technicians who had been trained by engineers.

The organisation itself directly monitored implementation of the project and quality.

Logistics and supply

Haitian companies were not necessarily registered, paying tax,



Different approaches were used to procurement - some items were prefabricated off site.
Photo: Mildred Beliard, CARE

publishing accounts or accountable to identifiable shareholders. This made it difficult for the organisation to monitor problems with labour rights, health and safety, environmental regulation or check that materials – particularly imported timber – were from sustainable sources.

Emergency staff were unable to build sufficient capacity for efficient procurement. As a result the project used multiple approaches for procurement. These were:

- A partner organisation and local private contractors purchased the timber and all other components and delivered them to site.
- The organisation itself purchased and delivered plastic sheeting, hurricane strapping and cement. It also provided truck rental for later deliveries.
- The beneficiaries themselves provided gravel and sand.
- Local private sector manufacturers assembled roof trusses and frames. This allowed quality to be controlled before kits arrived on-site.

20,000 Reinforcement kits

Item	Quantity
Plastic sheet (4m X 5m)	1
Timber 2" x 4" (50x100mm)	24m
Hurricane strap	6m
Roofing nails	1Kg
Nails - 1 inch (25mm)	2Kg
Nails - 4 inch (100mm)	1Kg
Metal corner spikes 50cm	6
8 mm nylon rope	25m
Bag for ironmongery	1
Plastic box	1

500 Rural Repair kits

Item	Quantity
Timber 2" x 4" (50x100mm)	48m
Hurricane strap	10m
Nails - 1" and 4" (25, 100mm)	4Kg
Plastic sheet 4m x 5m	2
Corrugated iron	2m ²
Roofing nails	1Kg
Cement 42.5kg	2 bags

1,126 Tool kits

Item	Quantity
Bucket - 20l with cover	1
Rope - polypropylene 10mm	15m
Iron wire gauge 12 or 14	15m
Hammer carpenters 0.5kg	1
Mallet - 1.3kg	1
Crowbar 45cm	1
Cold chisel 20cm	1
Wire cutters 20cm	1
Dust masks	2
Gloves	1
hacksaw 30cm	1
Hacksaw blades 30cm	4
Roofing nails 25mm	50
Wood saw 50cm	1
Chisel 3cm	1
Nails - 1 inch (25mm)	2Kg



Extension built by a family to upgrade a transitional shelter.
Photo: Mildred Beliard, CARE

A.6 Haiti - 2010 - Earthquake

Case study:

See "A.4 Haiti - 2010 - Earthquake - Overview", p.12 for background.

Country:

Haiti

Disaster:

Earthquake

Disaster date:

January 12th 2010

No. of houses damaged or destroyed:

180,000

Project target population:

Repair - 14,000 households

Structural assessment - 400,000 structures

Occupancy rate on handover:

Once a building had received a green-tag, occupancy jumped from 50% to 80%

Shelter size:

1-floor earthquake damaged structure (1 – 3 rooms): average of 15 - 35 m²

Materials Cost per house:

Repairs: average 2,000 USD per structure

Project timeline



Project description

The programme provided safe and improved housing which helped people to leave the camps and allowed them to restart the recovery process. The programme included: 1) damage assessment, 2) house repairs 3) public communication and training manuals 4) training.

Strengths and weaknesses

- ✓ The project used a community based approach and maintained open channels of communications with the relevant government ministries and the population at large.
- ✓ A repair and rehabilitation project was developed. This considered the types of housing, differing neighbourhoods, government guidelines and the local community.
- ✓ Local builders learned cost efficient but safe techniques for rebuilding.
- ✓ Public awareness campaigns assisted displaced community members to return to homes which were structurally safe.
- ✗ A shortage of local companies, combined with presidential elections and security issues lead to a delay in the start of the public information campaign.
- ✗ The public information campaign suffered from poor messages and overlapped with other

organisations who were conducting repairs. This caused some confusion.

- Initially, owners were suspicious of the engineers. As the project became better known, owners began asking the engineers to assess their homes.
- The repaired houses are stronger than they were when the earthquake struck, but they look virtually identical to how they looked before the earthquake.
- The assessment showed that nearly every neighbourhood of Port au Prince contained a mixture of levels of damage.
- An analysis of the damage showed that residential buildings, schools, and churches were the hardest hit while commercial buildings fared best.
- Although all the houses repaired were more resistant to earthquakes than they had been before, it is not possible to guarantee that the repaired houses would be able to withstand another major earthquake.



Many buildings that were tagged yellow could be repaired at a lower cost than building a new transitional shelter. Photos: Chiara Jasna Vaccaro

Before the earthquake

(See "A.4 Haiti - 2010 - Earthquake - Overview", p.12.)

Prior to the earthquake, there were no enforceable building codes and no inspections. As a result homeowners could build as cheaply and therefore insecurely, as they chose. The same was true for urban planning and zoning. Houses were regularly built into existing roads, on steep, unstable slopes, or in ravines prone to flash floods.

Most structures were built in stages as and when money was available. Additional floors and rooms were often added without checking the original foundations or structures. Entire neighbourhoods were built and developed without planning.

The main problem with construction in Haiti is that the structures are too brittle. Almost all the structures are built out of masonry blocks with reinforced concrete columns and beams.

After the earthquake

An international seismic engineering company was brought to Haiti a week after the earthquake to help the organisation with the early response. Initially the focus was on the main government buildings as well as the main hotels and factories.

Many people were sleeping under tarpaulins not because their house was unsafe, but because they were

afraid that it was. Large numbers of people would leave camps and tents and return to their homes if they could be sure that their houses were safe.

Implementation

The programme was divided in four separate components.

1) Damage assessments

Damage assessments were implemented working closely with the Ministry of Public Works (known by its french acronym MTPTC). The survey was conducted by teams of engineers. Each team had between one and fifteen engineers. During the project there were up to 18 teams at any one time; a total of 270 Haitian engineers.

The assessment tagged buildings according to the damage using the following "traffic light" system:

- green - safe for use,
- yellow - damaged, but stable (needing minor repairs to be made useable),
- red - unstable, either major repairs or demolition and rebuilding required.

Haitian engineers were trained to conduct the evaluation. They were then sent in groups to assess the structures in a neighbourhood. The engineer would use a PDA to photograph each building and take its GPS coordinates.

They then inspected every room of the building, and completed a short questionnaire on the PDA. At the end of the inspection, each building was spray-painted with a highly visible red amber or green tag. Each engineer was able to inspect an average of 10 structures a day. At the end of each day, the data was downloaded directly into the central database and used to create a map.

To standardise assessments, the ATC20 form was modified for use in Haiti. The ATC20 is the standard form used in California to rapidly assess earthquake damage.

During the assessment, over 400,000 structures were tagged; this was nearly every building in the Port-au-Prince metropolitan area that was impacted by the earthquake.



Buildings were sprayed with green, yellow or red markings according to the level of damage sustained. Photos: Joseph Ashmore

The assessment highlighted how widespread the damage was. Rather than having a core area of red tagged houses surrounded by rings of yellow tagged and then green tagged houses, nearly every neighbourhood is a mixture of green, yellow, and red tagged buildings.

2) House repairs

Once a house had been assessed, the next challenge was to repair it. The cost of rebuilding yellow tagged buildings was relatively inexpensive compared to the cost of new construction or comparable transitional shelters. However, it was also clear that the reason that most buildings had collapsed was that they were poorly built.

Based on the information gained during the damage assessment, twelve different types of repairs were identified.

The most common repair was of an X-shaped crack in masonry wall. The specific steps to repair each type of damage were detailed in a separate guideline accompanied by clear illustrations.

To ensure that builders continued to use the better techniques, the organisation, working with an international contractor, conducted inspections of the work on site.

3) Public communication & training manuals

Four areas were chosen, for a public communications project. In each area, a community based organisation was contacted.

The repair process

1. The damage assessment database was used to identify the number of houses that can be repaired.
 2. Project engineers visit the neighbourhood to verify that the houses are not in high risk areas, nor in rights of way.
 3. Community animators meet with local leaders to identify the house owners. The owners sign a repair agreement.
 4. Local engineers assess each house. The engineer fills in a form on the PDA and writes the details of the repair required on the house.
 5. A contractor is assigned to repair a group of houses.
 6. As each repair is completed, the supervision engineer certifies that the repairs are complete and the contractor is paid.
- Contractors work on groups of three to six houses at a time.
 - Only masons and contractors who had successfully completed the training on the improved construction techniques were allowed to work on the repairs.

The involvement of the community facilitated the setting up of meetings with the inhabitants, and municipal authorities. It has also facilitated the design of a public awareness and information campaign.

Workshops with local populations and existing community projects helped to identify the key people to meet and to accompany and support the teams on the ground.

To build back safer, three key changes were made to the way that the masons built walls:

- High quality materials: rather than allowing the masons to make their own blocks using river sand, stronger blocks were made in factories. They were made with clean materials and were vibrated after casting. Masons were required to use clean sand for the mortar.
- A thinner layer of stronger mortar: the masons used a 3:1 sand : cement ratio rather than the traditional 6:1 ratio. The masons were instructed to use only a thin layer of this mortar. This helps to compensate for the higher cost of the mortar.
- Steel reinforcement bars in the wall: the masons were instructed to add two steel bars between every four courses of blocks and vertically every three blocks. The horizontal steel bars are tied into the vertical columns and the vertical bars are tied into the ring beam.



Different repair specifications were developed for walls with and without windows, cracked ring beams, walls that had separated from the roof, and for minor cracking in walls and columns.

The specific steps to repair each type of damage were detailed in a separate illustrated guideline.

4) Training

The following people were trained:

- engineers (who had been vetted by the government) - to conduct damage assessments, to use PDAs and to how complete the required forms,
- masons - on repair techniques,
- contractors - on repair techniques,
- international NGOs and their technicians.

The focus was on how to build more safely. Since the changes were minor, the masons and contractors could be trained in just three days.

Trained on conducting Damage evaluations
270 engineers for Damage evaluations:
105 during the 1st Phase
165 during the 2nd Phase
Trained on conducting Repair evaluations:
32 engineers
Trained on conducting repairs:
11 sub-contractors
Trained to support subcontractors on conducting repairs:
30 engineers
210 masons

A.7 Haiti - 2010 - Earthquake

Case study:

See "A.4 Haiti - 2010 - Earthquake - Overview", p.12 for background.

Country:

Haiti

Disaster:

Earthquake

Disaster date:

January 12th 2010

No. of houses damaged or destroyed:

180,000

Project target population:

5,690 households or 34,140 individuals

Shelter size:

18 m²

Materials Cost per shelter:

Wood framed shelter 878 USD

Steel framed shelter 1,800 USD

Host family grant 800 USD

Project Cost per shelter:

Wood framed shelter 1,060 USD

Steel framed shelter 2,500 USD



Project timeline

13 months - Project completion

1 month - Project start

January 12th 2010 - Earthquake

Project description

This organisation ran several projects focused on supporting economic, social, and political recovery. Shelter assistance was delivered through a variety of "shelter solutions", including traditional wooden framed transitional shelter construction, steel framed transitional shelter construction, supporting host families through a livelihoods-based incentive system, and the removal of rubble. The projects targeted those who decided to stay in or around their homes of origin.

Strengths and weaknesses

- ✓ The projects provided an economic benefit to both shelter recipients and through supporting activities such as paid labour for rubble removal. In total, the projects injected 750,000 USD into the local economy in paid wages.
- ✓ The projects trained and / or employed nearly 400 local masons and builders. Many of whom went on to secure formal employment for the first time.
- ✓ The projects successfully prevented over 5,000 households from going to settlements.
- ✓ Many households converted parts of their new homes into shops, salons or cafes, leading to a more rapid recovery.
- ✗ The projects were delayed. This was primarily due to unavoidable circumstances such as domestic shortages of key construction materials, severe weather conditions, disease outbreaks (cholera), and post-election tensions.

- ✗ Steel framed shelter components were delayed in shipment and customs.
- ✗ Effective sanitation for shelters was delayed.
- ✗ Relatively low capacity of local builders required extensive capacity building and oversight.
- ✗ Complications with land tenure and land verification processes slowed shelter provision and created an unexpected staffing and administrative burden.
- ✗ Procurement of some shelter components was delayed, leaving some incomplete shelters.
- Challenges with coordination often resulted in duplication and a wide variation in shelter assistance.
- Removal of debris was a key factor in the ability to construct transitional shelters.
- Limited local leadership from the local or national governments, which varied from location to location.
- Assembly lines and serial production were largely newly introduced concepts and required a lot of advocacy, training, and oversight.

Before the earthquake

(See "A.4 Haiti - 2010 - Earthquake - Overview", p.12.).

Target groups

The projects aimed to encourage affected families to stay in their communities of origin to depressurise formal or informal camps. To achieve this aim, mobilisation teams worked with settlement leaders to identify households who wished to settle near to their properties.

In most cases, the organisation worked with 'spontaneous settlements' that were no more than a cluster of households squatting on private land or in the streets or public spaces next to their property.

Selection of beneficiaries

Beneficiary criteria were developed with community leadership structures in neighbourhoods and informal settlements, and through local authorities.

The starting point for the beneficiary selection process was the Mayor's office in any given location. Identification of informal settlements in this way was highly dependent on the support and activity level provided by each Mayor.

To triangulate vulnerability assessments, project staff also consulted with other local organisations and community leadership. Shelter assistance was prioritised for single female-led households, the elderly, and households with more than four family members.

Previous homeowners rather than renters were targeted as a result of the added complexity of determining viable rental agreements and entitlements.

Plot identification

Individual shelter plots were identified through written statements by community members and local leadership.

Upon finalising the location of the plot, shelter construction teams coordinated with cash for work teams to assure that all rubble and dangerous material was removed from the construction site, and from access paths.

Engineers worked closely with shelter construction teams to assure that placement of the shelter would provide the safest possible space for the beneficiary household.

Wooden shelter

The transitional wooden shelter had an area of 18m² and was intended for a family of five. The structure was composed of almost 50 pieces of timber, ten corrugated galvanized iron sheets of 12 feet (4m) and a concrete floor.

The structure was strengthened with hurricane straps. The main bearing wooden columns were anchored to the soil using cast-in-place concrete piers. The walls were clad with plastic tarpaulin. The life expectancy of this structure was 24 to 36 months.

Once materials were delivered to site, a team of one skilled carpenter and two unskilled labourers built two shelters a day. On average, the project completed 15 wooden shelters per day.

The organisation hired approximately 120 carpenters in five communes of Port-au-Prince and installed wooden shelters in various areas of the capital.

Steel shelter

The organisation built 2000 light gauge steel shelters in areas outside of Port au Prince, Leogane and Petit-Goave. These were more resistant to hurricanes and heavy rain, being designed to resist winds up to 120-140 miles an hour. These 18m² shelters were anchored into concrete floor slabs.

The shelter components were shipped pre-cut from USA, from an American design firm in 40 containers of 50 shelters per container.

Different teams off-loaded the containers, assembled the parts, loaded and off-loaded prefabricated structures and installed the shelters on site.

Approximately 200 male and female workers were trained to use drills in the assembly of metal parts. Additionally, 8-10 other drivers and loader crews were used to deliver the assemblies to the construction sites.

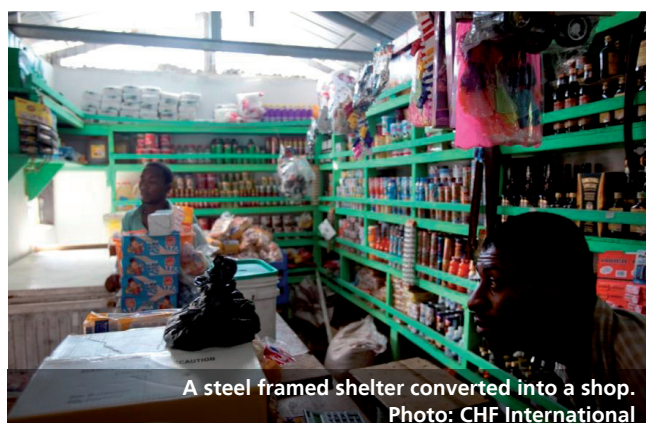
Once the assembly mechanism was fully operational, each facility prefabricated about 45 steel shelters each day and installed or "completed" approximately 17 shelters per day on individual plots.

Only a short training time of 4-5 days for each assembly team was required to start producing roofs, sides and front walls.

Once the shelters were built, an additional 6-8 three man crews of masons installed the cement floors.

Owner contribution

The beneficiaries made a floor fill from broken rubble so that the concrete floor would use minimum



A steel framed shelter converted into a shop.
Photo: CHF International



Family in a timber framed shelter.
Photo: CHF International



Projects were implemented with the common goal of encouraging affected families to stay in their communities of origin to depressurise formal or informal camps. Photo: CHF International

cement. The families were also expected to help clear rubble in preparation for the arrival of the shelter.

Since the project was only funded to provide a metal sheet roof and a tarpaulin as side covering, it was left to the families to build more durable walls. This led to some issues between the organisation and the beneficiaries.

Host family

Rather than distinguish between the displaced and the host families, the project viewed the combined households as one household unit so that the economic assistance would be tailored to the needs of both families and agreed upon by both the displaced and hosting heads of household.

Each household unit was offered a choice of vouchers that could be spent on a variety of needs, including: tuition, household supplies and groceries, medicines, and small business re-stocking.

Project staff worked with each household to select the vouchers needed to support the joint family unit. Both families signed tri-partite agreements with the organisation and a local government representative to document their cooperation, agreement, and intent to mitigate any arguments with local officials.

Each household unit received 800 USD to support the host family arrangement for a minimum of four months. In most cases, the arrangement lasted long past the distribu-

tion and expenditure of household livelihoods grants.

Logistics

Existing relationships with brokers and familiarity with customs systems built over the previous years helped more rapid procurement of materials required for the wooden shelter. Local vendors sourced timber in bulk from the USA and the Dominican Republic, and delivered directly to warehouses.

Shelter managers submitted order forms for each project site for remaining materials such as nails, cement, and iron sheeting.

Shelter mobilisers and team leaders organised the delivery of specific material quantities to construction sites on a daily or weekly basis, to reduce the possibility of graft and wastage.

Customs delays resulted in some interruptions in the supply chain, and other materials such as sand and plastic sheeting were also delayed due to high demand among non-government organisations and slow-moving customs processing.



Wood framed shelters under construction. Photo: CHF International

Local teams were responsible for managing and tracking shelter components from the assembly facilities. In many cases, steel frame shelter components were transported to individual building sites by groups of labourers.

Materials list

For 1500 Wooden Shelters	
Timbers 2" x 4" x 12' yellow pine (50 x 100mm x 3.7m)	9,000
Timbers 2" x 4" x 14' yellow pine (50 x 100mm x 4.3m)	11,500
Timbers 2" x 2" x 12' yellow pine (50 x 50mm x 3.7m)	10,500
Corrugated iron roof sheeting, 28 gauge. 12' lengths (3.7m).	5,000
Portland cement (42,5 Kg)	2,500 bags
Hinges 4" (100mm)	3,000 pairs
Sliding lock	1,500
Nails 3" (75mm)	900 kg
Nails 4" (100mm)	900 kg
Roofing nails (Umbrella Type)	900 kg
Doors and windows	1,500
Staples (boxes of 1000 staples)	1,000 boxes
Mosquito nets metallic type	50 Rolls

Host Family Livelihoods Grant Options

Small business grants	Through a selection process with a committee with beneficiaries submitting business plans
Household supplies	Buckets, cleaning supplies, cooking supplies
Fees for tuition	Direct payment to schools through vouchers
School supplies	school books, pens, paper, etc.
Work tools	hammers, drills, nails, paint, brushes, etc.

A.8 Haiti - 2010 - Earthquake

Case study:

See "A.4 Haiti - 2010 - Earthquake - Overview", p.12 for background.

Country:

Haiti

Disaster:

Earthquake

Disaster date:

January 12th 2010

No. of houses damaged or destroyed:

180,000

Project target population:

3,960 households

Occupancy rate on handover:

One year after the beginning of the project, the occupancy rate was 89%

Some households did not occupy shelters still covered with tarpaulin for fear of theft

Shelter size:

1-5 people 18m²

6-10 people 36m²

11-15 people 54m²

Materials Cost per shelter:

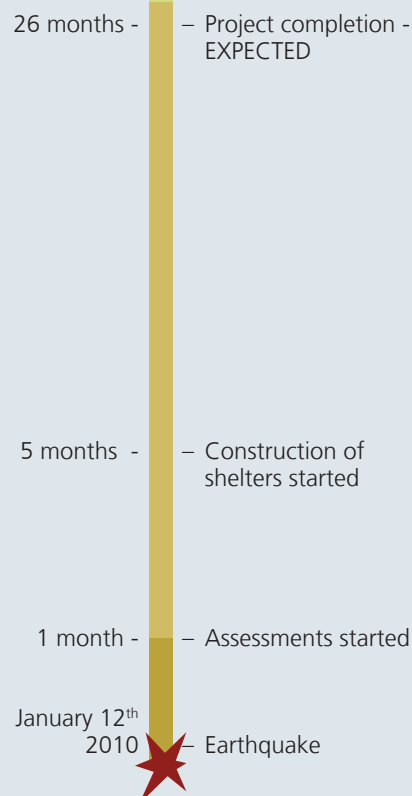
2,400 USD (18m² module)

Project cost per shelter:

4,700 USD (18m² module)



Project timeline



Project description

This project built progressive shelter in two phases: a first emergency response (structure covered with tarpaulin) and a second durable solution (permanent housing with cement cladding). The project included safer construction awareness activities and safer construction trainings. The shelter project was the beginning of an integrated programme that also included water and sanitation, hygiene promotion, health, disaster preparedness and livelihoods projects.

Strengths and weaknesses

- ✓ Support was provided irrespective of land tenure.
- ✓ Modular design allowed for living space to be varied according to family size.
- ✓ All construction materials, except the steel frames and a part of the roofs, were purchased locally, promoting the local economy.
- ✓ The project included safer construction awareness activities for all families and safer construction trainings for construction workers.
- ✓ As a part of the integrated programme, the access to water and sanitation was improved.
- ✗ Beneficiary participation in the construction is low as rapid construction was prioritised.
- ✗ Power tools were needed to assemble the shelters and as a result generators were required. This had logistical and financial implications.
- ✗ Due to lack of understanding of the market,

some construction materials were purchased locally. However the local market could not provide these materials easily. This resulted in construction delays.

- ✗ The project was still ongoing two years after the disaster, and water and sanitation solutions were not complete.

- ✗ Few resources are being allocated to follow up and monitoring of incidents (occupation, evictions, etc.).

- Some of the land where the beneficiaries were living was very close to a river. All the shelters have a raised floor to prevent flood damage. In areas with higher flood risk, a deeper foundation would be built as an additional measure.

- The traditional Haitian house has several exterior doors. Many beneficiaries added doors to their shelter.

Before the earthquake

See "A.4 Haiti - 2010 - Earthquake - Overview", p.12.

After the earthquake

The town of Leogane's population was estimated at more than 134,000 people. The earthquake is estimated to have destroyed 32,000 buildings (around 80% of Leogane's buildings). After the disaster there were around 300 camps in the area, with more than 60,000 people living in them.

The construction of shelter was the beginning of a programme that provided support to affected households. The support also included water and sanitation, hygiene promotion, health, disaster preparedness and livelihoods projects.

Land issues

The shelters were allocated on land where the beneficiaries lived before the earthquake, promoting the return of displaced people to their places of origin.

Land ownership was difficult to verify. Many beneficiaries did not have personal identification documents, and there were many difficulties in obtaining legal and official land property records. There were many owners or heirs that did not have documents to prove that the land belonged to them. Rental agreements with the land owners were made verbally in most cases.

To meet shelter needs of all the people living in the communities, solutions for all households who fulfilled the selection criteria were developed, whatever their tenure situation. Intensive community mobilisation was undertaken, and local authorities were involved.

In the case of owners or heirs without official identification or land ownership documentation, validation meetings were organised where the community certifies their identity and their land ownership. A document was signed by the beneficiary, a neighbour, community representatives and local authorities.

In the case of tenants who lived in houses that were destroyed



Shelters had a steel frame and were modular. They could be personalised to meet household needs.
Photo: Beti Egea

during the earthquake, it was initially unclear whether the shelter would be the property of the beneficiaries who fulfilled the selection criteria, or whether the shelter would be the property of the house owners.

It was decided that shelters would always be the property of the beneficiaries. A document was signed between the beneficiary and the owners, where the owners authorise the beneficiaries to build their shelters on their land. This document was valid for five years. If the owner did not respect this agreement the beneficiary could move the shelter.

If families were landless, the community networks were encouraged to help them to find some land. There were also negotiations with local authorities to find a solution for beneficiaries who had lived in squatter settlements. Finally authorities let these shelters be constructed.

Implementation

After the validation and signing of the documentation, construction materials were distributed.

The construction team had 4 shelter specialists, 4 local coordinators and 15 local engineers. Each engineer led a team of workers from the communities, and each team built 6 shelters per week.

Up to ninety shelters were built per week, but delays with material supply slowed production.

Beneficiary participation in construction was low. Rapid construction was prioritised, leaving little time to mobilise, train and incorporate beneficiaries into the work.

The shelters were adapted according to the number of people in the family. The basic module is 18m². Families with up to 5 members received one module, families over 5 members received two modules and families with over 10 members received three modules.

The construction of the progressive shelter is implemented in two phases: a first emergency response shelter (structure covered with tarpaulin) and a second durable solution (permanent housing with cement cladding). Different cladding materials were tested for the permanent housing.

A prototype was erected to compare the practicality of installation and the acceptance by the target population. The beneficiaries chose cement cladding as they found it more durable, safer and very similar to the construction technique they traditionally used.

The project included safer construction awareness activities for all the families and safer construction trainings for construction workers.



Shelter made from two modules and later upgraded by family.
Photo: Betisa Egea



Two-module shelter with a door added by the family (standard two-module shelter has two doors, one on the front and one at the back).
Photo: Sandra Tapia

Shelter construction was part of an integrated programme to support affected households and communities, access to water and sanitation was later improved. There were plans to drill bore holes, to provide 70 litres of water per person per day.

Selection of beneficiaries

Coordinated project assessments started one month after the disaster intervention in areas agreed through coordinating with other organisations. 3,960 families living in rural and semi-urban areas of Leogane were targeted.

All of the families of the intervention areas were surveyed. Since this was an integrated programme, shelter support was not only provided to families directly affected by the earthquake, but also to families whose houses did not achieve a certain minimum habitability criteria. The aim was to avoid creating inequalities within the communities.

Selection criteria

The following selection criteria were used:

- Families whose main residence became uninhabitable because of the earthquake.
- Families whose house does not achieve a certain minimal condition of habitability, even if it has not been affected directly by the earthquake. These included:
 - lack of space in relation to the number of people who live there,

- no water and sanitation.
- Vulnerability criteria:
 - number of dependants, elderly, or handicapped people or children,
 - single-parent families,
 - no monthly income.

Technical solutions

The shelter had a galvanised steel frame with a mono-pitch roof and a raised floor. The shelter was 3 x 6m on plan and had 6 columns spaced on a 3m grid, fixed to rectangular reinforced concrete foundations using a base plate and four ordinary bolts per base. The shelter could be demounted and foundation bolts cut to reuse the frame.

The main structure was made from three primary frames spanning in the transverse direction with rectangular hollow section columns. The roof cladding was corrugated steel sheeting nailed to steel secondary roof members spanning between the three primary frames.

Timber studs are screwed to the steel members and the tarpaulin (emergency response) or the perforated metal sheet of the cement cladding (durable solution) attached to them. Additional timber sub-framing is used to form windows and doors.

The intention was that the structure could be used in a modular manner, putting two side by side to form a double pitched roof structure of 36m².

Logistics and supply

Steel frames were procured internationally and shipped to Haiti.

Other materials were sourced locally and transported by trucks to site.

Due to lack of understanding of the local construction materials market it was decided to locally purchase some materials that the local market could not provide easily. This resulted in construction delays.

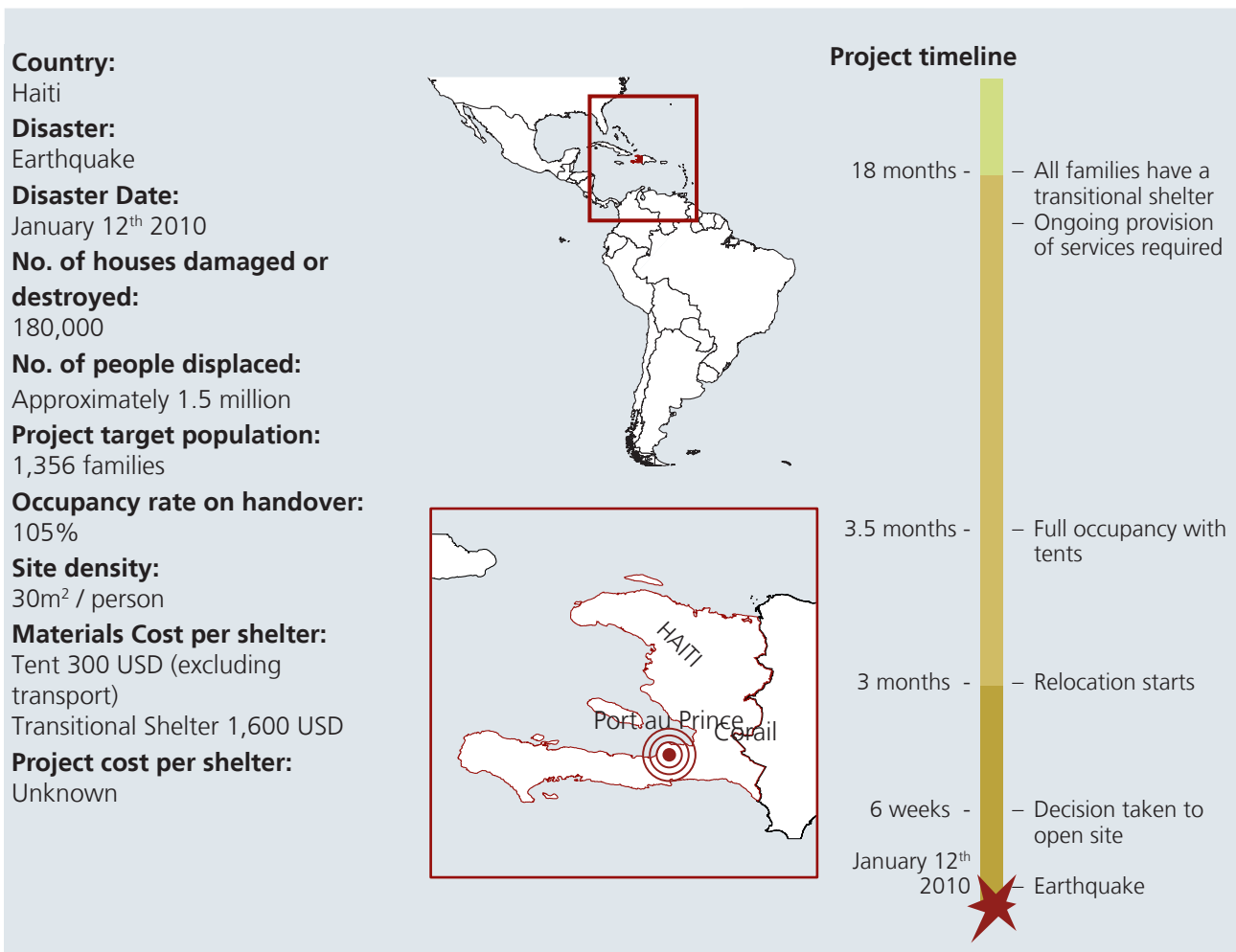
Materials list

Materials	Quantity
Cement (42.5kg bags)	3 bags
Sand	0.38 m ³
Gravel (20mm aggregate)	0.38 m ³
Iron bars 12 mm	36 m
Column base plate (300mm x300mm x6mm plate)	6 pieces
Steel 2mm (80mm x80mm)	27.65m
Floor beams 2mm (40mm x 40mm)	100.9m
Window and door framing (32.5mmx100mm)	9.9m
Plywood door (1.94m x 0.7m)	1 piece
Plywood flooring (21.8thk)	18 m ²
Steel sheeting (0.75m x 1.83m)	18 pieces
Plastic sheeting (6m x 4m)	4 pieces
Mosquito net	8 m ²
Bolts, nuts + washers (20, 10, 6.25 d.)	200 pieces
Brackets (35wide, 70+20legs, 2thk)	70 pieces
Hurricane straps – angles (75x75)	36 pieces
Self tapping screws	75 pieces
Nails (10, 8, 4 d.)	22.7 kg
Hinges	3 pieces
Door latch + padlock	1 piece
Cement cladding:	
Perforated metal sheet	27 pieces
Cement (42.5kg bags)	16 bags
Sand	1.25 m ³
Natural fibre	0.34 m ³

A.9 Haiti - 2010 - Earthquake

Case study:

See "A.4 Haiti - 2010 - Earthquake - Overview" p.12 for background.



Project description

Families were relocated from a spontaneous settlement in the Haitian capital to a new planned camp in an area called Corail 20km away. The initial establishment of the camp was according to a carefully considered plan and relocation took place within a month. As with many sites in Haiti, two years after the earthquake, the future for the camp based population remained unclear.

Strengths and weaknesses

- ✓ Key actors worked together to prepare the site within an extremely limited timeframe.
- ✓ Strong coordination greatly assisted with the logistics of the relocation through information campaigns and consultation with the affected population.
- ✗ The urgency of the relocation initially left little opportunity for activities beyond the provision of shelter, water, sanitation, food, education and health services.
- ✗ Greater emphasis on ensuring access to existing or developing livelihood activities would have been beneficial had time allowed and the site was far from existing livelihoods.
- ✗ There was a significant delay in the follow up construction of transitional shelters, meaning people had to stay in tents in an area with little natural shade

from the sun and wind.

- ✗ The site does not represent a durable solution for the relocating families and remains one of 802 occupied camps for displaced families in Haiti.
- ✗ Rapid site preparation required significant investment at a time when financial resources for the provision of basic services were limited.
 - The impact of having a camp in any location has to be carefully considered since it might end up as a permanent settlement.
 - The decision to relocate the people was based on an engineering assessment of the risk of flash floods (high volume, fast moving water) at several spontaneous IDP locations. The identified population faced life threatening risk in their current location. In addition, there was an urgent need to decongest the camp to allow the introduction of basic services.



Left: an aerial photo of a typical spontaneous settlement in Port au Prince.

Right: An aerial photo of Corail shortly after construction.
Photo: Shaun Scales / NRC

Background

See "A.4 Haiti - 2010 - Earthquake - Overview" p.12.

Identification of families

Given the large population in camps within Port au Prince, weeks after the disaster, assessment teams identified specific areas at risk from flash flooding. They also assessed which engineering works could mitigate identified threats to life.

The assessment was conducted in spontaneous settlements within Port-au-Prince. Amongst others, it identified the Delmas 48 site as being at risk from flash floods and landslides during the approaching seasonal rains. The site had over 25,000 people living in high densities on a steep hillside.

The engineering team developed a mitigation plan that included the diversion of surface water and land stabilisation works. To complete these works, an estimated 7,500 people would be required to move from their current high risk plots.

The area of the settlement that needed to be vacated was marked. The high density population left little room for internal relocation and re-organisation.

Selecting the site

State land is limited in Haiti and the power of the government to claim land for public emergency use is even more limited. Identifying alternative land close to neighbourhoods of origin was problematic as most potential sites were already occupied. The only immediately available land of sufficient size was 16km away. This did restrict opportunities for relocating families whilst maintaining access to livelihoods.

Planning the site

The new site was based on a firm plan. Site assessments identified four separate 'sectors' for development with 'Sector 4' selected as the first to be prepared and occupied by the relocating population from Delmas 48.

The outline of the site was determined by existing natural drainage. This was upgraded to protect plots from surface water from above the site and to allow the development of an internal drainage network.

The camp was planned for occupancy as a transitional site with defined individual family plots, internal road networks and space for education, health, recreation and distribution facilities. The plan was strictly followed so that future development with longer term infrastructure could be possible. Although the site was officially temporary, the site planners took account of the possibility that it might not close soon.

Pending the development of durable solutions for the significant displaced population within Haiti, the maintenance of essential services to all camps, including Corail, remains a prolonged and significant challenge.

Site construction

Land clearance and the development of a gravel road network were completed within two weeks. Construction progress was accelerated by foreign military forces, some who were due to depart imminently.

Land clearance allowed plots to be marked for shelter and infrastructure. Tents were then erected and temporary water and sanitation facilities provided. Fire breaks were built and a population density of 30m² per person was maintained.

Why tents?

Allowing relocating families to bring their existing shelter materials with them was not seen as a sensible approach as they were generally of too poor a quality to re-use and it was too logistically challenging.

It was recognised that the commonly adopted emergency shelter strategy focused on the provision of plastic sheeting, but given the circumstances tents were provided as they were the best emergency shelter solution.

Relocation

The Camp management agency with support from the Camp Coordination and Camp Management lead organisation initiated a settlement wide information campaign to identify families willing to relocate to a new planned camp.

The relocation of 1,356 families was completed in stages over a ten day period with transport provided by the United Nations mission. A plot identification system allowed each arriving family to be allocated an individual plot which was recorded as part of the registration process and assisted with the future delivery of services.

Transitional shelters and other structures

The delivery of transitional shelter was significantly delayed. However by mid 2011, each family plot had an 18m² transitional shelter on it.

Each shelter included a raised cement finished plinth and a small veranda area covered by an extended truss roof.

Education and health facilities were formalised with semi

permanent or permanent structures of wood and brick construction. The original temporary latrines were also replaced with blocks built of bricks.

Eighteen months after the occupation of the site, kitchen gardens and a market selling foodstuffs, household items and handicrafts had been established. Small businesses, including restaurants, carpentry workshops and an art gallery were also established, although the primary source of income comes from work off site.

The school was adopted as a government institution with ministry of education providing salaries for teachers.

Following the occupation of Sector 4, further development of adjacent sites continued to allow for further relocations including 178 families affected by Hurricane Tomas in November 2010.

The longer term

Almost two years after the earthquake, people in camps in Port au Prince continued to receive limited free services in water, education, health, and other assistance.



A typical street in Corail with transitional shelters.
Photo: Shaun Scales / NRC

However services were falling back as funds fell and organisations began to close projects. It was recognised that camp based services could contribute to the sustained presence in camps however an acute shortage of return solutions for the majority of the displaced population of former tenants, remained the primary factor hindering camp closure. This may have contributed to the sustained presence of camps.

Two years after the earthquake, the future for camp based populations across Haiti remained unclear. The exit strategy for Corail was always the closure of the camp following delivery of durable

solutions for the displaced population. However a lack of reconstruction continues to hinder this process, and Corail was not likely to close soon.

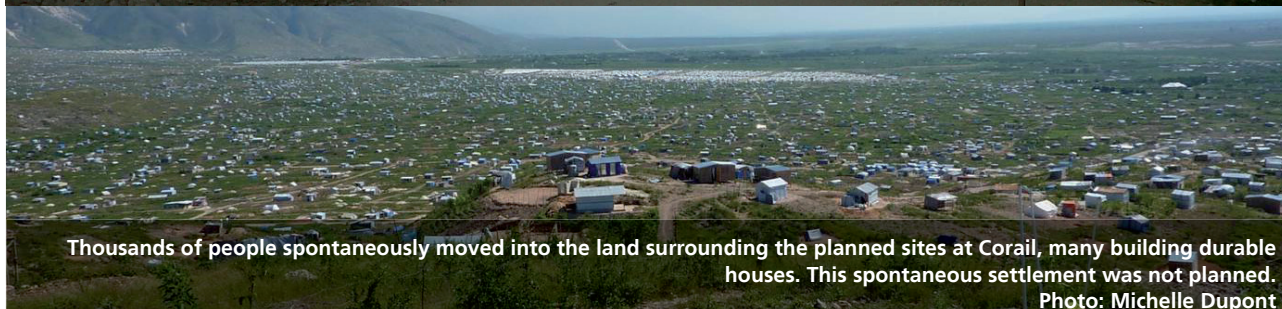
Corail was less densely populated than many spontaneous sites in Haiti. Transitional shelters were built, and this caused some confusion regarding the 'status' of the site. The future closure of Corail would require the same efforts as other emergency and transitional settlements. It also became surrounded by thousands of Haitians who had built their own shelters and houses.



Tents provided initial shelter at the site. This was later upgraded to transitional shelters.
Photo: Shaun Scales / NRC



A Market area in "Corail Sector 4".
Photo: Shaun Scales / NRC



Thousands of people spontaneously moved into the land surrounding the planned sites at Corail, many building durable houses. This spontaneous settlement was not planned.
Photo: Michelle Dupont

A.10 Haiti - 2010 - Earthquake

Case study:

See "Haiti - 2010 - Earthquake - Overview", p.12 for background.

Country:

Haiti

Disaster:

Earthquake

Disaster Date:

January 12th 2010

No. of houses damaged or destroyed:

180,000

Project target population:

Families with disabled persons

Shelter size:

12m², 18m² or 24m² with a 6m² porch dependent upon family size and land.



Project timeline



Project description

The project targeted displaced disabled people in rural locations in the south of Haiti. The project used a participatory approach to build durable shelters. The project re-engineered a well known traditional technique known as *clissade* making it more durable, suitable for mass assembly and later upgrade by beneficiaries.

Strengths and weaknesses

- ✓ The construction technique of *clissade* is well known by the local population as it has been traditionally used in rural Haiti. As a result it is easy and affordable to maintain and upgrade.
- ✓ The shelter was designed in panels. Each panel has the same width as a door, allowing beneficiaries to create new openings in their shelter.
- ✓ The project paid particular attention to beneficiaries with disabilities. Each individual shelter and its sanitation facility was adapted to the type of disability. It was accompanied by a rehabilitation program for people with disabilities, to increase their mobility and build capacities in the use and access to the latrine and the shelter.
- ✓ The project worked with students from a youth vocational training centre. It aimed to increase their capacity to join the labour market.
- ✗ Beneficiary selection depended on a referral system from other organisations. It proved very time

and resource consuming to receive beneficiaries referred in this way. This increased the logistical challenges as beneficiaries were identified as the project progressed and were not identified from the start.

- ✗ If the beneficiaries do not upgrade their shelter by covering their panels, water could enter and it could be cold.
- ✗ Logistics were demanding and slow as rural locations meant that some families could not always be reached by vehicles.
- ✗ The project and the design was very labour intensive.
- The shelter was prefabricated in pieces in the central workshop and sent to the field for assembly by beneficiaries themselves. The concept was that shelters could later be moved if required.

Before the earthquake

See "Haiti - 2010 - Earthquake - Overview", p.12.

Before the earthquake, the majority of Haitian families who lived in rural areas lived in self-built houses. Many were built using *clissade*, a Haitian technique of weaving bars of palm wood to make walls. These walls were later covered by mud and cement. The roof was covered with corrugated zinc.

After the earthquake

In general, the *clissade* houses resisted the earthquake much better than the concrete houses. Where they were damaged in the earthquake, the injuries to the occupants were not as severe as those caused by collapsing concrete houses.

Pilot shelter

The project began with a participatory process that lasted 10 days. During this time, community groups were organised in a remote village. The focus was on understanding the daily activities of each member of the family, including working, cooking and sleeping. This process led to a shelter design being developed that could be used for a pilot shelter.

A location for building the pilot shelter had to be negotiated with the local authority. It was intended that the pilot shelter would be useful for the community. In the end it became a treatment centre for disabled people.

Once a site was identified, it took another 10 days to organise teams and materials to build. The pilot shelter allowed different technical solutions to be tested. Different technical and design corrections were made to the pilot in order to improve it and to fit it in the budget. The shelter was assessed by structural engineers offered by another organisation. Specific changes including additional bracing and hurricane straps were required to ensure that it could withstand 100 mph (161 Km/h) peak wind speed.

The shelter was later adopted by the local authority and by several

other non-governmental organisations. Once designed, the next three months were spent negotiating with donors, tendering, organising logistics and preparing workshops. The workshop was designed and organised with a chain of production producing around 30 shelters per week with almost 45 persons working inside.

The programme included a sanitation component providing with access to latrines or an adapted sanitation solution. Both the shelters and the sanitation component were adapted to the disability of the beneficiaries of the shelter.

To build the shelters, 60 USD was given to the beneficiaries to pay local workers. The organisation provided skilled workers to lead the construction.

Less than 40% of the families owned their land. For these families, a multi-party document was signed to keep the beneficiary on the land for free for at least for 3 years. This was signed by the beneficiary, the landowner, the community leader, the mayor and the organisation. After 3 years, the beneficiary will remain the owner of the shelter and the owner will keep the latrine.

At its peak, the project had a

staff of over 150 people working in the workshop, on site, in logistics and as social mobilisers.

Day	Stage	Worker days
1	Ground preparation	2 x technical advisor, 6 x beneficiaries
2	Digging foundatrions	6 x beneficiaries
3	Bolting and fixing columns	1 x chief carpenter 1 x chief mason 6 x beneficiaries 6 x labourers
4	Embankments	6x workers
5	Installation of panels and carpentry	1 x chief carpenter 6 x beneficiaries 3 x workers
6	Paving and drainage	1 x chief mason 6 x beneficiaries 3 x workers
7	Fixing roof windows and doors	1 x chief carpenter 6 x beneficiaries 3 x workers

Selection of beneficiaries

The project targeted vulnerable families affected by the earthquake, including people with disabilities. A survey form was prepared to select the most vulnerable people amongst those who were referred to the organisation. A social officer worked in close collaboration with the organisations field office, with other non-governmental organisations referring families with disability cases and with local organisations and associations.



The shelters were built using a traditional technology known as *clissade*.
Photo: David Sacca



A traditional shelter that survived the earthquake.
Photo: Joseph Ashmore

A completed shelter, based on vernacular styles.
Photo: David Sacca

Technical solutions

The T-shelter was made from pressure treated pine wood. Panels were prefabricated in the workshop and were then transported to the field. Once on site, the pieces were bolted together. All the nails and screws (the panels were fixed with nuts and bolts, not nails) were double hot dip galvanized.

For roofing, corrugated bituminous sheets were selected. They were selected due to their 15 year guarantee, their thermal properties and their strength.

The site for each shelter was prepared by a team who were tasked with taking into consideration possible risks, such as landslides, of each plot. The field teams were expected to conduct work to mitigate the risks.

Each shelter is raised by between 30 and 50 cm from the level of the ground preventing water entry in case of floods.

The shelter was designed and tested by structural engineers to be resistant to hurricane, earthquake and floods. It was also designed to ventilate naturally.

Logistics and materials

Once the shelters had been prefabricated in the workshop, it proved challenging to get the components to remote locations in the mountains of southern Haiti.

Many of the raw materials had to be imported to Haiti. For example the timber used was pressure treated pine that was not available in Haiti. Most were shipped in and then trucked into the workshop in Petit Goave. In the workshop, the whole shelter was pre-fabricated in panels and trusses. The pre-assembled components were then transported to the site, by truck or by hand in difficult to access areas.

Materials list

Materials	Quantity
Timber 2"x2"x14' (50x50mmx4.3m)	4 pieces
Pine 2"x4"x14 (50x100mmx4.3m)	89 pieces
Pine 1"x4"x14 (25x100mmx4.3m)	23 pieces
Pine 1"x6"x14 (25x150mmx4.3m)	3 pieces
Plywood 1/2" (13mm)	3 pieces
Plastic mosquito net 48" (1.2m)	20' (6m)
Wood Glue	0.5l
Corrugated fastener 1"x5"	unit
Corrugated roof sheets (Onduline)	19 pieces
Ridge (Onduline)	9 pieces
Twisted roofing nails for wood 2 1/2"x9" (60x230mm)	
Threaded rod 3/8" 80" (10mm)	23' (7m)
Nails: 1 1/2"-5" (30mm-125mm)	
Coiled strap (Hurricane strap)	15 m
Hinge 4"x4" (100mmx100mm)	1
Hinge 3"x3" (75mmx75mm)	2
Bolt 4", 3" (100mm, 75mm)	2
Wood screw 3 1/2"x10	
Cement	18 bags
Sand	6 m ³
Gravel 5/25	4 m ³
Cement blocks	70 pieces



Some areas were difficult to access and materials needed to be transported by hand.
Photo: Olivier Dorighel

A.11 Haiti - 2010 - Earthquake

Case study:

See "A.4 Haiti - 2010 - Earthquake - Overview", p. 12 for background.

Country:

Haiti

Disaster:

Earthquake

Disaster Date:

January 12th 2010

No. of houses severely damaged or destroyed:

185,000

Project target population:

8,450 households after 24 months

T-Shelter size:

Aim for 18m² minimum
Less considered when insufficient space

Materials Cost per household:

T shelter: 2,800 USD
500 USD livelihoods grant

Project cost per household:

T-shelter projects: 4,500 USD



Project timeline



Project description

The project supported people to leave overcrowded camps and encouraged them to lead their own recovery process. It provided transitional shelters for those with land, cash for those who needed to rent, and relocation grants for those who moved to different areas. It also subsidised health care and provided livelihoods grants which were used to help re-establish businesses, or to support children going to school. Camp decongestion required at least one year of monitoring and support after families had relocated.

Strengths and weaknesses

- ✓ The project took a broad approach to shelter, looking at the overall settlement issues.
- ✓ Households were involved in identifying a shelter solution with which they felt comfortable.
- ✓ Families were able to quickly pick up some threads of normality with the cash support to develop income generating activities.
- ✓ Physical security for people was improved once they were out of the camps.
- ✓ Cash gave people a greater degree of choice and permitted them to spend money according to their own priorities. This in turn helped to maintain people's dignity.
- ✓ Cash had potential benefits for local markets and trade.
- ✗ The process was very labour intensive and required constant monitoring and support.
- ✗ The process for cash transfers was cumbersome and needed to be shortened.
- ✗ Technical support for some construction aspects has been limited. In particular, viewing the land and identifying the work that was required before construction could begin.
- ✗ Camp committees were difficult to manage as they believed that they should be receiving a salary.
 - Some people did not want to leave the camps as they believed that they would continue to receive goods if they remained there.
 - Some households split across multiple sites to receive a greater total amount of assistance.

Background

See “A.4 Haiti - 2010 - Earthquake - Overview”, p. 12.

After the earthquake

Up to eighty percent of the population in Port-au-Prince rented either the house or the land. In other urban centres such as Leogane, up to seventy percent of the population rented.

Reconstructing houses would restore the assets of the landlords, but would not ensure the availability of this accommodation to the former tenants who are currently shelter-affected.

Residential reconstruction activities therefore included measures to ensure that former tenants received benefits in kind through agreed rent-free tenancies for a defined timeframe, separate cash grants linked to rental accommodation, or shared usage rights.

Settlement approach

The organisation implemented projects using a ‘settlement approach’. Communities and infrastructure were supported, integrating other sectors such as water and education. Many of the projects had strong economic and social ‘livelihoods’ components.

Shelter was seen as including support to all of the settlement options chosen by affected populations, including host families, rental accommodation and, where necessary, camps. In choosing between options, families and groups can make best use of their coping strategies.

Five months after the earthquake, the shelter team began registering people in four camps in an area of Port au Prince. A variety of solutions to support households were identified.

The interventions were based on assessments and discussions with families. Three areas of support were identified:

- an improved shelter solution,
- support for livelihoods,
- an option to help their children return to school.



The project also had a significant information component and the organisation actively promoted public health messaging.
Photo: Julien Goldstein

Different options offered

Different options were provided depending upon the context that the family found itself in:

1) Own land

Some people had the option to move back to where their house was or to a piece of land to which they could show ownership. They received a T-shelter on their land and received a 150 USD grant.

8% of families received this form of assistance.

2) Access to land

Some people knew someone who had a plot of land who agreed that they would be able to reside on the plot for two years. They had to produce a signed document stating that they can live on the land for two years, and a copy of the ownership documents and their identification

They received a T shelter built on the land and a 150 USD grant.

3) Repairable houses

People who had houses classified as green (having minor damage) were offered cash or a voucher to access the needed materials, an unconditional business grant, and training on earthquake resistant construction.

In the first two years of the project, no families chose this support option.

4) Resettlement in Port au Prince

Families identified accommodation within Port-au-Prince that

they could rent. If the accommodation was deemed to be secure, had water and sanitation facilities and was seen as a safe dwelling, the family received up to 500 US dollars to resettle. This sum covered a year's rent.

Often, people moved towards the areas they lived in previously as they were familiar with the area.

72% of families in the project chose this option.

5) Resettlement in the provinces

19% families chose to return to their provinces of origin. These families received a resettlement grant.

Additional support

All Families additionally received:

- A livelihoods grant of 500 USD divided into two distributions of 250 USD. The first was one month after having left the camp and the second was after three months.
- A training was provided on managing finances and business opportunities of their choice.
- Families were supported with health insurance for one year. The health insurance was provided by a local organisation. The insurance was 1 USD monthly per person, and entitled them to free consultation at clinics run by the organisation. It also limited their payments for medicines to a maximum of 150 USD. They could also have low cost medical investigations.



The project included support for livelihoods , support getting children back to school and access to improved health care.
Photo: Julien Goldstein

The small minority of families who did not take up any of the support offered signed a document to show that they had refused the offered support and would remain in the camps. Once families moved out of the camps, sometimes other families might settle in space made. It was the responsibility of the Haitian authorities to deal with these cases.

Monitoring and evaluation

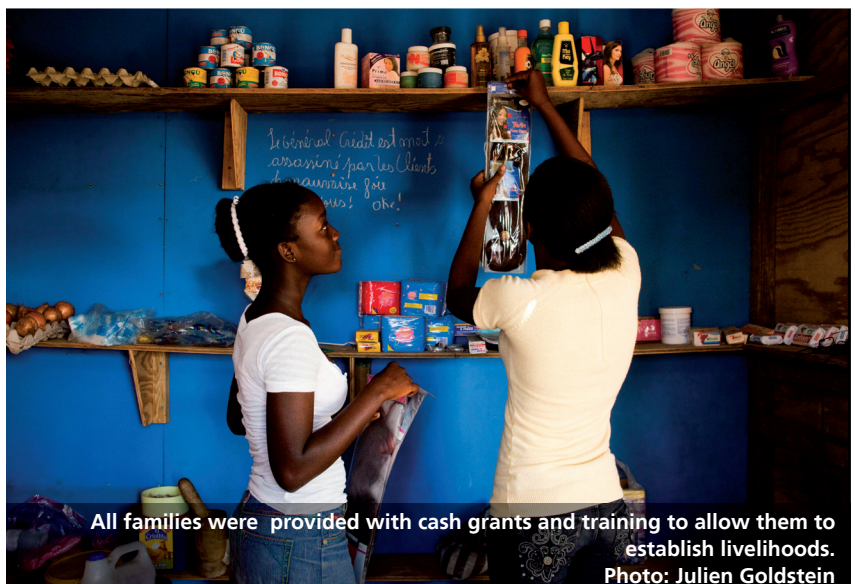
The organisation was asked to intervene in the camps that it is working in either by the government, local organisations that were involved there or by the communities themselves. In some cases camps under threat of eviction asked the organisation to help.

All families in the camps were eligible for one of the support options above. The focus was on people without a land title. After registration, people were responsible for organising their preferred accommodation.

Camp decongestion did not end with finding shelter solutions and moving families out of the camp. At least one year of monitoring with support in livelihoods and vocational training followed.



The organisation provided transitional shelters for those with land to build on. It provided cash grants to help people either rent or resettle elsewhere.
Photo: Julien Goldstein



All families were provided with cash grants and training to allow them to establish livelihoods.
Photo: Julien Goldstein

A.10 Haiti – 2010 – Earthquake

Overview: **Keywords:** Returns, Unplanned camps, Planned and managed camps, Urban neighbourhoods, T-shelter, Rental support, Housing repair and retrofitting, Cash / vouchers, Mass communications.

Summary

In October 2010, ten months after the Haitian earthquake, a humanitarian organisation began a project to close a small camp of around 200 families. Families were given rental support cash grants to cover the costs of renting accommodation for one year and to support the transition from camps to their new accommodation. The project succeeded in its aims and became a test case for a much wider programme of rental support.

Promoted by a small number of organisations, the rental support approach relied on donors' willingness to take a risk on a project-type with few precedents. By mid 2011, rental support cash grants had become a key part of the return strategy and by November 2012 over 23,000 households had received grants.

Early indications are that rental support cash grants have been successful. A survey of households that have completed their year of rental subsidy found that all of the respondents (90% of the total caseload) had been able to organise their own housing for the foreseeable future. None had returned to camps or moved to informal settlements.



Le Marron Inconnu (the unknown slave) statue surrounded by shelters in the Champ de Mars camp in early 2012. Photo: IOM



The statue in April 2012 after the Champ de Mars camp closure. Photo: IOM

Background

The Haiti earthquake of January 2010 caused massive loss of life and damaged or destroyed 180,000 houses. (See Section A.4 *Shelter Projects 2010* for more background on the Haiti response)

Responses generally took one of three forms following the distribution of non-food items in the initial emergency phase:

- T-shelters: This was the main response by many organisations. Transitional shelters (T-shelters) were built using basic frames which could later be adapted into more permanent structures.
- Yellow House repair: Buildings were assessed by engineers and classified as Green (safe), Yellow (to be repaired) or Red (to be demolished).

- Permanent housing reconstruction: Rebuilding irreparably damaged houses.

The lack of buildable space in densely-populated urban areas and complex issues over land rights meant that the three main responses would only benefit those with land rights or those who owned houses.

Those displaced in camps overwhelmingly did not own either land or housing before the earthquake. Consequently, only a quarter of T-shelters built went to Haitians who were living in camps. Not only did this mean that camp populations were being reduced at a slow rate but it proved almost impossible to close camps completely. If only a small proportion of a camp had a durable solution available for them it wasn't long before the empty

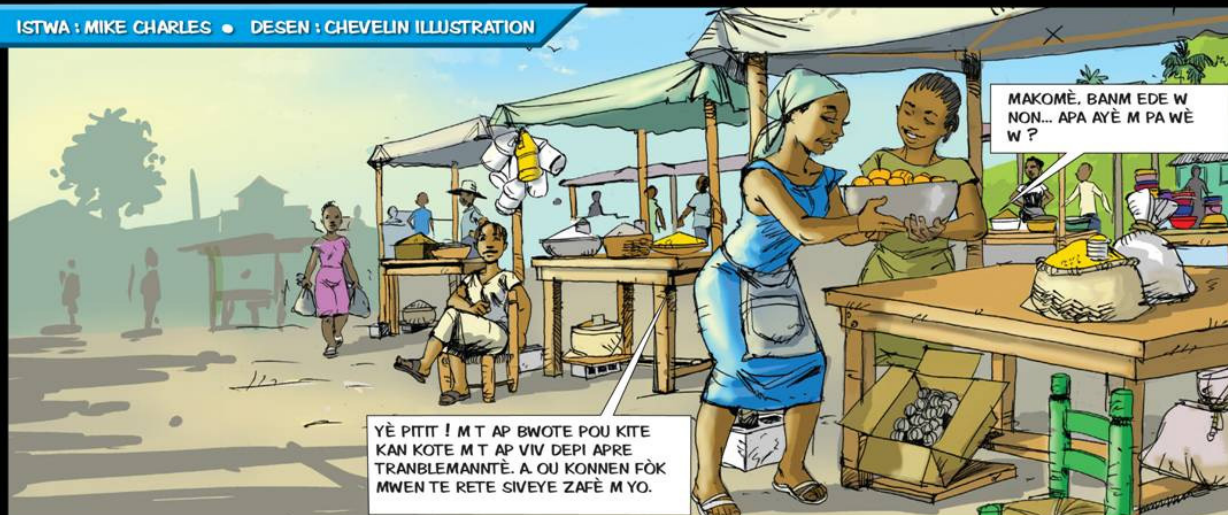
plots in the managed camps were taken by others moving in from spontaneous settlements.

Camps were not only bad for the displaced people but they also prevented occupied public spaces from being rehabilitated.

In this context some Haitian officials began suggesting that displaced people should be paid to leave camps. These proposals were dropped due to protection concerns as it would be impossible to verify if the families had found a durable solution. However, interest in properly planned rental support cash grants grew and presentations were made to donors to encourage adopting the approach.

Men nan men ak pwojè 16/6 gouvènman Ayisyen an

ISTWA : MIKE CHARLES • DESEN : CHEVELIN ILLUSTRATION



An edition of Chimen Lakay, a graphic newspaper, featuring the 16/6 program and a newly cleared market place. Designed by: Chevelin Pierre, Script: Mike Charles.

Neighbourhood approach

Rental support was closely combined with the neighbourhood approach to reconstruction.

The concept of the neighbourhood approach is that projects such as rubble clearance, rebuilding, water, sanitation and livelihoods programming should be joined together across sectors and that agencies create a coordinated and efficient response supporting families to move from camp to community. As of December 2012, this goal had not been fully realized, but efforts were being made to take a more holistic approach.

This approach minimises the possibility of families “rebounding” back into camps. For example, “rebounding” could be caused by a lack of employment opportunities or extremely poor sanitation standards in the neighbourhoods to which people return.

The 16/6 program

The 16/6 program, led by the Haitian government, targeted income regeneration in sixteen neighbourhoods coupled with the closure of six camps.

The programme focus on neighbourhoods meant that livelihoods grants were not allocated to families leaving the camps. Instead, a targeted livelihoods program was implemented, aimed at support-

ing neighbourhood businesses to start-up or expand in order to offer those returning real income generation opportunities. The grants were available to anyone with a business idea and not restricted to those returning from camps.

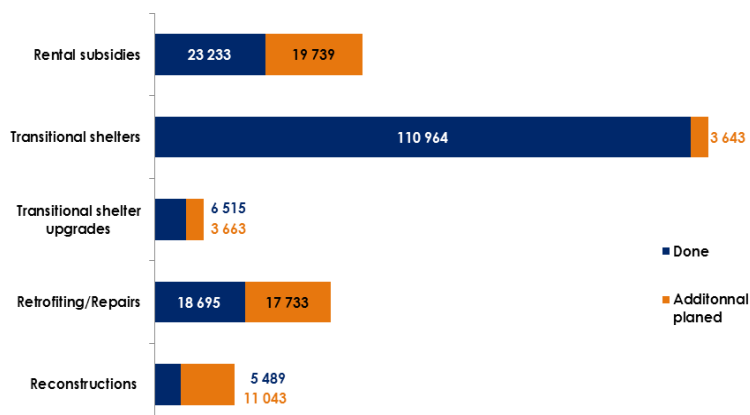
The 16/6 programme relied heavily on the use of rental support cash grants to offer all families living in camps a realistic housing option.

Rental support

Rental support projects differed between agencies but largely followed the same pattern:

- **Registration:** Emphasis on obtaining accurate beneficiary lists through other health or distribution activities, in collaboration with Haitian authorities

- **Protection and assistance:** Identification of vulnerable families who qualify for additional help
- **Beneficiary communication:** Facilitation of informed choices by beneficiaries using wide range of multi-media and face-to-face communications
- **Choosing a housing option:** Either T-Shelter, Yellow-house repair or rental support cash grant
- **Choosing a rental property:** Family chooses a property (independently assessed for safety) and negotiates the rent
- **Cash grant transferred:** The year’s rental cost of US\$ 500 is transferred directly to the landlord and the family receives the money left over



Graph to show completed and planned housing solutions, November 2012
Source : E-Shelter and CCCM Cluster

- **Camp closure:** Families are given a US\$ 25 cash grant to help in transporting their possessions to their new home
- **Surprise visit:** Agency awards a US\$ 125 bonus to families continuing to live in their chosen rental accommodation following a surprise visit made a few months later.

In addition to the US\$ 650 grant costs, the relocation of one household incurred an additional US\$ 350 in programming costs, making a total cost of the return of one household rise to around US\$ 1,000. Programming costs include beneficiary registration, communication of activities and protection activities such as providing two-years rental for vulnerable families.

In comparison, a T-shelter costs around US\$ 2,000 and a permanent house around US\$ 6,000.

Concerns and safeguards

There have been vigorous discussions around the appropriateness of a rental support approach as a durable solution.

Some of the key concerns and corresponding safeguards were:

- **Cash distributions can act as a pull-factor to camps:** Announcements about rental support programs were made publicly only after accurate beneficiary lists were made. Negligible pull-factors were noted.
- **Rental properties may not meet minimum standards:** All rental properties were assessed for safety and sanitation issues. The emphasis was therefore on moving people out of the much worse conditions in camps.
- **Cash grants would inflate rents:** Rents were monitored by organisations using the prices agreed between families and landlords. Rents had not risen by the end of 2012.

Indicators

The rental support approach shows the following early indicators of success:



The ruined National Palace surrounded by shelters before the Champ de Mars camp closure.

Photo: IOM



The ruined National Palace after the Champ de Mars camp closure.

Photo: IOM

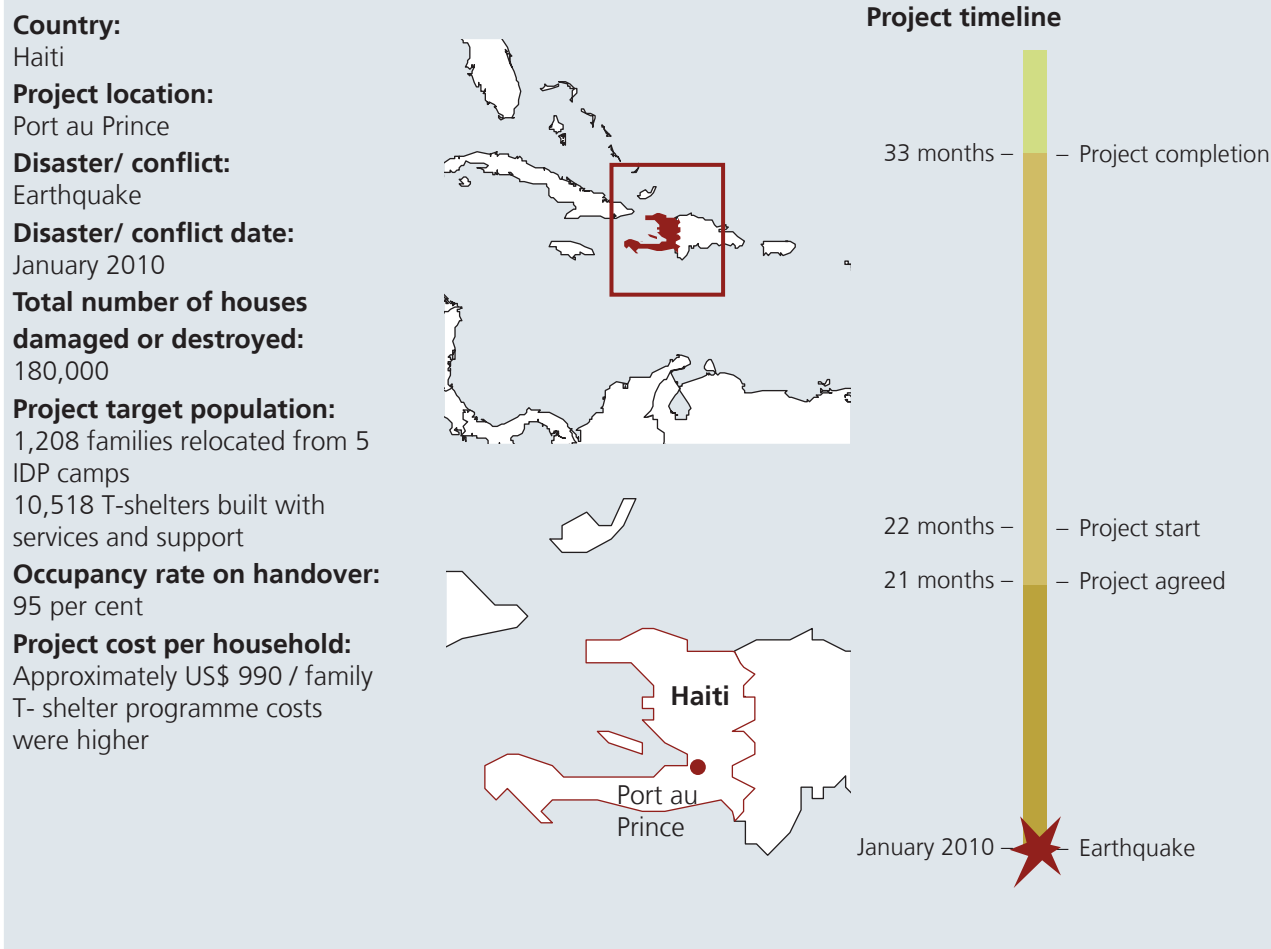
- A survey of households who rented for one year achieved a 90 per cent response rate. Out of those households responding, all had found their own housing solutions and none had been forced to return to camps or informal settlements.
- Nearly 100 per cent of respondents reported that their situation is better or much better than it was in camps.
- 77 per cent of landlords used two-thirds of the rent money to improve the standards of the properties that they were renting out.

Lessons

- Rental support could have been implemented earlier if it had been considered or picked up by other donors.
- Better links to livelihoods programmes could be made to further support families to continue to cover rental costs themselves in the future.
- The neighbourhood approach offers more chances for better coordination between sectors and organisations as well as between emergency and development actors.
- The approach has been popular with the general public, particularly as it emphasises beneficiaries' rights to actively choose where to live. Haitian politicians have been keen to promote and be involved in rental support programs.

A.11 Haiti – 2010 – Earthquake

Case Study: **Keywords:** Returns, Unplanned camps, Urban neighbourhoods, T-shelter, Rental support, Housing repair, Cash, Training.



Project description

The project offered several service packages, including rental assistance, transitional shelter construction and repairs to damaged homes, to incentivise families to leave camps and find suitable housing solutions. Central to this project were life skills training, household livelihood planning, temporary health insurance and psychosocial services. Over one year, the project closed all five camps that were targeted and helped more than 1,200 families resettle.

Strengths and weaknesses

- ✓ The organisation fully achieved its target of closing five camps.
- ✓ Life-skills training was delivered in time to prepare families for their resettlement.
- ✓ Effective mechanisms to prevent fraud and to minimise inflation of rent prices.
- ✓ Participants were given a choice in their resettlement option.
- ✓ Good mechanisms for preventing programme abuse and to reduce the chance of housing price inflation.
- ✓ Use of mechanisms such as a hotline improved the organisations accountability.
- ✓ Strong support from local government.
- ✗ Some landlords canceled contracts due to the organisation making late payments.
- ✗ Personnel costs were comparatively high due to the large number of staff required to provide a personal

service to families.

- ✗ Early beneficiaries could have been better prepared for the risks of receiving cash.
- ✗ Staff safety was a serious concern due to the challenging sites chosen (site selection based on level of need rather than ease of implementation).
- ✗ With a large part of camp residents making a living from small commerce, there was an opportunity to work with IDPs before they relocated to improve their small commerce activities. This component was not added until the second phase of the project.
 - The rental subsidy lasted one year which gave the family time to save and plan for their future and recover from living in a camp for two years.
 - Despite early scepticism from many humanitarian staff, rental subsidy programmes did not noticeably lead to rental price inflation.



The project offered various options, including cash for rent, and provided additional support to help close camps. Photo: Jack Reybold (CRS)

Background

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

The organisation created the Ann Ale Lakay project (meaning “Let’s go home” in Haitian Creole) in September 2011. The project aimed to support families remaining in camps to leave those camps. The project was a response to the fact that pull factors alone (the setting up of services in return neighbourhoods) were not sufficient to get families to relocate.

The project began as a 6-month, US\$ 600,000 pilot project to close three camps (460 families). It was extended for six more months to close an additional two camps.

The project was aligned with the Haitian government’s “16/6” programme. This programme aimed at closing six camps and rehabilitating sixteen return neighbourhoods.

Selection

The five camps were chosen in coordination with other actors and had been identified as priority sites for closure. Some camp dwellers were “renting” tents from those who have moved out of the camp. The organisation ensured that these families, rather than the tent “owners”, received project services by conducting a “surprise census” to ensure that the genuine residents were registered. Beneficiaries were

given photo ID cards to prevent further disputes.

Coordination

In line with government strategy, the project offered a standardized package of resettlement options. The goal was for all agencies engaging in camp closure projects to operate using a standard approach, as this prevented families from refusing the services of one organisation in the hope of receiving a better deal from another.

“With the conflict resolution [training], I can find solutions to all my other problems”

Project beneficiary

Implementation

The project offered households three choices: one year’s rental subsidy, construction of a transitional shelter or support to repair a damaged house.

Of the 1,205 families supported, 98 per cent chose to take the one-year rental subsidy and 2 per cent chose to receive a t-shelter.

As few of the families living in the camps had owned a house before the earthquake, there were no housing repair services requested.

Most families moved to houses in neighbourhoods near the camps, while others moved to areas with more open spaces such as Carrefour and Croix des Bouquets.

The rental subsidy was worth US\$ 500 and if the family could negotiate a lower price with a landlord they were able to “keep the change”. For example, if they find a place for US\$ 400, they could keep US\$ 100. This helped prevent rent price inflation as project participants had an incentive to negotiate the best deal possible

Although the housing market in Haiti had not even begun to recover, it was flexible enough to absorb more people capable of paying rent.

Around 60 per cent of the people receiving rental subsidies found accommodation for less than US\$ 500. The median rental price was US\$ 375. In informal interviews, the majority of beneficiaries reported using the remaining funds from the rental subsidy to support their activities in small commerce, such as purchasing a small quantity of goods for resale.

There was a risk that people would be harassed and pressured to give the money to groups such as the police and the camp committee. As a result the money was transferred directly to the landlord



Life skills trainings were an essential component of the project, preparing residents for life outside the camps. Photos: Nathan Jayne



Camps were slowly turning into permanent shanty towns and many had poor sanitary conditions. Photos: Nathan Jayne

via a money transfer service. The remainder was transferred to the head of the household via a mobile phone base transfer system.

Some tent “owners” pressured the “renters” to share the leftover money from the rental. In later phases of the project, it was suggested that everyone should keep information to themselves on whether or not they received leftover money. It was suggested that renters immediately moved out of the camp, and that they should not share their address with the tent “owner”.

The project team had 19 people: an international programme manager, a project manager, two project officers, a monitoring and evaluation officer, two psychologists and twelve social workers.

Accountability

The organisation took some specific steps to provide accountability to service recipients, including setting up:

- notice boards in all communities with information about the organisation and the project
- a free telephone hotline to deal with any questions
- regular community meetings – for information dissemination and feedback to the organisation
- contracts with Beneficiaries, outlining mutual responsibilities
- posters and trainings for all project staff on the

- organisation’s Code of Conduct
- field teams based within the camps
- an official, organisation-wide accountability framework.

Protection

Protection issues were dealt with in different ways:

- Training included a family communication and conflict-management module, which focused on positive ways to solve problems (including disciplining children) without resorting to physical punishment.
- Social workers checked the safety and adequacy of all houses before families moved in. The families who chose to receive rental support were not allowed to choose houses marked as damaged, nor homes located in or along a ravine.
- The municipality signed all rental agreements to give the

contracts greater legal weight in favour of the family. The aim was that this would help to prevent evictions and reinforce the government’s leadership in this project.

Trainings

Cash transfers were accompanied by a life-skills training module. According to participant interviews and focus groups, this training was crucial to the success of the project.

These six-module trainings prepared camp residents with life skills they would need for a successful transition. To help people develop a sense of responsibility for their future, families developed a “family plan”, a personal road map for resettlement and recovery. The plan not only helped families think about their goals for the future but also helped them plan for potential setbacks.

Summary of Training modules

Module	Details
Family communication	Interpersonal skill development and conflict resolution
Personal responsibility and problem solving	Role within the country of Haiti, larger community, neighborhood and family
Prioritising needs, planning for the future	Helps families to identify needs and create a family plan.
Financial planning	Banks, savings, lending options, health and other insurance, negotiation
Small business management	Key concepts to improve the profitability of a small business

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:

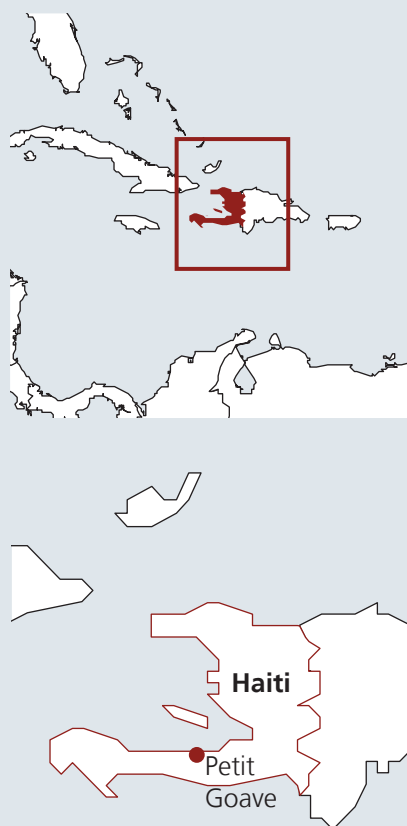
US\$ 3,190 (Including US\$ 740 local contribution)

US\$ 1,000 (including US\$ 300 local contribution) for repairs

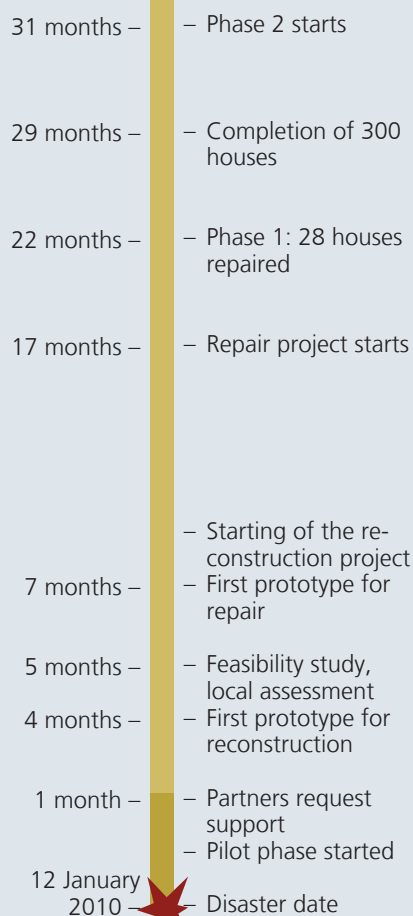
Project cost per household:

US\$ 4,000 reconstruction

US\$ 2,000 for repairs



Project timeline



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

households 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.

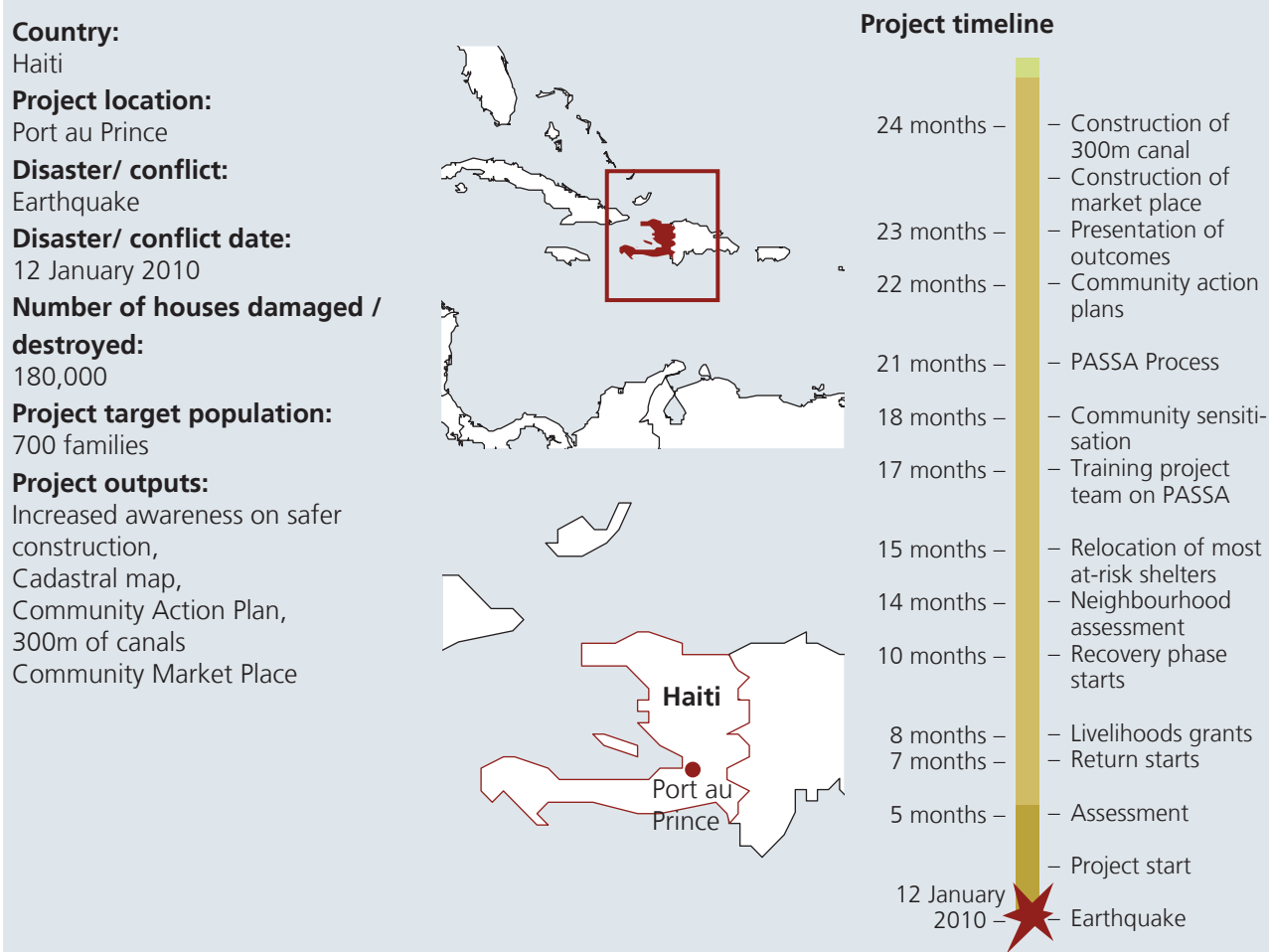
Other organisations have adopted this project approach and are conducting their own trainings in other areas.

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

A.13 Haiti – 2010 – Earthquake

Case study: **Keywords:** Returns, Unplanned camps, Urban neighbourhoods, Infrastructure, Community engagement



Project description

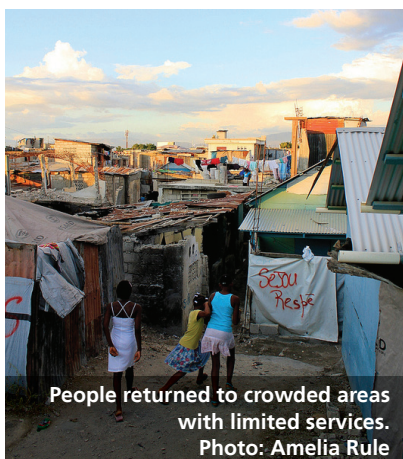
The organisation used the Participatory Approach for Safe Shelter Awareness (PASSA) process to support the community make the transition to neighbourhood recovery. A range of participatory activities were carried out to decide both a comprehensive community plan for reconstruction, and a detailed list of related programme activities by the organisation. The identification of problems and solutions enabled the community to make plans for their own long-term recovery activities.

Strengths and weaknesses

- ✓ A participatory planning approach promoted a high level of engagement by the community which led to a programme that responded to people's self-determined needs.
- ✓ The process empowered and gave a voice to members of the community who are not often heard.
- ✓ The plans that were developed cut across a number of different sectors which resulted in an integrated approach to settlement planning.
- ✓ The project built on relations with camp residents early in the response to support recovery.
- ✓ Enabled the community to directly act in their neighbourhood to improve their quality of life.
- ✗ PASSA was not used in the first year of the response leading to delays in the recovery planning.
- ✗ Participatory tools are only the first step for reconstruction. Additional training, planning and

technical skills are required for safer construction.

- ✗ More time was needed to explain that participatory tools only informed planning, and expectations for concrete results needed to be managed.
 - PASSA was developed in rural contexts, the focus on 'shelter' needed to be adapted to 'habitat' to encompass the infrastructural and social aspects of living in an urban context.
 - "PASSA" can be carried out simultaneously with other assessment techniques.
 - GIS mapping was essential to monitor progress.
 - Considerable time is required to plan the participatory process and analyse the information from workshops.
 - Local terms needed to be used to ensure a full understanding of issues.
 - Participatory tools developed for rural contexts can be adapted for urban contexts.



People returned to crowded areas with limited services.
Photo: Amelia Rule



The organisation used a PASSA process: residents identified their own problems and the actions needed to address them.
Photo: Mandy George

Before the earthquake

After land was reclaimed from the marshes in the 1980s, an informal settlement developed in Delmas 19, Port au Prince. The houses were self-built structures made with poor-quality materials such as concrete blocks, corrugated iron and wood, and constructed with little knowledge of safe building techniques.

Infrastructure was poor with limited water and sanitation services, and the site was badly drained with limited access.

After the earthquake

The earthquake destroyed half of the houses in the settlement and damaged half of the remaining structures. The main drainage canal was also damaged and blocked by rubble and debris.

Many water reservoirs belonging to individual households and commercial suppliers were damaged and pit latrines were inaccessible or broken. There were more than 100 families, with only one public latrine, living in makeshift shelters.

Selection of beneficiaries

Following the earthquake the organisation provided emergency assistance in the targeted camp, and identified the clear need for joint livelihoods and shelter support.

In June 2010, the private landowner offered US\$ 200 to families to leave the site. Consequently two-thirds of the camp population relocated. The majority were from the adjoining neighbourhood, and the organisation followed them as they returned home to de-

molished houses, makeshift shelters and a lack of services.

The groups with the highest shelter vulnerability were renters and those who lived next to the canal on land that could be reclaimed by local authorities. Those facing possible eviction had a broad range of backgrounds in terms of education levels, livelihood strategies and home ownership.

Direct support was given to specific households based on vulnerability assessments developed with the community, while the whole community benefited from improvements to site drainage and public spaces such as the market.

Implementation

The participatory process began with an explanation to participants of how a detailed planning process would result in the best solutions for reconstruction. The coordination of different sectoral projects, such as solving drainage issues before providing shelter solutions, achieved a joint approach to settlement rehabilitation.

The organisation used the "**Participatory Approach for Safe Shelter Awareness**" (or **PASSA** see - *PASSA, Participatory Approach for Safe Shelter Awareness, IFRC 2011*). PASSA was a relatively new, and formally structured approach to participation in shelter projects. It was based on a tool commonly used in WASH programming.

The PASSA process involves working with a group of 40 representative people. This group was selected by the community and did

not include the existing committee members. However, all activities were carried out in coordination with the committee members.

PASSA comprised eight participatory activities, which were carried out over two to three months:

1. historical profile and everyday problems
2. community mapping and visit
3. frequency and impact of hazards
4. safe and unsafe habitat
5. options for solutions
6. planning for change
7. problem box (future planning)
8. monitoring plan (future planning)

After each activity, the group shared their work with family and neighbours to encourage understanding of the process across the community.

At the end of the process, all the work, findings and plans were shared firstly with the committee members for feedback and input, and secondly presented to the whole community at an open day held in the community centre. The PASSA group members shared what they had done and received their participation certificates.

The main problems faced by the community were:

- weak infrastructure and flooding
- public health, water, sanitation and waste management issues
- safe access routes and personal safety
- unsafe shelter and settlement.



Both the market (left) and the path (right) were identified needs and both were built by residents with the support of the organisation. Photo: Amelia Rule

The identified solutions were to:

- construct the canal
- install solar street lighting
- construct shared latrines
- improve waste management
- improve housing and planning
- improve technical expertise through supervision and training.

Community projects

Planning for change started with mapping the issues in the neighbourhood and understanding their relationships. This enabled the community to take into account issues, including gender, protection and security. Once the issues had been identified the groups discussed each problem in turn.

Working groups, called 'cells', took on each subject and carried out further work, before creating an overall Plan of Action.

A security cell positioned solar lighting while a community waste management group cleared waste.

Community contracts were written for people from the neighbourhood to build the canal. This employed over 300 people.

Materials and technical supervision were provided by the organisation and fifteen shared latrines were constructed by the families themselves.

Community construction teams that had received training before working on the canal also built the market.

All of these activities started with awareness raising and engage-

ment with relevant authorities. The projects also aimed to improve skills for the housing construction and repairs which would follow.

Challenges with PASSA

The community had raised expectations about what PASSA could provide. They thought they would immediately receive the solutions they identified. The facilitators spent a lot of time explaining that the participatory approach would help to identify priorities and the solutions that the community themselves could achieve. It would also analyse where support was needed from the organisation and the local authorities.

The PASSA tool was developed in a rural context with a specific focus on 'Shelter'. As a result, some limitations were found using the tool in an urban context and within an integrated approach. The team adapted the activities to take into account the wider issues of infrastructure, water sanitation, urban issues such as spatial planning and security problems.

DRR components

The area was suffering from poor drainage, poor waste management, poor housing construction and poor infrastructure. All these aspects made the population vulnerable to flooding, the effects of hurricanes, outbreaks of disease and earthquake risks.

PASSA raised understanding of how risks to health and safety were caused not only by natural disasters but also by the everyday practices of the community.

Poor waste management and lack of upkeep of the canal lead to serious blockages and subsequent flooding of low-lying houses with waste and sewage.

To mitigate against these problems the PASSA process helped participants to identify simple actions that they could conduct. These included improved construction and environmental management, and how to prepare, plan and respond to a natural disaster.

Technical solutions

When provided with the materials and technical support necessary to carry out the reconstruction the PASSA process had ensured that the community was highly motivated.

At the end of 2012, Haiti had no official building codes and material standards were not enforced. The general level of understanding by architects and builders of seismic construction techniques was limited. A great deal of time was spent with engineers, seismic specialists and construction professionals to ensure that the shelter solutions were safe and that the community understood the reason behind the application of new techniques.

This knowledge was transferred outside of the participatory planning sessions, delivered instead through on-site practical training sessions.



Participatory Approach for Safe Shelter Awareness (PASSA) is a participatory method of disaster risk reduction (DRR) related to shelter safety. It is a variation of Participatory Hygiene and Sanitation Transformation (PHAST), which has been used by many Red Cross Red Crescent National Societies in water and sanitation programmes since the late 1990s.

The aim of PASSA is to develop local capacity to reduce shelter related risk by raising awareness and developing skills in joint analysis, learning and decision-making at community level.

PASSA is a process, facilitated by volunteers, that guides community groups (called PASSA groups in this manual) through eight participatory activities which enable the participants to do the following progressively:

- Develop their awareness of shelter safety issues in their community
- Identify hazards and vulnerabilities that create risk related to shelter
- Recognize and analyse causes of shelter vulnerability
- Identify and prioritize potential strategies to improve shelter safety
- Make a plan to put those shelter safety strategies into place, based on local capacities
- Monitor and evaluate progress.

Source *PASSA, Participatory Approach for Safe Shelter Awareness, IFRC 2011*



“PASSA helped us to see that many problems in our area are not complicated to fix, they are small things that can have a large negative impact – such as the rubbish blocking the canal and causing flooding.”

PASSA participant
Delmas 19

Defining the community:

In this complex urban context, the community was defined by: housing typologies, level of poverty, physical boundaries of roads (making the area a pedestrian community), a representative committee and the familial and neighbourly networks that were already in place.

Drainage was identified as a key safety issue. 300m of drains were cleared and covered to make a path.
Photos: Amelia Rule

A.6 Haiti – 2012 – Hurricane Sandy

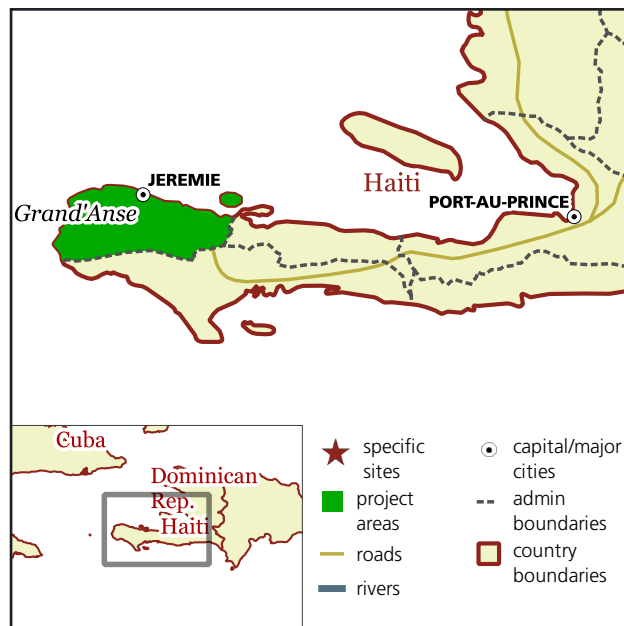
Case study

Keywords: Housing repair and retrofitting; Cash / vouchers; Training; Structural assessment.

- Emergency:** Hurricane Sandy, Haiti.
Date: 23-26 October 2012.
Damage: 6,666 houses destroyed, 24,348 damaged, and 9,352 flooded.
People affected: 195,300 affected, 20,000 evacuated, 2,298 homeless.
Project location: Grand'Anse Department.
Beneficiaries: 1,700 households (8,500 people).
Outputs: 100 new houses, 414 houses repaired. Over 1,000 households received cash for NFIs and DRR training. Around 84% were completed within the project timeframe.
Occupancy rate: 89% of completed new houses and 100% of completed repaired houses.
Shelter size: Varied: model houses = 20-30m², beneficiary houses = 16-40m².
Cost: US\$ 2,050 cash grant for new construction, or US\$ 750 for repair. Beneficiaries also made their own contributions.

Project description:

Following an initial emergency response, the project distributed conditional cash grants and technical supervision to support beneficiaries in the construction or repair of houses. Builders were trained in Improved Vernacular Construction (IVC) techniques, using local materials.



Emergency timeline:

[a] October 2012: Hurricane Sandy hits.

Project timeline (number of months):

- [1-2]** November 2012: First phase planning.
[2-4] First implementation phase (emergency distribution).
[4-18] Second phase planning and implementation.
[9] Vernacular construction training begins.
[10] First model house completed.
[11] First cash instalment.
[14] Second cash instalment.
[15] First repaired house completed.
[16] First new house completed.
[19] May 2014: Project ends, some repairs not complete.



Strengths

- ✓ Existing local knowledge on safer construction was improved, with the new techniques replicated by non-beneficiaries.
- ✓ Multiple model houses were adapted to the different environmental and cultural contexts in the area, reflecting the materials locally available.
- ✓ Beneficiaries were empowered to take ownership of the project by managing the construction process themselves.
- ✓ The project integrated DRR, Shelter and WASH programming.

Weaknesses

- ✗ Limited availability of qualified technical project staff made for a lengthy recruitment process.
- ✗ The integration between Shelter and WASH teams could have been improved, with joint-planning and

joint training to enable both teams to better supervise the beneficiaries' work.

- ✗ The close work with the community required investment of staff numbers beyond the means of the project budget.
- ✗ A complete market assessment was not carried out at the beginning of the project and subsequent shortages of materials caused some delays.
- ✗ Although transport costs were factored in to the grants, some beneficiaries preferred to buy lower quality, locally available materials which did not need to be transported.

Observations

- Some of the beneficiaries in the repair category managed to build a new house, salvaging materials from the old one.



Left: Beneficiaries chose the materials they were most familiar with for walling. Centre and Right: Model houses from Anse D'Hainault and Corail. The houses were designed to reflect the traditional architecture of the local area.

Photos: Blanca Sancho Moreno

Situation before the disaster

People were living in rural areas and the majority of houses in the affected areas were poorly constructed with low-quality materials, reflecting both the level of poverty and lack of technical knowledge.

The location of many of these houses in areas prone to strong winds and flooding magnified the risks posed by the sub-standard housing construction.

Situation after the disaster

In the aftermath of the disaster some households were hosted by family or friends, some were evacuated to emergency shelters and some stayed in their damaged houses. Many families had lost their livelihoods.

Shelter strategy

Following the 2010 earthquake in Haiti, there was plenty of good practice to draw from in project planning. However, as Grand'Anse Department had not really been affected by the earthquake, most agencies were not operative in the area and few intervened after Sandy hit. The disaster attracted a limited response from donors.

No coordination strategy was officially activated and the Shelter and CCCM Cluster in Haiti did not dedicate a working group to the Sandy response.

Guidelines for response did exist in the form of a best-practice manual published by the Unité de Construction de Logements et de Bâtiments Publics in 2010, but these rarely

referred to local building technologies or vernacular materials.

Project implementation

Emergency phase

Any family whose house had been completely destroyed or severely damaged was given an unconditional cash grant of US\$ 100, paid through a money transfer company. This intervention was completed within four months of the disaster and involved 761 families.

The households mainly used the money to buy food and non-food items or to replace household livelihood assets as well as paying school fees for their children or buying materials to rebuild their houses.

Recovery phase

After the initial beneficiary registration, verification visits were conducted to the families to assess the damage to the house.

Three categories of assistance were provided:

- Category 1: House destroyed. Conditional cash grant of US\$2,050 to rebuild the house and latrine (100 households).
- Category 2: House damaged, vulnerable household. Conditional cash grant of US\$750 to rebuild the house and latrine (414 households).
- Category 3: House damaged, household does not meet vulnerability criteria. Unconditional cash grant of US\$ 100 (1,186 households).

The third category was added to the project plan based on the findings of the assessment.

Some of the beneficiaries claimed that the grant was too small, but most completed their houses with the grants.

A training programme for masons and carpenters was established, whilst beneficiaries received key sensitisation messages.

Construction

Beneficiaries were given the responsibility for managing the construction process, with technical support from the organisation through the lifetime of the project. This method was difficult for some beneficiaries to accept initially, since a great deal of humanitarian assistance in Haiti has been implemented directly by aid organisations.

Motivating beneficiaries was one of the biggest challenges, as it required a great deal of staff input and energy, and breaking a long-term culture of dependency was not always possible.

After ten months, the training of carpenters and masons was complete, and beneficiaries were encouraged, but not obliged, to hire a builder from the approved list. The design of the house was up to the family, but they had to observe the implementation of improved construction techniques.

Cash was paid in two instalments. The first instalment (approximately 40%) was paid upon signing the agreement. The second instalment was paid upon verification of the first phase of works by the project's technical team. For Category 1 this meant completing the foundation

and structure, while Category 2 repair phases were defined on a case-by-case basis.

Cash was transferred through a money transfer company. The beneficiary list with mobile phone contact numbers was given to the company who sent an SMS with a code to the beneficiary which was then used to collect the money from an authorised distributor. In areas where there was no network, or a beneficiary did not have access to a phone, community mobilisers gave the code directly to the beneficiary.

Beneficiary selection

Two assessments were made. The emergency assessment identified 761 households with damaged or destroyed houses who needed immediate support.

A second, more detailed assessment resulted in 1,700 households being allocated to the three different categories of assistance. Households were selected against vulnerability criteria with an emphasis on female-headed households, physically handicapped persons, and elderly persons living alone.

In order to participate in the project, beneficiaries had to provide the organisation with proof of property and land ownership, and sign an agreement with the organisation detailing the conditions of how the grant was to be used.

A small number of beneficiaries were unable to produce ID cards, but this was mostly resolved on a case-by-case basis with the local authorities and other family members. In cases where no solution could be found and the agreement could not be signed, the Category 3 US\$ 100 was awarded instead.

Some beneficiaries were unable to find a plot of land in a safe area and others did not wish to move. The organisation conducted a significant amount of advocacy to explain the dangers of staying in high-risk areas, but ultimately the beneficiary had the final decision.

Coordination

The project benefitted from a Memorandum of Understanding between the implementing



Construction of latrines (on the left) was integrated into the project.
Photo: Blanca Sancho Moreno

organisation, and a technical partner organisation which provided both technical expertise and training.

Technical solutions

Improved construction techniques were based on existing local traditional techniques with new disaster-resistant features.

Traditional local houses were built on wooden posts dug directly into the ground, which quickly rotted, weakening the structure. The new design introduced a proper foundation of cement and stones and added cross-bracing to the walls.

Diverse ways to strengthen the joints between the different structural elements were also introduced, or adapted from current local best practices.

To resist high winds, houses were built with four roof slopes, using corrugated iron sheets or straw.

Disaster Risk Reduction (DRR)

DRR was integrated into the project through the plot selection process, and through training and sensitisation on safe construction.

The technical partner provided the first Improved Vernacular

Construction (IVC) training, based on a detailed assessment of local construction techniques and included topics such as the selection of safe sites, basic architectural and construction principles, and the properties of local materials.

Ten carpenters and masons were trained as facilitators, who in turn trained 130 builders (five of them women). The training involved the building of twelve different model houses, all of which were adapted to the specific contexts of the area they were built in.

In order to reach the wider population and other NGOs, a one-day practical workshop in IVC techniques was facilitated by the technical partner.

The DRR sensitisation received by Category 1 and 2 families was more detailed than for Category 3 households, as the first two groups received a greater number of direct visits from community mobilisers.

Some Category 2 repairs were of poor quality, mostly due to a lack of motivation on the part of the beneficiaries.

Wider project impacts

Some families that did not receive direct assistance have begun to replicate the construction techniques used in the project. Some of the carpenters and masons trained by the project, advocate for their customers to implement the IVC techniques.

“I did not understand why I had to buy the materials and hire the masons or why the organization was not building the house for me. But when I finished the house by myself, I knew that I was able to do things that I never thought I could.”

Beneficiary



This booklet is a compilation of case studies of humanitarian shelter responses in Haiti compiled across the seven past editions of the interagency publication Shelter Projects.

The projects described in the case studies and overviews contained in this booklet represent responses to natural disasters in Haiti, implemented by national and international organizations, as well as host governments, and demonstrating some of the implementation and response options available.

The publication is intended to support learning by highlighting the strengths, weaknesses and some of the lessons that can be learned from different projects, which try to maximize emergency funds to safeguard the health, security and dignity of affected people, whilst – wherever possible – supporting longer-term shelter needs and sustainable recovery.

The target audience is humanitarian managers and shelter programme staff from local, national and international organizations at all levels of experience. Shelter Projects is also a useful resource for advocacy purposes, showcasing the work done by the sector, as well as for research and capacity-building activities.

All case studies and overviews contained in this booklet, as well as from all editions of Shelter Projects, can be found online at:

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Global Shelter Cluster
ShelterCluster.org
Coordinating Humanitarian Shelter