A woman in a light-colored short-sleeved shirt and a long blue skirt is leaning over a large, shallow metal tub, washing clothes. She is in a narrow, cluttered outdoor space between makeshift buildings. The buildings have walls made of concrete blocks, corrugated metal, and wood. Clothes are hanging on lines in the background. In the foreground, there are several large metal tubs, some stacked on tires, and a green plastic tub with more clothes. The ground is muddy and uneven.

IASC Emergency Shelter Cluster

# SHELTER PROJECTS 2008

UN  HABITAT

 **UNHCR**  
The UN Refugee Agency



International Federation  
of Red Cross and Red Crescent Societies

## Foreword

### Shelter Options 2008

Much has been written over the years about the challenge of providing shelter for households affected by crises, whether they are human-made or result from natural events. In spite of the many reports commissioned by governments, donors, independent experts, multilateral and international aid organizations that provide a variety of recommendations on issues ranging from design to cost analysis methods, shelter remains one of the most controversial and challenging components of sustainable recovery from disasters.

In recent years, the humanitarian community has looked inward, learning from their past experiences in providing emergency shelter for the ever-increasing number of populations suffering from crises worldwide. The humanitarian reform process has helped widen the community of practitioners, reinforced global and country-based coordination systems, and required the agencies concerned to seek new and better means of ensuring integrated and robust humanitarian programming.

This publication is an example of a series of learning tools being produced to support improved response to crises. It has been developed by the Emergency Shelter Cluster through a group of agencies within the cluster led by UN-HABITAT. It contains summaries of a range of experiences applied in crisis situations, and an honest appraisal of their successes and failures. From these, a number of key principles emerge.

One key principle is that the survivors of these crises must be given every opportunity to engage in their own recovery. Disaster-affected households should no longer be treated as liabilities. This has significant implications on recommended approaches to post-disaster shelter and settlement responses, several of which are well illustrated in the case studies in this publication.

A second principle is that without immediate strategic planning covering land use, tenure, livelihoods and critical services, in addition to shelter options, there is a danger that temporary solutions become, de facto, permanent ones. As well as failing to address the risks and vulnerabilities that may have contributed to the scale of the crisis, poor or inadequate programmatic responses can increase shelter and settlement vulnerabilities. A number of the case studies illustrate these considerations.

A third principle follows from the above – that is, all change demands social mobilization, the involvement of the affected population and the appropriate local authorities, and legal compliance. Immediate shelter solutions *must* therefore consider long-term settlement issues, both for temporarily displaced populations and those who are able to return to the location of their damaged or destroyed shelters. The cultural, social and economic norms of the specific disaster-affected societies must be reflected in shelter and settlement responses that may potentially become durable, rather than transient, in nature. Non-tent based emergency shelter solutions that are rapid and cost effective can also be culturally acceptable to the populations they are designed for, in both the short term and over a longer period of recovery. This publication highlights a number of such examples.

A final principle follows from the three outlined above. Putting people (survivors and victims) first, planning and programming in advance, considering the potential of longer term solutions, and finally, creating space to address land and property-based losses following a crisis, all contribute to reducing demand on humanitarian capital while maximizing potential opportunities for recovery.

There are many more lessons in this book that will be of benefit to the reader. On behalf of our agencies, and in collaboration with our interagency partners from the Emergency Shelter Cluster, we encourage the study and widespread use of these lessons.



## Acknowledgments

**Project coordinated by** UN-HABITAT on behalf of the Emergency Shelter Cluster: Esteban Leon, Joseph Ashmore

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**Editorial support:** Seki Hirano

**Special thanks:** The authors would like to give special thanks to the following people for providing case study information, editing drafts, and for providing the photographs:

Hassan Abdalla, Subhan Ahmadov, Eddie Argenal, Dyfed Aubrey, Lizzie Babister, Eric Baranick, Rick Bauer, Isaac Boyd, Joana Cameira, Michelle Carter, Chris Cattaway, John Flomo, Tom Corsellis, Milton Funes, Valle Galan, Catherine-Lune Grayson, Jens Grimm, Anamul Haque, John Howard, Cynthia Jones, Yasmin Keith-Krelik, Peter Krouwel, Unni Lange, Mark Lawler, Dan Lewis, Manoucher Lolachi, Julia Macro, LeGrand Lee Malany, Bill Marsden, Tom McKnight, Jelena Milosevic, Douglas Osmond, Paul Neale, Nicole Poirier, Anna Pont, Albert Reichert, Adelmo Risi, David Sanderson, Qurat Sadozai, Graham Saunders, Hassan Noor Saadi, Anna Maria Sellari, Charles Setchell, Thierry Schweitzer, Alister Shields, Jo Da Silva, Joana Sousa, Mikael Adri Budi Sulisty, Wondwossen Teffera, Ombretta Tempra, Kim Williamson, Matthias Wohlfeil, Jake Zarins.

Additional thanks to the Cuny Center in Washington DC, USA for allowing access to the documents that have provided the case studies in Section D.

A final thanks to all of the field staff who have worked so hard to make all of these projects possible.

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# Introduction

The case studies in this book are of real shelter projects that have been implemented. Each project is specific to an individual context and is the outcome of local assessments and monitoring.

**None of the case studies in this book should be directly copied.**

Because these projects were implemented in diverse and often challenging conditions, they illustrate both good and bad practices. From every case study there are lessons that should be learned, and aspects that should be repeated or avoided elsewhere.

## Global shelter need

It is estimated that over 5 million people were made homeless by conflict and natural disasters in 2007<sup>1</sup>. This corresponds to approximately 1 million families. While the largest proportion of people made homeless by conflict are in Africa and the Middle East, the majority of those made homeless by natural disasters are in Asia. Although the numbers of people displaced by conflict and natural disasters over the past ten years run into the several millions, they are significantly lower in Latin America and the Caribbean than in Africa, the Middle East and Asia.

**There are approximately 40 million refugees and internally displaced people in the world - people who have been forced to leave their homes...**

While the number of people made newly homeless in 2007 was in excess of 5 million, a significant proportion of people are not able to return to their place of origin for many years. As a result, the total number of people displaced in the world has remained roughly constant at approximately 15 million refugees<sup>2</sup> and a further 25 million internally displaced people (IDPs)<sup>3</sup>.

## IDP estimates by region (2007)

Region	Number of countries	IDPs (millions)
Africa	20	12.7
Americas	4	4.2
Asia and Middle East	18	6.6
Europe	10	2.5
Total	52	26

## Estimated number of people made homeless by natural disasters (other than drought) 2000-2008<sup>4</sup>

Region	Number of homeless (in millions)
Africa	2
Asia	20
Latin America and Caribbean (LAC)	1.5
Europe	0.1
North America	0.1

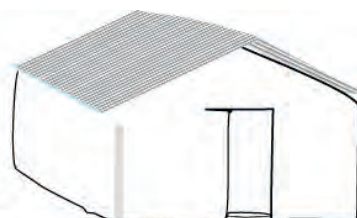
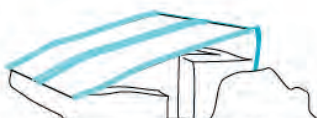
## Selection of case studies

Given the scale of emergency shelter need every year, the case studies in this book focus on implemented projects rather than small-scale trials or concepts that were not implemented on any scale. There is also a regional bias towards Africa and Asia, where the post-disaster and post-conflict shelter needs are largest.

The case studies were selected according to the following criteria:

- The shelter project had to have been implemented in full.
- A minimum of 500 families were sheltered by the project's activities.
- The project was implemented largely within the first year following a natural disaster. For conflict-affected populations, chronic emergencies and returns processes, longer timescales were considered.
- Accurate project information was available from the staff involved in the project implementation.

The case studies that have been selected are intended to illustrate a diversity of approaches to helping meet shelter need. Most of them go beyond 'throwing shelter relief items off the back of a lorry' or delivering shelters as a design or a product.



1. This figure was reached by combining the figure from the Emergency Events Database (<http://www.emdat.be>) for the number of people made homeless with the figure of 3.7 million new IDPs quoted in *Internal displacement: Global overview of trends and developments in 2007* (Internal Displacement Monitoring Centre). This figure excludes new refugees.

2. A refugee is a person who has crossed an international border and is unable to return through well-founded fear of persecution (see UNHCR *Handbook for Emergencies*, 3rd edition, 2007, for a fuller definition).

3. IDPs are broadly defined as people who have been forced to flee their homes suddenly or unexpectedly in large numbers as a result of armed conflict, internal strife, systematic violation of human rights or natural or man-made disasters and who are within the territory of their country.


4. This data is sourced from the Emergency Events Database (<http://www.emdat.be>) on 30 July 2008.


## Overview of case studies


































































































The case studies in this book cover a diversity of projects, from support for families in collective buildings over an eight-year period (Azerbaijan, B.2), to emergency distributions of plastic sheeting within hours of an earthquake (Jogyakarta, B.7). Despite the projects' differences, there are many recurring themes. Some of these themes are discussed in the following pages.

### Support the people affected

The first and main effort in all responses is made by the people who are themselves affected. Of the case studies listed in this book, the more effective projects all had the close involvement of the people affected, often through existing community groups or specially established committees.

 Sphere standards and indicators (Annex) provide common standards on participation, initial assessment, monitoring and evaluation.

 Supporting the people affected is the first principle outlined in the guidelines of *Transitional Settlement and Reconstruction after Natural Disasters* (Annex).

	Non-food item distribution		Shelter construction		Cash	Labour			Technical expertise
	Household	Shelter	Transitional	Permanent		Community	Contracted	Direct	
A.1 D.R. Congo - 2002									
A.2 Eritrea - 2002									
A.3 Kenya - 2007									
A.4 Kenya - 2007									
A.5 Liberia - 2007									
A.6 Mozambique - 2007									
A.7 Rwanda - 2006									
A.8 Somalia - 2007									
A.9 Sudan - 2004									
B.1 Afghanistan - 2002									
B.2 Azerbaijan - 1997									
B.3 India (Gujarat) - 2002									
B.4 Indonesia - 2004									
B.6 Indonesia - 2006									
B.7 Indonesia - 2006									
B.8 Ingushetia - 1999									
B.10 Pakistan - 2006									
B.11 Pakistan - 2006									
B.12 Sri Lanka - 2007									
B.13 Sri Lanka - 2005									
C.1 Honduras - 1998									
C.3 Peru - 2007									
C.4 Peru - 2007									
C.5 Peru - 2007									

Overview of assistance methods used in projects


Graphics: Transitional Settlement and Reconstruction after Natural Disasters

## Settlement Options

The case studies illustrate support for disaster-affected people in a variety of settlements. These include host families (Ingushetia, B.8), collective centres (Azerbaijan, B.2), both rural (Pakistan, B.9) and urban (Somalia, A.8) contexts, and planned and unplanned camps (Bangladesh, D.4).

***It was relatively difficult to find case studies of supporting host families.***

Finding shelter with friends and relations or by renting are common coping mechanisms for families who have lost their house in a disaster. However, it was difficult to find case studies of organisations providing support for hosting or rental arrangements.

 *Transitional settlement: displaced populations (Annex)*

***In most case studies, land ownership was a defining factor in what types of shelter support were offered.***

## Land ownership

Those without land are often among the most vulnerable people in society. Approaches to land ownership varied between the case studies. For example, in Peru (C.2-C.5) organisations built primarily only on the land of people who could offer proof of land title. Building lighter shelters allowed people to later move them.

A more active approach to establishing land for families is illustrated by the case study in Aceh, Indonesia (B.4) after the tsunami, where the organisation helped to negotiate land with title deeds for entire villages.

## Phases of response

Responses to disasters or conflict are commonly split into the phases of:

- preparedness before the disaster;
- emergency response;
- the recovery phase; and
- durable solutions.

Many of the case studies include shelter responses aimed at bridging the gap between emergency shelter and durable housing solutions. Housing programmes can take many years to complete, especially when implemented on a large scale. The project in Rwanda (A.7), illustrates a housing project that took two years to build 220 houses. The speed of durable shelter construction can leave a gap, with families in emergency shelter for many years. Transitional responses aim to bridge this gap.

A comparison of the strategies adopted in Aceh (B.4) and Sri Lanka (B.11) following the 2004 tsunami illustrates how long housing can take to complete in comparison to transitional projects. However, as the case studies note, in implementing the transitional response there should be a vision of what is being transitioned to. Often, there is not follow-on funding or land identified for permanent houses.

## Scale of programme

The responses illustrate the challenge of whether to implement high quality programmes for fewer people or poorer quality responses to support more people. The case studies in Pakistan (B.9-B.11) illustrate this challenge. One project delivered materials to over 2% of the affected population without support, while the other project built transitional shelters for 0.2% of the affected population.

***Which is better: a high level of support for fewer people or a lower level of support for more people?***

## Self-build and contractor models of construction

Different projects used different ways of organising the labour required to build shelters. The case studies in Peru illustrate a mixture from self-build (C.4) to supported self-build (C.3) approaches, to contractors prefabricating shelter components that were then erected by homeowners (C.5). Many of the projects in this book provided carpenters or masons to support self-build projects. In many projects, families were provided with some money to either support them while building or to allow them to employ others to build.

## Logistics and supply

In many projects, logistics and supply issues had significant impacts on both the design of shelters and the timescale for implementation. The scale of some procurements was huge (e.g. Gujarat (B.3)). Many projects, such as the one in Honduras (C.1), employed specific shelter logistics staff to ensure that shelter projects were implemented. Shelter staff had to work closely with these staff members.


## Assistance methods

The case studies selected include: giving money to host families, upgrading squatted communal blocks, establishing an inter-agency pipeline of shelter items and constructing shelters through both unpaid volunteers and contractors.

It was difficult to find sufficient detail on projects where families were given vouchers that they could redeem with certain suppliers, although according to anecdotal evidence this type of project has been successfully conducted. No case studies were found of loans being provided to support families through the emergency or transitional phases of the response.

## Other sectors

Many of the more effective projects were integrated with other sectors of the response, especially water supply and sanitation.

 The Sphere Project (Annex) provides useful guidance on integration with other sectors.



***By using transportable shelter materials, transitional shelter solutions can sometimes be found until land rights issues are resolved***

Photo IFRC





Effective shelter programmes are developed and implemented by involving the affected communities

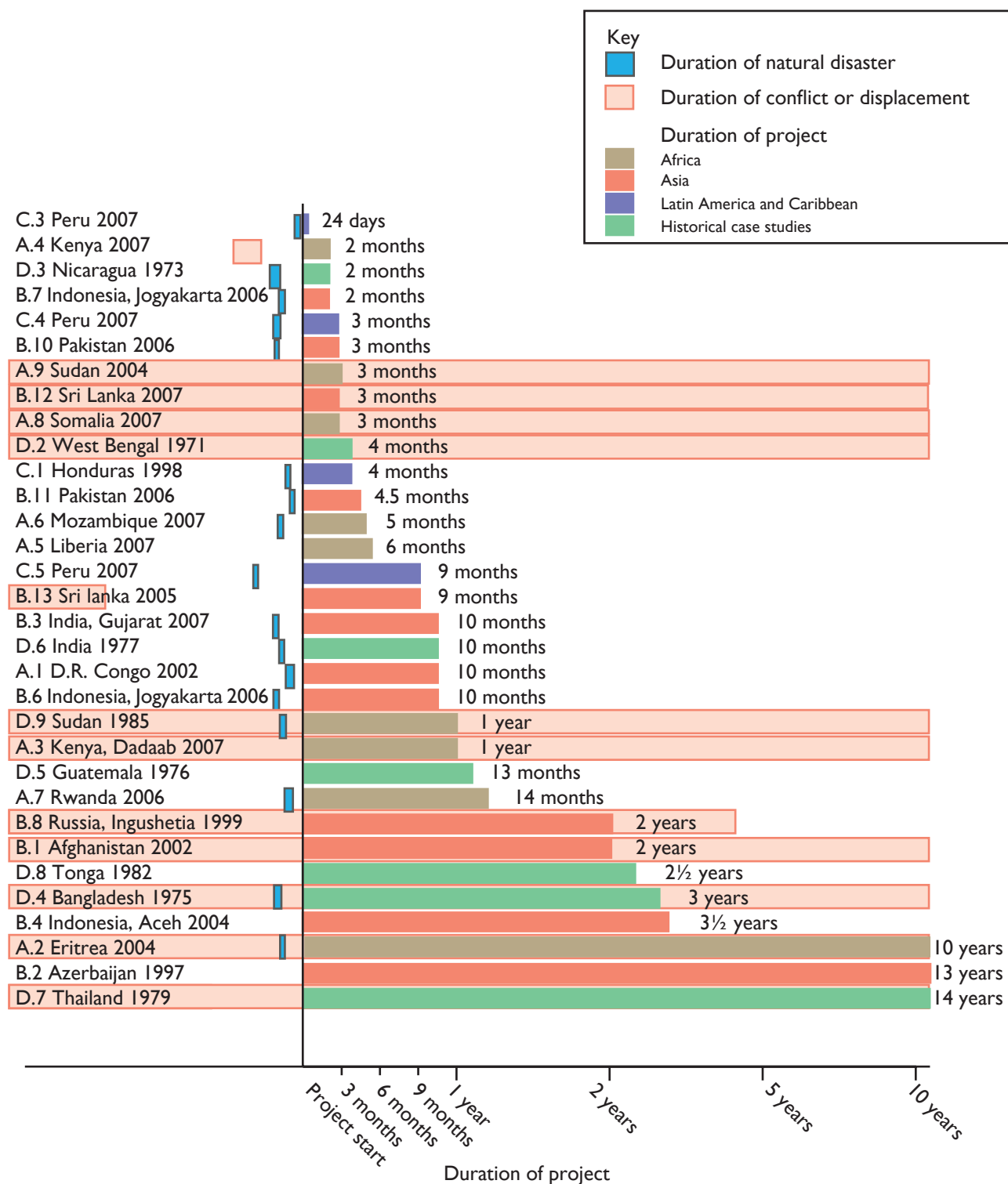


Illustration of the duration of the case studies



## Shelter design

For most projects, the design of the shelters themselves was less challenging than the design and planning of the shelter project.

Many projects that built shelters left the design and construction of shelters to the people affected, focusing instead on ensuring that people had the means to build them or the support to build them safely.

All of the projects that successfully constructed a specific model of shelter developed the basic shelter model in direct consultation with affected communities, taking into account their skills, capacities and resources.

**'If 3.5m<sup>2</sup> per person cannot be achieved, or is in excess of the typical space used by the affected or neighbouring population, consideration should be given to the impact on dignity, health and well-being of the people accommodated...'**

**- A guidance note to the Sphere (Annex) shelter and settlement standard for**



Photos: Joseph Ashmore

Left: Design for a timber-free domed shelter proposed as a response to an earthquake in 2005. Affectees were not involved in the design and it was not used on any scale.

Right: Shelter using reclaimed materials built by affectees weeks after the earthquake. Shelters such as this were common and supported by programmes of toolkits and corrugated iron distribution (see case studies B.10-B.12).

## covered living space

### Shelter size

The illustration below shows the diversity of shelter-covered areas in these case studies. These vary from 9m<sup>2</sup> (C.3) to 48m<sup>2</sup> (A.7). This is a result of varying needs, permanency, budgets, logistics constraints, host standards and official policies.

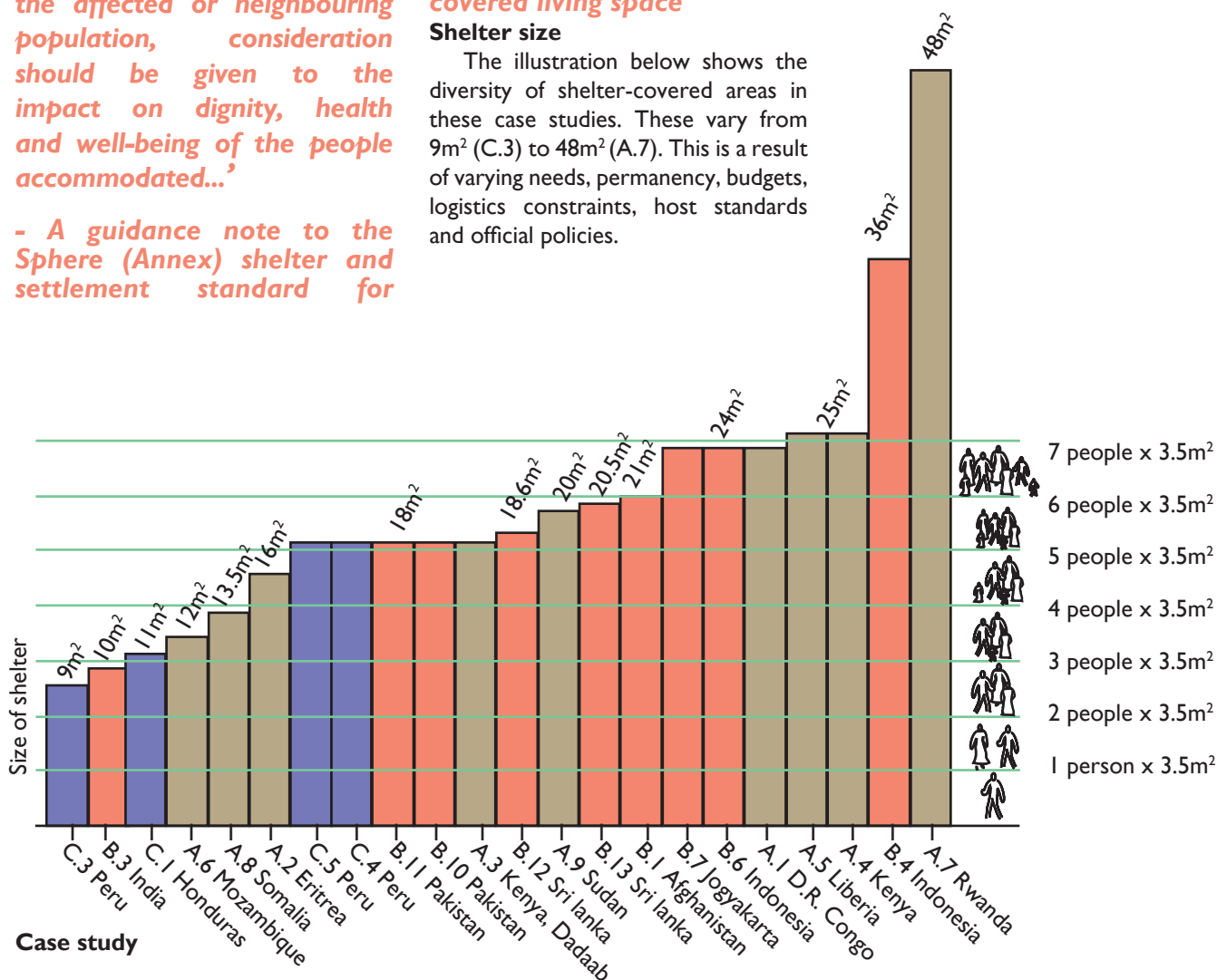
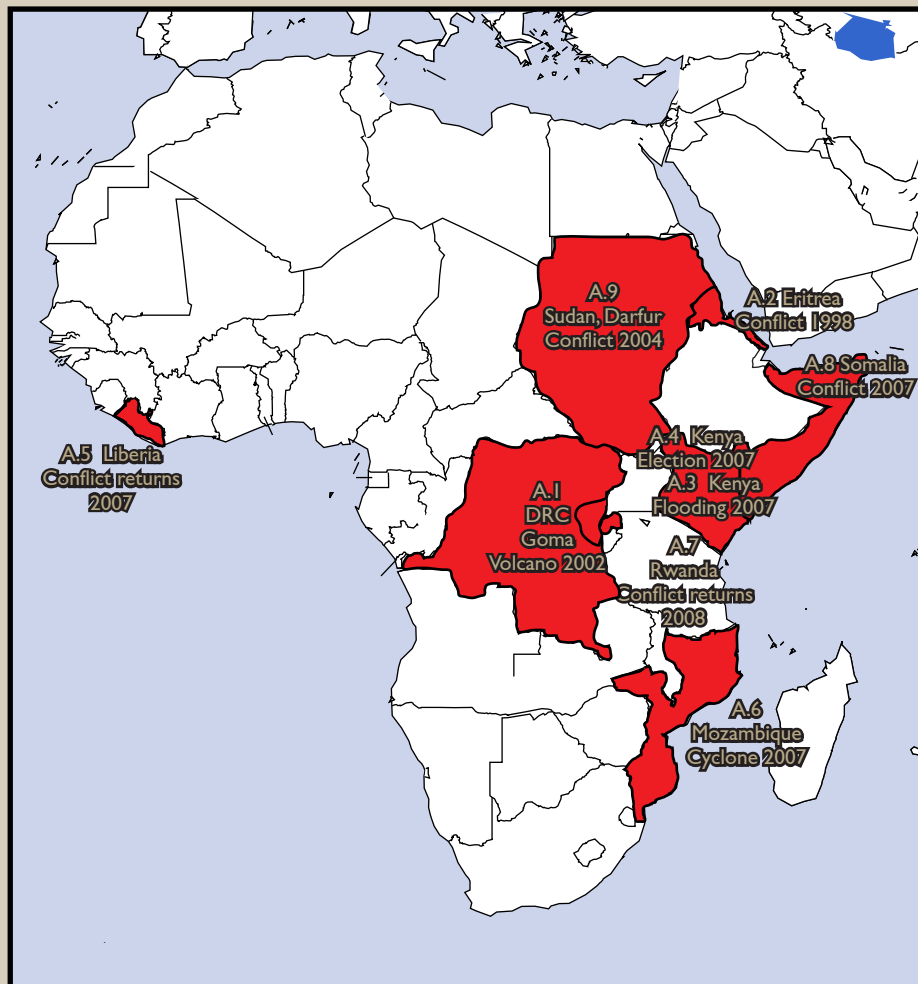


Chart showing sizes of the shelters in the case studies in comparison with the suggested allocation of 3.5m<sup>2</sup> per person. Note that smaller shelters are often constructed after assessment of local and host population standards, as well as what is practically possible. Shelter size is not necessarily a good indicator of the quality of a shelter programme.

# Section A

# Africa



## A.I D.R. Congo - Goma - 2002 - Volcano

### Distribution and technical support

#### Project type:

Materials distribution  
Self-build, with technical support

#### Disaster:

Goma volcano eruption in 2002

#### No. of houses damaged/people displaced:

15,000 houses destroyed; 87,000 people made homeless

#### Project target population:

3,000 families initially; increased to 5,000 families  
Part of a joint intervention targeting 12,625 families

#### Occupancy rate on handover:

All shelters completed

#### Shelter size

24m<sup>2</sup>

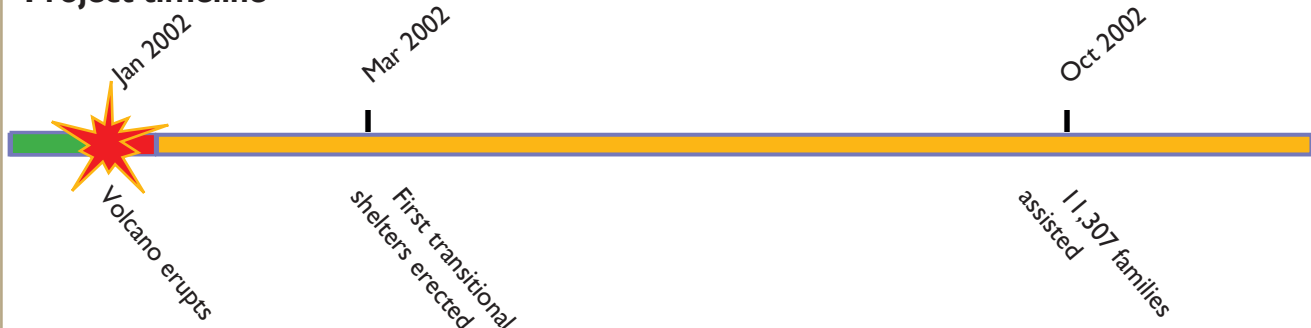
Total materials cost: US\$ 180 (including plastic sheeting)



### Summary

Distribution of mostly locally procured materials for beneficiaries to build their own transitional shelters on self-selected plots after the eruption of the volcano in Goma. The distribution was accompanied by technical support and distribution monitoring.

### Project timeline



### Strengths and weaknesses

- ✓ Adapting local design meant that shelters were easily constructed and durable enough to be adapted to long-term use.
- ✓ The self-selection of resettlement sites meant that no new site identification, preparation or infrastructure building was necessary, reducing costs and increasing the speed of plot identification.
- ✓ Local authorities and communities were involved in the development of selection criteria and the identification of land plots. A good flow of information between agencies and beneficiaries through community mobilisers meant that few complaints were made about beneficiary selection.

- ✓ Open dialogue between agencies meant that coordination was effective.
- ✓ Environmental impact was minimised through the adoption of managed local construction practices and materials and the provision of pit latrines.
- ✓ The programme was classified as an emergency, which excluded funding of more durable solutions. Despite this, use of transitional shelters meant that beneficiaries could modify structures to later become permanent houses.
- The local economy was partly regenerated through the payment of 30,000 days of labour and the sourcing of local materials.



## Strengths and weaknesses (continued)

- The affected population contributed 5,000 individual land plots, 6,000 days of voluntary labour and payment for 14,000 days of contract labour (equivalent to US\$ 40,000).
- US\$ 140,000 was invested by the affected population itself into the upgrading of their housing units by the end of October 2002.
- \* For families of eight or more people, space was insufficient.
- \* Some beneficiaries felt that the plastic walls compromised their privacy and security. It was easy to see what people were doing at night due to the shadows cast on the plastic by lamps and people were worried that the plastic sheeting could be easily cut by thieves.

### After six years, a donor assessment found that:

- The project was used as a model for the provision of 8,000 more shelters funded by other donors.
- Transitional shelters had been converted into permanent housing.
- The Disaster Risk Reduction (DRR) projects to monitor the volcano continue, with a weekly report broadcast on local radio.



*Sample of a temporary house*

### Situation before emergency

According to an NGO survey, Goma, an important border trading town in the north-east of the Democratic Republic of Congo, had a depressed economy before the eruption, with 46% unemployment and only 40% of people able to sustain themselves and their family on their income.

Before the emergency, shelter conditions were varied, with the average house size containing around 31.5m<sup>2</sup> of covered living space. The volcano had last erupted in 1977.

### After the emergency

The lava flow easily set alight traditional timber-framed houses, covering 13% of the town in a layer of molten rock one to three metres deep in a single day. Much of the central administrative and commercial district was damaged, affecting the capacity of the local authorities to respond.

Some of the 87,000 people displaced sought temporary refuge in communal buildings, while others moved in with relatives whose houses had not been affected. In this way, all found some form of immediate, temporary shelter themselves without direct international agency assistance.

Approximately 80% of the affected population reported that their economic conditions had worsened as a result of the disaster. A quarter had previously used their homes as the base for their income-generating activities.

### Implementation

Local authorities suggested a new area of land, largely bush land, for development into a new site. This site was rejected, as it would have required the construction of a whole new infrastructure network (roads, sanitation, etc.) as well as requiring considerable levelling. It would also have meant taking resettled people away from the economic opportunities in the town.

Instead, an emergency shelter response was jointly developed by a group of INGO, UN and local NGO representatives to provide a transitional shelter to families (who met certain criteria) once they had negotiated a new plot to build on within the town itself. This plot was either bought, rented or donated by relatives. This kept the economic activity within the town, used the existing infrastructure and ensured that beneficiaries were resettling somewhere where they wanted to be.

Two examples of the shelter were built and used as project offices so that beneficiaries knew what the shelters would look like and to make it easier to discuss construction issues. These offices, along with scale models, were used to train all households in how to build the transitional shelters.

Tools and a marked length of string, used to measure out bracing sections, were supplied with each kit. Few construction problems were reported due to the simplicity and familiarity of the design.

Although all households received training, around 70% of beneficiaries paid others to construct their housing unit.

By the end of October 2002, the joint intervention had assisted 11,307 families and plans were made to help a further 1,318. Those assisted included all of the families who had occupied the collective sites within the town itself, and families who had been 'hosted' by others.

### Selection of beneficiaries

Families in collective sites (such as schools) were prioritised as local authorities wished to reopen the schools as soon as possible. The remaining



Photo: Graham Saunders

Structural skeleton of a house, showing cross-bracing

funds were allocated on a neighbourhood-by-neighbourhood basis, based on the proportion of families affected by the eruption.

A household in a neighbourhood could make an application for assistance once they could prove they had negotiated a new plot of land for rebuilding. This was verified on site through discussion with neighbours and local authorities.

Final selection was overseen by a Local Advisory Group made up of community representatives and an agency staff member, following jointly-agreed upon criteria. Decisions and details of complaint processes were published on a notice board.

Prior ownership of a property was not made a requirement for assistance, in order to ensure that people who were renting before the eruption were also able to obtain a transitional shelter.

### Technical solutions

Although other emergency shelter solutions, such as tents, could have been deployed, these were rejected as they could not have been updated for permanent use. The transitional shelters cost just US\$ 55 more than a standard relief tent and took longer to deploy, but provided a stepping stone to permanent reconstruction.



Photo: Graham Saunders

Families were trained to construct their shelters, but around 70% hired others to build.

The transitional shelters measured 5m x 4.8m, provided 24m<sup>2</sup> of covered living space for five to six people, and followed Sphere minimum standards. The dimensions were defined by locally available timber sizes, in order to maximise section spans and minimize wastage from cutting. The traditional use of volcanic rock for walls was rejected as too slow and difficult to cut and size correctly, and too expensive to transport.

The unit was designed for robustness, without the need for cast foundations, so it could be dismantled and moved if necessary. Beneficiaries were instead encouraged to build up foundations with rocks and earth in order to reduce surface water inside the houses.

The roofs were covered with corrugated zinc sheets, which, despite their high cost and solar gain, were locally known for their ease of use.

As the budget did not stretch to timber-clad walls, the design had to be braced well enough to stand unmodified. The walls were covered with plastic sheeting held in place with timber laths and protected from the weather by the overhang of the roof.

Households normally divided their houses into separate rooms, so the transitional shelter was designed to allow families to partition the space using their own materials or plastic sheeting provided by agencies.

***'Goma's recovery was dependent largely on economic regeneration. By concentrating the activities within the town itself, this project considered the sustainability of regeneration'. - Donor***

### Environment

The certification of timber in the local area was difficult to verify, so timber from fast-growing eucalyptus was specified and bought from a number of different sources to minimise potential local deforestation.

Beneficiaries sometimes strengthened the frame with bush sticks. Although the potential environmental damage of this activity was not measured, alternative materials could have been considered at the start of the project.

Each assisted family was also provided with a latrine, improving Goma's pre-eruption sanitation.



Photo: Graham Saunders

### Logistics and materials

Materials were sourced locally where possible. A joint agreement between agencies to share supplier lists and agree on the materials to be provided reduced inter-agency competition and local price inflation.

The possibility of setting up a local timber mill was considered but not implemented. Lack of capacity at the local mills meant that some timber was procured from outside of Goma.

### Modification

By October, many had made improvements to their homes, often using salvaged corrugated metal sheeting or timber cladding to replace the plastic sheet walls. However, around 30% of the families felt they could not afford to make these upgrades and would be living in the transitional shelter as provided for some time.

Some enterprising beneficiaries made design modifications. For example, one family paid a contractor to build a kiosk into one end of the house in order to run a small business to raise money for new furniture.

### Disaster Risk Reduction (DRR)

This shelter programme was implemented alongside a DRR project to support the Goma Volcano Observatory's hazard monitoring and a community-based early warning system.

## A.2 Eritrea - 1998 onwards - Conflict

### Camp upgrades

#### Project type:

Non-food item distribution  
Camp support programme  
Fuel-efficient stove project

#### Disaster:

IDPs in camps in Eritrea following Eritrea/ Ethiopia conflict

#### No. of houses damaged/people displaced:

Around 1 million people displaced in 2001  
An estimated 100,000 homes destroyed in the war

#### Project target population:

Target population varied over time  
Camp population in the Gash-Barka, Debub and Red Sea states regions stabilised to 60,000 people by 2001

#### Occupancy rate on handover:

Occupancy of camps varied over time

#### Shelter size

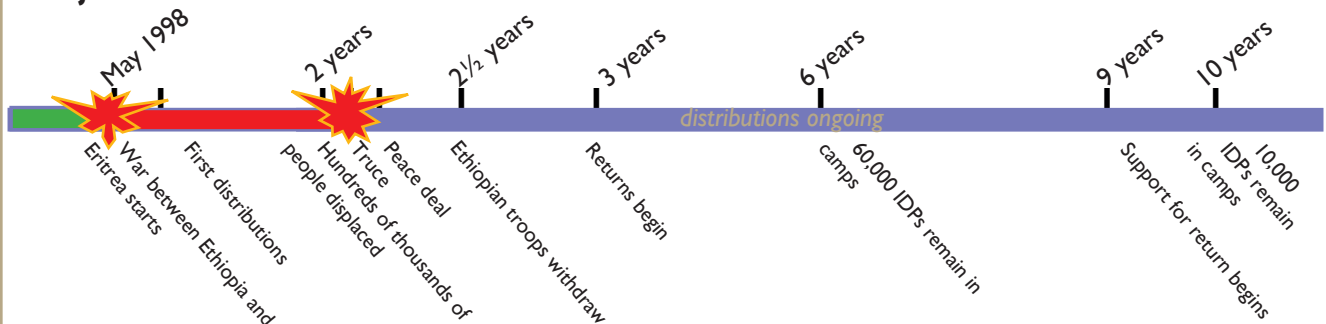
Tents provided 16m<sup>2</sup> of covered space. Some families had modified their shelters to provide up to 40m<sup>2</sup> for larger families.



### Summary

Support for a variable population of Eritrean IDPs following the conflict with Ethiopia. The agency in this case study was the main provider of shelter and non-food item (NFI) assistance. They provided IDPs with tents, tarpaulins and other non-food items (such as stoves) to those living in camps in the Gash-Barka, Debub and Red Sea states. The provision of durable shelter items was not possible due to political interests in ensuring that the camps were temporary. As a result, IDPs often adapted the emergency shelter items they received in order to improve their living conditions.

### Project timeline



### Strengths and weaknesses

- ✓ Camp residents were ready to invest time and capital into the improvement of their 'temporary' shelters.
- ✓ Distributions of tents and plastic sheeting were sufficient to ensure a basic minimum of covered space for IDPs.
- ✓ Fuel-efficient stove distribution reduced deforestation problems.
- IDPs created shelters that looked more like the homes that they had been displaced from than the tents that they had been given.
- ✗ Shelter options were limited by camps having to remain

'temporary', as authorities wished to avoid making the camps permanent.

- ✗ The inability to use more durable shelter materials that could have been reused by IDPs meant that emergency funds were used to replace worn-out shelters.
- ✗ Initial fuelwood consumption was so high that it caused deforestation in the local area and led to conflict over fuelwood with the local population.
- ✗ Although IDPs used their own initiative to upgrade their shelters, the designs required cutting down larger trees in an unmanaged way in order to obtain high quality timber.





Photo: Joseph Ashmore

Traditional hudno house with earthen roof



Photo: Joseph Ashmore

Over 60,000 people were living in tent camps six years after the outbreak of conflict.

### Situation before emergency

Eritrea is one of the poorest countries in the world, with more than 50% of its population living below the national poverty line of \$1/day. In the conflict-affected areas, people lived mainly in soil-block homes, in stone-constructed homes with heavy earthen roofs or in lighter-weight thatched round huts.

After Eritrea's independence from Ethiopia in 1993 the border between the two countries was disputed. In May 1998 the dispute escalated into war, displacing thousands from their homes in the disputed areas.

### After the emergency

As a result of the fighting, thousands of people left the disputed border area. Both countries also deported around 70,000 citizens. Settlements, including about 20 designated camps, were formed in the states of Gash-Barka, Debub and Red Sea. These were intended to be temporary and to house no more than 20,000 people on each site. Other people stayed with family members or rented accommodation. Many IDPs attempted to continue agricultural activities on their land while remaining displaced.

By June 2000 as many as 1 million people were displaced within Eritrea, though this figure fell sharply later that year to around 200,000 people in camps and 100,000 outside of camps.

Six years after the outbreak of the conflict, around 60,000 IDPs remained displaced. These people were either from disputed border areas, from the Ethiopian side of the border or had been prevented from returning to their land as a result of landmines.

Ten years after the outbreak of conflict 10,000 people remain displaced.

### Technical solutions

The official policy was that camps were temporary and that the displaced population would be returning home soon after the peace treaty. This meant that organisations were discouraged from providing more durable shelter solutions. However, the slow diplomatic resolution of the border demarcation and the need to properly demine return areas meant that ten years after their initial displacement some IDPs remained in camps and received only emergency shelter items.

Tents and plastic sheeting formed the core of the shelter response. Due to the short lifespan of such materials, many tents that had rotted, blown away or caught fire had to be replaced during the period of displacement.

There were trials with other materials. In 2001 the organisation distributed palm leaves for the repair of over 1,000 traditional homes in and around Barentu, in the Gash-Barka region. These were very bulky to transport. In 2004, woven mats were produced for one camp to provide a more traditional shelter material, but this was not extended to other camps.

With IDPs living in camps for much longer than expected, additional pressure was placed on natural resources in the area. IDPs and the host community were soon competing for scarce firewood and large areas of land near the camps were deforested.



Photo: Joseph Ashmore

Palm leaves were distributed to 1,000 families.

In 2002, the organisation began the distribution of fuel-efficient stoves and kerosene stoves, significantly decreasing the demand for fuel wood by IDPs.



Photo: Joseph Ashmore

Firewood collection led to serious conflict with the host community. Because traditional stoves were not very efficient, an improved stoves project was set up.

### Implementation

Distributions of shelter items were made in coordination with the governmental Eritrean Relief and Refugee Commission.

After a mass distribution of 15,254 tents in 2000 when the total population in camps reached around 150,000 people, all camp residents were assessed as having their basic shelter needs met.

However, nearly 4,000 replacement tents were required between 2003 and 2007. This redistribution of basic emergency shelter items was enough to rehouse nearly half of the total camp population of around 63,000 people. Considerable quantities of plastic tarpaulins were also distributed, although as some of these were distributed to returnees an exact figure for camp residents is difficult to obtain.

The table shows the distribution of tents and tarpaulins. UN agencies and other NGOs were also supporting IDPs with emergency shelter items in the early period of displacement, but by 2002 the agency was responsible for shelter provision in the camps.

Year	Number of IDPs	Tents distributed	Plastic tarpaulins distributed
1999	30,000	4,207	2,000
2000	150,000	15,254	
2001	65,000		
2002	63,000		
2003	63,000	3,406	11,471
2004	63,000	6	20,547
2005	46,500		No figures (approx. 5,000 to returnees)
2006			
2007	10,000		No figures (approx. 30,000 to returnees)
Total		Minimum of 22,873	Minimum of 34,018

\* Where there is no data, cells are left blank.



People adapted their tents in many ways.

### Adaptations by IDPs

An assessment made in 2002 revealed that many beneficiaries had made significant modifications to their shelters for two main reasons: emergency shelter items provided too little covered space and had too short a lifespan.

#### a) Space

The standard relief tent provides only 16m<sup>2</sup> of covered space (enough for a family of four people with 3.5m<sup>2</sup> per person) and many large families felt that they were living in overcrowded conditions. By modifying their shelters some IDPs managed to increase their covered floor space to around 40m<sup>2</sup> and to also ensure that they could stand up in them, something only possible in the middle of the tents.

While a standard ridge tent may have walls of 80cm in height when erected with long guy ropes, tents in the camp were pitched with shorter ropes in order to save rope for other

uses and to decrease the footprint of the tent. Shortening the guy ropes meant that the wall height shrunk to around 30cm, reducing the internal volume of the tent considerably.



People upgraded their tents using local materials to provide more head room.

#### b) Quality of materials

Weather conditions in this part of Eritrea included extreme heat during the day, cold at night, considerable dust and strong winds. Not all the shelter materials distributed were of the right specification to deal with these conditions. Tent canvas lifespan varied from four years to just six months. This variation can be explained by different shipments, with some tents provided from emergency stocks, some ordered new and some donated. Some canvas samples could be torn by hand after less than a year. Plastic sheeting often ripped in the wind, partly due to poor fixing techniques and a lack of suitable rope.

Many of the camp residents in the Gash-Barka region had previously lived in houses called hudnos. These houses had heavy roofs and thick walls, which kept interiors cool during the hot day and warm during the night.

The roof of a hudno uses a lot of wood - the roof frame is covered by more wood with a layer of mud on top. The walls are generally made of stone, often using mud as mortar.

Though the high consumption of wood and the impossibility of transporting stone ruled out hudno construction in the camps, many people adapted their temporary shelters to look and act more like the homes from which they had been displaced. Camp residents in Gash-Barka made the following modifications:

**Structure:** IDPs extended the height and floor space of their shelters by building large wooden frames and hanging tents and other material over the top.

The wooden frame was constructed from logs up to three metres long. The logs were cut down locally or purchased by the IDPs themselves. The frames were not particularly efficient in the use of timber, consuming around 200kg of wood for a family shelter with considerable structural redundancy.

**Roofing:** Layers of tent canvas, plastic sheeting, grain sacks and straw mats were used as roofing materials. For those IDPs who did not possess a tent, plastic sheeting was used as an outer layer with other available materials placed over the top to prevent plastic sheeting from degrading in strong sunlight.

**Walls:** External walls were made of the same material as the roofing. Inside the shelters, a 'wall' around 20cm high was built up around the edge using donkey dung or mud. The walls were used as benches or beds and also provided some protection against rain.

**Partitions:** Partitioned interior space was created by hanging material over timber frames. Some families also created separate areas for storing straw for animal feed.



A fly sheet separated from an inner tent and covered with plastic is used to form an extension. Sticks were used to raise the sides to increase the internal volume.

## A.3 Kenya - 2007- Flooding

### Shelter and disaster mitigation

#### Project type:

Construction of self-build new shelters for refugees  
Community mobilisation, disaster mitigation

#### Disaster:

Ifo refugee camp flood response, Dadaab, Kenya, 2007

#### No. of people displaced:

Approximately 6,000 households displaced, mostly from the Ifo camp

#### Project target population:

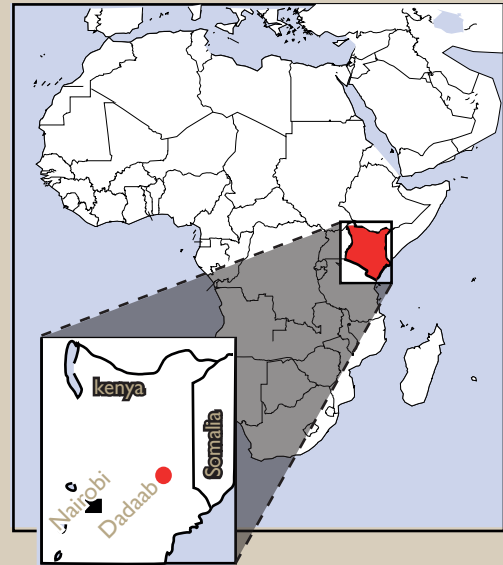
500 households in the Ifo camp

#### Occupancy rate on handover:

100% (based on visual assessment)

#### Shelter size

18m<sup>2</sup> (6m x 3m)



#### Summary

Through a combination of upgrading and emergency response funding, 500 families were assisted in making bricks and building shelters through a community-based construction programme following flooding in a large refugee camp.

#### Project timeline



#### Strengths and weaknesses

- ✓ Strong community participation through the training of beneficiaries to construct their own shelters meant project costs were low and construction standards were high.
- ✓ A sense of ownership and pride in their shelters was demonstrated by the wide variety of self-implemented modifications, raising living conditions.
- ✓ Mud brick production has become a major income-generating activity even though the project has finished.
- ✓ Deforestation in the Dadaab area was reduced by replacing stick walls with mud bricks.
- ✓ The use of a thick foundation and lower wall reduces the possibility of collapse in heavy rains.
- ✓ Broken bricks were recycled to demarcate plots, build furniture or were remixed with water to be remoulded.
- ✗ Soil quality was variable outside of the camp, so many used soil from their own plots. This created hazardous holes that may create mosquito breeding grounds. Sourcing

soil from outside the camp required negotiations with the host community to avoid conflict.

✗ Water consumption was high. Water meant for domestic consumption was used in brick production. Rainwater catchment systems will help to avoid this in the future.

✗ Though foundations increase the structure's strength, they can still degrade through contact with water. Stabilising the soil with cement will help to make them stronger.

✗ The inclusion of people from minority groups, such as the disabled, was not fully realised.

- The agency needs to use the refugee initiatives that emerged from this project to help redesign its strategy. Supporting livelihood activities may accelerate the construction pace and decrease costs.

- Opportunities for income-generation activities and broad environmental concerns require joint agency solutions. This kind of shelter project requires coordination





Photo: Joana Cameira

Village constructed through community-based project



Photo: Joana Cameira

Brick production

### Situation before emergency

Three refugee camps (Ifo, Hagadera and Dagahaley) sheltering mainly Somali refugees were established close to the town of Dadaab, in Northern Kenya, in 1991 and 1992. By 2007 they had a population of around 173,000 people.

Dadaab is an area with little vegetation and refugees' access to natural resources (including building materials) is limited. The government of Kenya does not encourage activities that are 'permanent', so refugees rely on aid agency support rather than self-sufficiency through agriculture or other livelihoods.

The camps are highly congested, creating sanitation problems and fire safety issues. The majority of shelters in the camp are of two types, both employing highly flammable roofing materials: traditional tukuls – 3.5m diameter dome structures made of wooden sticks, covered in fabric; and adobe huts – 6m x 3m shelters using a large number of sticks for walls with a roof made of local vegetation.

### After the emergency

The severe flooding in the Ifo camp destroyed over 2,000 shelters and left more than 10,000 people homeless. This meant that many refugees had to move to a new camp neighbourhood, 'Section N'.

Section N was not a popular choice for many refugees. Although the ground was higher and less affected by floods, the site was further away from the market and its lack of trees meant little natural shade.

### Selection of beneficiaries

Beneficiaries had been preselected by a UN agency, following standard vulnerability criteria that was verified through door-to-door checks.

### Implementation

The agency faced two main challenges: convincing refugees that Section N could become a nice place to live and that improved mud-brick constructions would be stronger than the previous buildings that the refugees had seen washed away.

It was decided that the agency would follow the idea of previous shelter programmes in building mud-brick houses, but would improve the durability of the design, increase the involvement of the communities and reduce the need to pay beneficiaries for construction.

The aims of the programme and the implementation of the strategy were explained to camp leaders who disseminated the information. As well, community mobilisers (agency staff who were based in the blocks for eight hours per day) ensured that the right information was reaching everybody.

A public demonstration of 'brick throwing' to test the strength of bricks made from different soils ignited the interest of potential beneficiaries and addressed the fears of mud-brick houses being weak. The agency constructed some prototype shelters that were then used as classrooms for the construction trainees.

The agency then provided a 'training of trainers' to a small group of refugees on construction techniques and brick-making. Efforts were made to ensure

that training teams included women and the elderly. Each trainer supervised around four families per month, assisting them with layout, foundations, walling and plastering. Carpenters were deployed to give technical support on roof and latrine construction.

***'It was my first job! It allowed me to support my family'. – Female refugee construction trainer***

Soil-sourcing sites, both within and outside of the camp, were identified by the agency, which also supplied brick moulds, pangas (knives), wheelbarrows and plastic sheeting to cover completed bricks during the rain. Tools were shared among the community groups and returned to the agency when not in use. Water storage was provided near the soil-sourcing sites.

Agency staff maintained quality-control checks on all the constructions to ensure the safety of the houses, particularly as previous mud brick failures had been mostly due to poor construction rather than design.

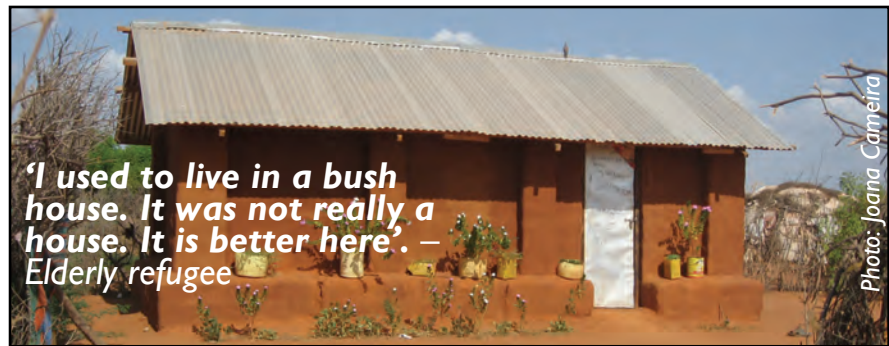
Upon completion of the mud-brick structures, the agency supplied the construction materials that the beneficiaries could not produce or purchase themselves, such as roofing sheets and doors.

The combination of a team of trainers able to transfer skills to the community and beneficiaries willing to participate in the construction of their own shelter at no cost led to full engagement of the community and guaranteed that people would maintain their properties themselves.

### Technical solutions

The 6m x 3m houses required 1,700 bricks, considerably more than previous designs implemented in the camp. While disaster mitigation was primarily achieved by relocating refugees to the higher ground of Section N, extra bricks were necessary to build a thick foundation and lower wall to improve the structure's performance in heavy rains.

Eight pillars provided support for the walls and roof trusses, increasing the stability of the roof itself. Mud-brick walls were plastered with



***'I used to live in a bush house. It was not really a house. It is better here'. – Elderly refugee***

Completed house

mortar or cow dung and the roof was covered with iron sheeting. Improvements were made to ventilation to decrease the high internal temperature of previous designs.

A change in the position of the house on the plot improved sanitation. Latrines were moved to the front of the plot next to the street and the house was positioned at the back of the plot. This left space for more construction inside the plot and prevented the problems of a dirty backyard blocked by wastewater runoff.

### Beneficiary modifications

Beneficiaries made a number of modifications to the new structures. These included:

- Aesthetic: Painting and decorating.
- Windows: The size was adjusted. Sometimes they were partially closed with other bricks or sticks to increase security and reduce sunlight but maintain ventilation.
- Furniture: Some families constructed beds and tables out of the mud bricks, which helped to demarcate the internal living space.
- Plot boundary: Small walls to define the extent of a plot were often built with spare or broken bricks.
- Plastering: Some families plastered their house with cement mix, making the walls impermeable.
- Gutters were made out of waste tin sheet and tin cans.
- Livelihoods: Market stalls were built as extensions onto or between houses, increasing the income of the families and providing more options for other residents to shop locally.

About 30% of the beneficiaries employed other refugees at some stage of the construction. This increased the income generated in the housing industry in the camp. Such initiatives inspired the agency to look into the

next stages of the implementation strategy, to increase the supply at lower costs and in a shorter timeframe.

### Logistics and materials

Families originally used soil from planned and unplanned areas within the camp. A project to dig new garbage pits outside the camp presented an opportunity for a new soil source.

To reduce the water consumption necessary for brick production, 'spilled water' from tap stands was collected. The rest of the water was supplied by truck and stored in oil drums distributed around Section N or in water tanks if the bricks were being produced outside the camp.

Roofing and door materials were procured in the capital with support from a UN agency, while other materials were procured in the nearest large town.

The total cost of materials, including transport, was around US\$ 440 if the soil was sourced within the camp, rising to US\$ 480 if soil was sourced outside the camp. Labour costs for each shelter were around US\$ 30.

Quantity	Unit
Iron sheets (2.5m length)	20 pieces
Timber - cypress (2mx2m)	120 m
Plain sheet (2.4m x 1.2m)	1 piece
Nails 4"	4 kg
Nails 3"	1 kg
Nails 1"	0.5 kg
Roofing nails	5 kg
Butt hinges 4"	3 pieces
Padbolt 6"	1 piece
Tower bolt	1 piece
GI Ridges (1.8m length)	4 pieces
Binding wire	5 kg
Wood preservative	8 l

## A.4 Kenya - 2007-2008 - Election violence

### Transitional shelter kits

#### Project type:

Pilot project providing transitional shelter kits  
Technical support for building  
Full construction for vulnerable households

#### Emergency:

Kenyan election crisis, 2007-2008

#### No. of people displaced:

125,000 - 250,000 IDPs found shelter in camps and similar settlements during the violence.  
An estimated 300,000 moved in with relatives or friends and around 12,000 fled to Uganda.

#### Project target population:

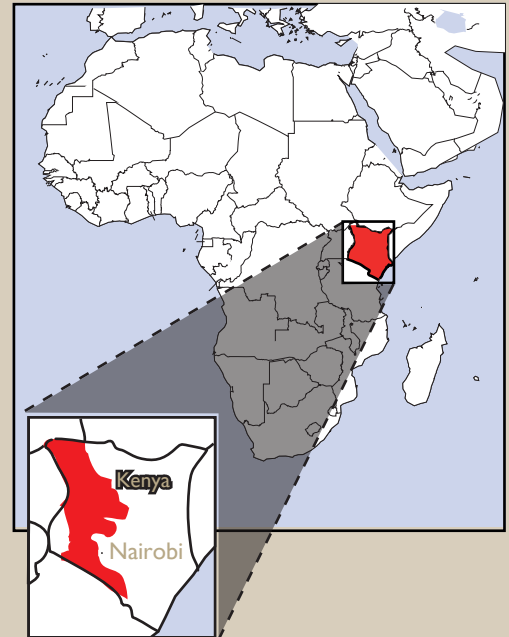
481 transitional shelter kits provided as a pilot project (226 erected by the agency, 255 self-built)

#### Occupancy rate on handover:

86% - Those not occupying shelters wanted to wait until the shelter had been upgraded with stronger walls or until other family members returned. Both reasons related to ongoing feelings of insecurity.

#### Shelter size

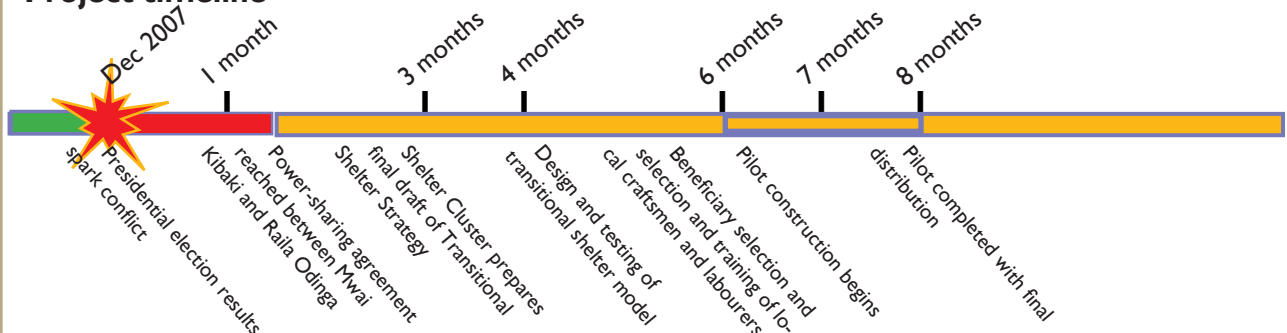
18 m<sup>2</sup> (extendable, modular construction)



### Summary

Provision of transitional shelter kits as a pilot project in the Rift Valley of Kenya, before upscaling to a national response. Shelters were designed to be adapted by beneficiaries into permanent homes and, except in the case of vulnerable households, were erected by the beneficiaries themselves.

### Project timeline



### Strengths and weaknesses

- ✓ Only viable project sites were selected, based on the security guarantees of the local administration, existence of peacebuilding initiatives and willingness of IDPs to return.
- ✓ Because it used local building technologies and local craftsmen's knowledge, the design was readily accepted by the beneficiaries and easily built.
- ✓ Having construction teams of mixed ethnicity contributed to the peacebuilding process in an unplanned but positive way.

- ✓ Consideration was given to how the shelters could be upgraded in the future to permanent homes. This maximised the impact of the financial investment.
- ✓ Use of robust building components meant the shelters could be relocated. Some beneficiaries used plastic spacers when nailing the roof to make disassembly easier.
- ✓ Close involvement of the community and local administration in beneficiary selection meant that distributions ran smoothly and disputes were resolved.
- ✓ Linking the project with livelihoods interventions



## Strengths and weaknesses (continued)

promoted sustainable return.

- \* Occupancy was not as high as hoped for, with some IDPs not ready to move back.
- \* Not all of the materials are available locally in sufficient quantities. Sourcing of materials needs to be reconsidered before the project can be upscaled.
- \* Only those whose houses had been completely destroyed received the kit. Further attention needs to be given to those whose houses are partly damaged, as many

roofs and doors had been looted.

- \* The kit included spare sheets and plastic sheeting for the construction of latrines. These materials were often used to extend the roof instead.
- \* Some beneficiaries stated that they would have preferred to have been given the cash value of the plastic so that they could buy local materials themselves to build the walls (cash grants are being considered for the post-pilot phase).



*Transitional shelter built on the family's own land*

### Situation before emergency

A number of the tensions related to the ethnic nature of political affiliation in Kenya, unresolved land issues, inequality of wealth distribution, high unemployment and conflict over natural resources led to violence following the December 2007 election.

The majority of those displaced from the Rift Valley province had lived in small timber pole-framed houses with timber or adobe wall cladding, thatch or iron-sheet roofs and compacted soil floors, strengthened with dung or cement.

### After the emergency

The election crisis was compounded in April by food security problems, flooding in some areas and drought in the north. The pattern of displacement was complex. People were displaced from many different parts of the country as one ethnic group escaped the threat of violence from another.

Around half of IDPs found shelter in camps. The rest sought refuge with friends or relatives and some moved back to their 'ancestral' land where support services were limited.

A response plan was developed through the Cluster System, which would provide non-food items and tents to meet the need for emergency shelter while a transitional shelter design was developed to bridge the emergency and permanent shelter phases.

### Selection of beneficiaries

The Shelter Cluster agreed that 481 transitional shelter kits would be distributed as a pilot project to test the design of the shelter and the response of beneficiaries.

It was important that the site chosen should be one where security was good, IDPs were willing to return to and the community they were returning to was ready to accept them. Mtaragon, in the Kipkelion District, fit the requirements.

The local administration had a record of all IDPs. Their assessment of the impact of the violence, correlated with the agency's own assessment, showed that around 500 houses had been completely destroyed.

The following criteria were used to decide which of the 500 households who had no shelter to return to would be chosen to receive a kit. The selected beneficiaries:

- were registered as an IDP by the local administration;
- were willing and ready to return;
- had proof of land ownership.

Proof of land ownership was only required for this pilot project. It was anticipated that an appropriate response would later be developed by the Shelter Cluster to deal with those without formal titles to their property or whose houses were only partially damaged.

An ad hoc beneficiary selection committee was established by the local administration, with appropriate representation of women and IDPs, to select the final beneficiaries. This committee was monitored by the implementing agency.

The degree of vulnerability of the households was also assessed and was intended to be used as another filter in beneficiary selection. But as the number of shelters to be provided almost matched the number of houses completely destroyed, vulnerability criteria was used to determine the level of construction assistance a household required, rather than to select the beneficiaries themselves.

To qualify for construction assistance, the household had to be headed by a single parent or a child or have members who were elderly, disabled or had special health requirements.

The criteria for the upscaled project was modified from the Shelter Cluster's Transitional Shelter Strategy developed in March 2008, following feedback from the pilot project.

### Implementation

A prototype of the shelter was tested for structural quality and reviewed by IDPs for its suitability. At the same time as the final selection of beneficiaries was being made, a second prototype was built in a prominent

location in Mtaragon to sensitize beneficiaries as to what was being provided and to get feedback on the design.

Local craftsmen and unskilled labourers were recruited into ten teams and trained. Although not planned, the teams were a 50-50 mix from the ethnic group that had fled and the ethnic group that they felt threatened by. This side effect of the project had a positive impact on peacebuilding. The donor organisation directly procured the materials within Kenya and delivered them to the implementing agency's warehouse in Nakuru.

The implementing agency then distributed the materials at three locations. Beneficiaries collected them and took them to their plots up to three kilometres away, using their own transportation (either by hand, by donkey, or by tractor and trailer).

The kits also included the basic tools necessary to build the shelter.

***'I'm over 60 and unable to get the materials to build on my own. Despite what happened, I have to continue staying here. Being my land I cannot run away. If everybody can be assisted in the way I was, that would be great. Plastic sheeting is OK, but I would have preferred timber, as it's stronger and can't be blown away'.- Beneficiary***

Guidance was given by the local craftsmen on how to put the shelter together. The beneficiaries provided the labour themselves and the houses were normally completed within one or two days.

Over 45% of the beneficiaries met the vulnerability criteria and qualified to have their houses built by the construction teams.

### Technical solutions

The structure had a covered space of 18m<sup>2</sup> (6m x 3m), was split into two rooms, and had good clearance above head height.

The frame was made up of 10cm diameter cedar poles, dug into the

ground at a depth of around 60cm. The poles supported a timber ring beam, which in turn supported the timber rafters onto which an iron sheet was nailed.

Walls were clad in plastic sheeting and floors were compressed earth. The doors were flaps in the plastic sheeting and weighted with timber battens.

The design was based on the vernacular housing typically lived in by IDPs prior to their displacement. This enabled IDPs to upgrade their shelters incrementally using materials and methods that they were already familiar with. The walls could be clad with timber, adobe or even brick and cement. Cement could be used to increase the durability of the floor.

The use of plastic sheeting allowed shelters to be built and occupied very quickly, though some beneficiaries replaced the plastic sheeting walls immediately with adobe or reclaimed building parts, such as doors or timber. The plastic sheeting could then be sold or used for temporary house extensions, and provided waterproof storage for seeds and fertilisers.

The use of regular frame and roof sections made the construction modular – it could be easily extended or adapted. The choice of materials meant that there was no part of the building that could not be fixed or replaced locally.

Most beneficiaries erected their shelters on exactly the same site as their previous homes had been, so little site clearance or ground levelling was required.

### Logistics and materials

Materials were sourced in Kenya, and chosen for their familiarity, durability and low cost. Timber was supplied by private forestries who were only considered if they had government-approved replanting projects in place. Plastic sheeting was made from recycled plastic. The total cost of materials and labour for one transitional shelter was US\$ 350, not including transport and agency administrative costs.

Materials	Quantity
<b>Walls</b>	
Cedar posts 9", 4" diameter	14 units
Walling-polythene sheeting-1000g	45 m <sup>2</sup>
Cypres timber 2x3", 6 x 2m, 3 x 2m	20 m
Ordinary nails 4"	2 kg
<b>Roof</b>	
Cypess timber 2x3", 2 x 10m, 3 x 3m, 1 x 8m	40 m
Cypes timber 2x2" 6.5 x 6m	41 m
CGI ridge covers-30g -1.5 m	4 units
CGI sheets-30g 2 x 0.9m	20 units
Ordinary nails, 2kg 4", 2kg 3", 1/2kg 2"	4.5 kg
Roofing nails	4 kg
Iron hoop	1 kg
<b>Tools</b>	
Stanely claw hammer	1 unit
Stanley woodcutting saw	1 unit
Panga knife	1 unit
Hoe and handle	1 unit
Manaila thread 30m (roll)	1 unit
Measuring tape	1 unit

***'The prototypes built by local craftsmen in each project location enabled structures to be tested and important feedback from builders and beneficiaries to be incorporated into the final design.'* – Engineering coordinator**



Transportation

## A.5 Liberia- 2007- IDPs, refugees

### Self-build shelters

#### Project type:

Community mobilisation  
Self-build shelters  
Materials distribution  
Cash payment for materials and labour  
Technical support for improved design

#### Emergency:

Liberian returnees, 2007

#### No. of houses damaged/people displaced:

A 2005 needs assessment estimated 80% of the housing stock was damaged. In total, around 500,000 of Liberia's population of 3 million had been displaced by civil war.

#### Project target population:

500 individual shelters in Cape Mount, Bomi and Gbarpolu counties, benefitting 1,328 beneficiaries.  
Post-completion, a total of 1,782 people were living in the houses as family members and lodgers moved in.

#### Occupancy rate on handover:

100%

#### Shelter size

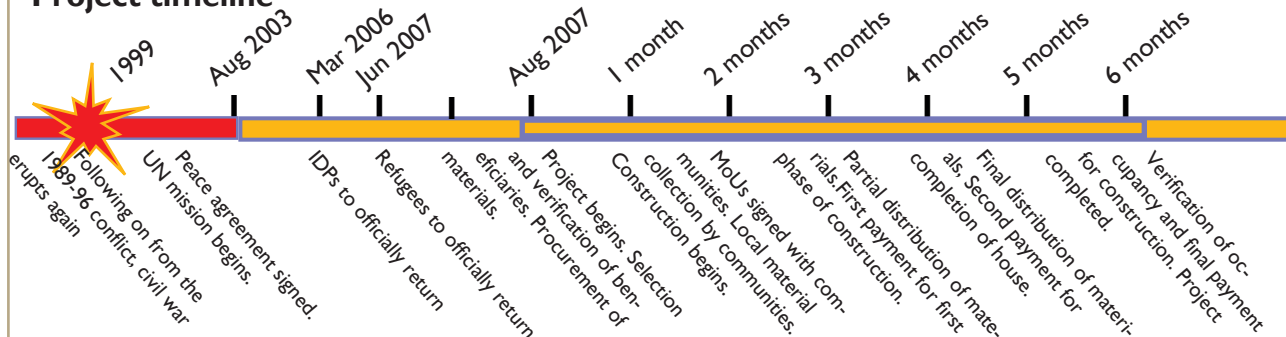
25m<sup>2</sup> (5m x 5m)



#### Summary

Shelter assistance to vulnerable returnees (IDPs and refugees). Building materials were provided and cash incentives were given to communities for construction. The agency provided technical support and close project monitoring in collaboration with the community.

#### Project timeline



#### Strengths and weaknesses

- ✓ Selecting beneficiaries in collaboration with the community ensured community cooperation.
- ✓ Close partnership with local authorities through several initial open meetings meant that what was and was not covered by the project was clearly understood.
- ✓ A good balance between community decision-making and quality control was achieved through close monitoring of the project by the agency. This helped to minimise corruption.

- ✓ Learning from previous projects, enough supervisors were employed to ensure that they had a face-to-face meeting with each beneficiary once a week.
- ✓ Paying for materials and labour only after the materials had been used in construction and the beneficiary had moved in ensured work was completed on time and that the right people benefited.
- ✓ Using a local design meant that local people knew what they wanted to build and how to build it.



### Strengths and weaknesses (continued)

- The project ran alongside water and sanitation and education programs, which was necessary to ensure that people had access to the services they needed in order to resettle.
- The construction of shelters for vulnerable beneficiaries appeared to inspire other returnees to begin rebuilding spontaneously, as it created a positive atmosphere of recovery.
- The project was better suited to a rural context than an urban one, as community mobilisation was much easier in smaller villages where the benefits to the whole community

could be more clearly seen.

- ✗ Maintenance issues could have been considered further, with many beneficiaries asking for cement for flooring and walls.
- ✗ Technical supervision could have been more intensive from the beginning, as some construction work had to be rectified.
- ✗ Donor-driven partnerships with community-based organisations from previous projects had to be dropped due to corruption and a lack of community involvement.



Completed houses for returnees

### Situation before emergency

After years of civil war, many of Liberia's 3 million inhabitants had been displaced within or outside of the country. Between 2004 and 2007, 327,000 IDPs were assisted in a returns process, leaving an estimated 23,000 in camps. Over 110,000 refugees returned at the same time. Around 90,000 Liberian refugees remain outside of Liberia, making the total figure of those displaced over half a million.

It is estimated that the number of people living on less than one dollar per day rose from 55% in 1997 to 80% in 2007. As well, the sanitation and nutrition conditions of the early 1990s had seriously deteriorated by 2004.

### After the emergency

The vast majority of returnees did not have appropriate shelter when they returned, due to their houses being destroyed or simply deteriorating during the two civil wars.

In rural forested areas, building traditional shelters required families to collect materials and provide the labour to rebuild. While some support was provided for rebuilding (such as this project), most returnees' shelter

assistance did not extend beyond the standard repatriation package (sleeping mat, blanket, cooking kit, food and transportation) issued in the return-transit camp.

### Selection of beneficiaries

Using the opportunity of a routine check of returnee names, the agency made notes of those living in overcrowded shelters and poor conditions before communities were aware of a proposed shelter programme. This eliminated the temptation for people to temporarily overcrowd their shelters on assessment day. By correlating this information with a joint UN/NGO monitoring project to establish vulnerability categories (including female-headed households, unaccompanied minors, the chronically ill and physically disabled) the agency was able to draw up a shortlist of potential beneficiaries.

The final selection of 500 beneficiaries was carried out by the agency, in collaboration with local authorities and community representatives, after several visits and open meetings. Three-way Memorandums of Understanding, describing the assistance

given and the criteria for beneficiary selection, were prepared and signed by beneficiaries, community leaders, and agency representatives.

### Technical solutions

The traditional house design is a bush pole-framed, mud-walled construction with a thatched roof of grass or palm leaves. The project improved the design to include a corrugated iron roof, which reduced the need to maintain a thatch roof, and a stronger central pole to improve structural stability.

Many local houses do not have closable doors and windows, and walls and floors have to be frequently repaired after damage from the elements. As vulnerable beneficiaries were unlikely to be able to undertake much maintenance themselves, doors and windows were included in the build.

***'I now have a good place to stay, and my family will come to stay with me in my new home'.  
— Beneficiary***



Traditional shelters under construction

The doors and windows originally produced by each local construction gang were found to be of inconsistent size and quality, so it was decided to prefabricate these components in the NGO's compound using skilled workers.

### Implementation

Once beneficiaries had been selected and cooperation of the community was agreed upon through a series of open meetings, a skilled local carpenter was chosen to lead the construction of between one and three houses. The carpenter would also act as a community mobiliser to organise people to collect materials and provide labour for construction.

Progress was monitored by one of five shelter supervisors, all of whom had construction knowledge and skills. The supervisors were managed by a shelter coordinator and a project director.

Supervisors were expected to visit each beneficiary at least once a week. The coordinator usually visited sites four days a week. Such close and direct monitoring was a key reason for the project's success, as problems were identified and resolved quickly and the quality of building could be examined throughout the project. This enabled ongoing improvements to be made.

The NGO paid US\$ 40 for the materials collected to build the house

and US\$ 40 for the labour. This was not a salary, but an incentive. The community decided who would benefit from the money; normally it was used to pay for the food of those who provided labour.

The sum was large enough to be an incentive to get people involved, but small enough to prevent conflict over who benefited. The US\$ 40 for the materials was only paid once construction up to the roof was completed.

Payment of the final US\$ 40 was made upon occupancy rather than when the structure was completed. This was a lesson learned from previous projects, where payment had been made upon structural completion. The NGO was then unable to prevent occupancy of the structures by non-beneficiaries afterwards.

Shelter supervisors marked out the agreed 25m<sup>2</sup>. A standard design was proposed for a two-room construction with a veranda. However, beneficiaries were free to alter this design according to their needs. The NGO felt it necessary to make further stipulations about central support poles, to ensure that the building was safe once the project was underway.

The project was completed on time with a 100% occupancy rate.

### Land issues

The community allocated the land themselves. This was easy in rural

areas and small communities, where there was no pressure on land. In more densely populated communities (though not urban) land had a price. In these areas the NGO had to check the site selection as there was a temptation to allocate land to vulnerable beneficiaries that was inappropriate for building. This was solved through joint meetings with the local authorities and community representatives.

### Logistics and materials

Materials were collected locally, apart from doors and windows. It was not thought that environmental damage would be caused by local collection. The total cost of materials for each shelter was US\$ 320 (US\$ 240 for imported materials, US\$ 40 for local materials bought from communities, and US\$ 40 for labour provided by the community).



Completed house

Materials	Quantity
3" nails	65 (0.3kg)
4" nails	28 (0.3kg)
Hammer	1
Zinc roofing sheets (0.66m x 2.4m)	2 bundles
Zinc nails	1.5 packets
Door and frame	2
Window and frame	2
Hinges	4 pairs
Nails	115 (0.3kg)
Hasp/staples	4 pairs
Window and door bolts	4 pieces
Roofing felt	1 piece
<b>Materials collected locally:</b>	
Central pole	1
Poles for frame	Around 160
Rafters (poles)	50
Bamboo/rope for ceiling mats	As required



## A.6 Mozambique- 2007- Cyclone

### Shelter material packages and training

#### Project type:

Distribution of shelter construction material packages  
Training on improved building techniques

#### Emergency:

Cyclone Favio in northern Inhambane, Mozambique,  
February 2007

#### No. of houses damaged/people displaced:

160,000 people displaced by flooding  
Approximately 6,500 houses damaged by the cyclone

#### Project target population:

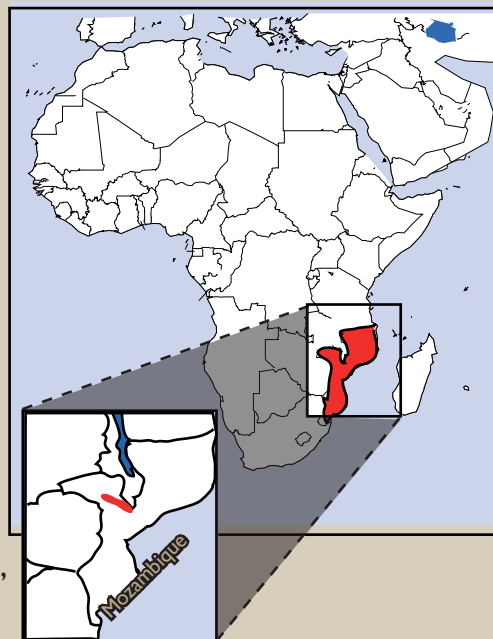
2,219 vulnerable households (11,095 people) who had  
remained on their own land

#### Occupancy rate on handover:

15% of households had been unable to use the distributed  
materials to rebuild three months later. Of those who did,  
a visual assessment suggested around 95% of the people  
living in the rebuilt houses were the original beneficiaries.

#### Shelter size

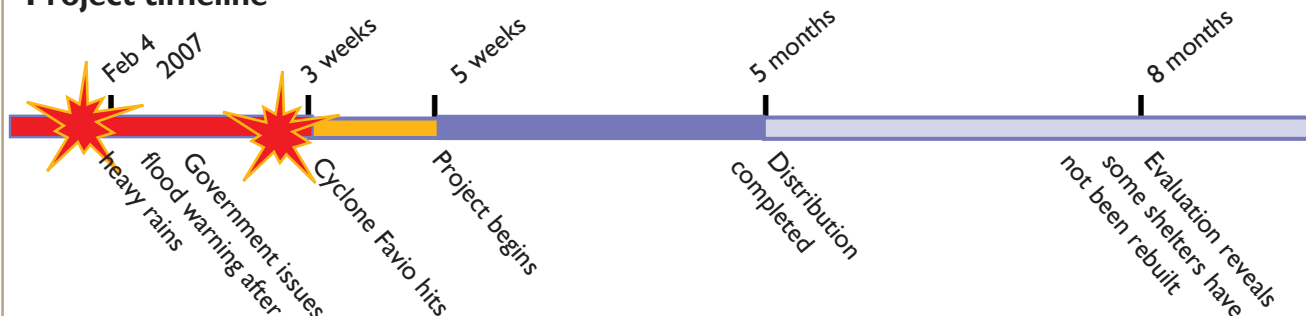
Around 12m<sup>2</sup> (varied by design and whether the structure had been rebuilt or repaired)



### Summary

Despite having no previous shelter programming experience in the country, no emergency shelter stockpile and a delay in funding, the agency distributed shelter materials with technical advice to the most vulnerable people affected by the cyclone (child-headed households, widows, the chronically ill, handicapped, etc.) in two districts.

### Project timeline



### Strengths and weaknesses

- ✓ Local purchase of items helped to stimulate the local economy.
- ✓ The most vulnerable beneficiaries were targeted.
- ✓ Cooperation with local government minimised potential fraud and coordination with the national government.
- ✓ Community mobilisation and the voucher system were key to ensuring smooth distributions and crowd control.
- ✗ Procurement was difficult. Environmental issues regarding building poles proved particularly problematic.
- ✗ The assumption that all vulnerable households would

receive support from relatives or the community proved wrong. Three months after the distribution had been made, 15% of beneficiaries were not able to use the distributed materials for rebuilding. In the future the agency would pay for construction or mobilise community groups.

- ✗ Given the vulnerability, and in some cases, social isolation of the extremely vulnerable, they often needed the help of several people to transport the items from the distribution site to their house.
- ✗ Lack of a stockpile of emergency shelter materials, such as plastic sheeting, and a delay in securing emergency



## Strengths and weaknesses (continued)

funding meant that some beneficiaries did not have support for basic shelter needs for at least three weeks.

✱ Technical advice was not always implemented by the beneficiaries. Although beneficiaries attended the training, the construction may have been carried out by someone else or they had not been convinced by the advice. This

required repetition of the messages.

✱ Local suppliers were sometimes unable to meet deadlines. This resulted in the project requiring an extension. Delays were partly due to legal requirements for supplier registration and payment of taxes by suppliers.



Photos: Lizzie Babister

*A damaged house and self-built reconstructed house using distributed items*

### Situation before emergency

Many of Mozambique's inhabitants live in floodplains and the country is regularly hit by cyclones. As a result, it has repeatedly required disaster-recovery assistance.

### After the emergency

Over 300,000 people were directly affected by the combined effects of the flood and the cyclone. About 140,000 of the displaced sought shelter in communal accommodation, which had been pre-positioned after the 2001 floods. A further 55,000 people began moving to 'resettlement areas' – part of the government's programme to encourage people to resettle on higher ground. Others stayed on their own land, rebuilding where possible.

The government conducted an initial needs assessment and three international agencies were made responsible for delivering the three main needs of water, food and shelter.

The international organisation in this case study had limited local experience of emergency shelter response, as it was mostly involved in development projects and non-shelter emergency responses. With no stockpiles and no immediate funding, the agency was not able to respond with an emergency shelter distribution until after the first two weeks.

The majority of those affected in the area of the agency's operation found shelter with relatives. Many had rebuilt their own shelters within the first two months.

Unable to respond with immediate emergency items, the organisation decided to run a rehabilitation programme, distributing materials for the repair or rebuilding of houses belonging to vulnerable households. The agency participated in the national Shelter Cluster meetings and received a donation of plastic sheeting. This was included as part of the general distribution.

### Selection of beneficiaries

The agency supported vulnerable beneficiaries in the districts of Inhassoro and Govuro. These included women-headed households, children, the elderly, the disabled or the chronically ill, and those without resources to rebuild a home that had been completely destroyed.

An initial target was set of 1,300 households (around 6,600 people) who had remained on their own land but had inadequate shelter. This rose to 2,219 vulnerable households (11,095 people) following additional funding.

Assessments of the shelter needs of each of the vulnerable households were made in partnership with the local government. Beneficiary lists were checked and double-checked by the agency and local authorities.

A simple assessment form was developed, illustrated with simple graphics, to enable teams to quickly classify what kind of shelter kit a household would require (see table at the end of this case study).

Five different shelter packages were designed to be distributed depending on the type of home the household had previously had – traditional round houses or rectangular 'mixed' houses built from a mix of traditional and modern materials – and the level of damage suffered.

### Technical solutions

Training in simple construction techniques to improve the durability of structures in the event of further cyclones was provided to beneficiaries on the day of distribution.

Agency staff demonstrated the use of improved building techniques on a lived-in house in the village of distribution. Techniques included advice on nailing roofing sheets more securely and using wire doubly crossed over in an x-shape to strengthen joints.

The demonstration lasted a couple of hours and was made before the materials were distributed. A later assessment showed that while many had implemented the techniques, others had not, despite being present at the training. It is not clear if these techniques were not implemented due to habit or due to difficulties in implementing the training.

Hammers and pliers were distributed to groups of beneficiaries whose entire homes had been destroyed.

## Implementation

The project began in mid-March after a delay in securing funding. The time during the delay was used to make thorough assessments. By the time the beneficiaries were selected many people who had the resources had already rebuilt. The distribution was completed within five months, including a one-month extension that was required due to the difficulties of procuring locally.

The shelter items were distributed using a voucher system that detailed what kind of shelter package would be received. The voucher system was introduced in order to reduce the fraud and manipulation of beneficiary lists, which the organisation had experienced early on in the project. The voucher system also reduced the time needed to verify beneficiaries on the day of distribution.

The day before distribution, beneficiaries' identities were cross-checked by the agency and authorities. They were given the voucher, information on what time to attend the distribution, and informed that only one other family member should be with them.

The voucher system, coupled with effective cooperation between the organisation and the local authorities, meant that distributions were conducted smoothly. However, the preparation of the vouchers themselves, to avoid counterfeiting, added to the preparation time.

To further reduce crowd management issues at distribution, community mobilisers employed by the organisation led crowds in song to reduce tensions and prevent potential overreaction by authorities, who were quick to beat back crowds with sticks.

Although the distribution of items was successful, the organisation overestimated the level of social cohesion. This was a surprise, as their usual work with local associations suggested the existence of a reasonably community-minded attitude among the population that would help those most vulnerable.

**'We did not consider all the aspects of construction in terms of labour for the extremely vulnerable and we learned a lot from this project. In Cyclone Jokwe in 2008, we applied the lessons and we are now a lot better prepared for the next disaster'.**  
– Project manager

An assessment three months after the distribution had been completed showed that 15% of those who had received shelter materials had been unable to use them to rebuild their homes. The vulnerable households either did not have the money to pay someone to rebuild their homes or did not have any relatives willing to do the rebuilding. With everyone struggling after the disaster it appears that people were too occupied with solving their own problems to assist others without additional support.

Although it was recommended that beneficiaries take off the old roofing thatch, attach plastic sheeting underneath and then re-thatch the roof, many people had simply spread the plastic sheeting over the roof as they did not have sufficient labour to carry out this very physical task. Consequently, plastic sheeting was not well fixed on the roof and tore easily.

## Logistics and materials

All materials were purchased locally, though the ability to guarantee the sustainable management of the forests from which the poles were cut was limited. The use of alternative materials was not pursued due to transporting issues and the potential for further delays.

Due to a shortage in dry grass, plastic sheeting was distributed as a roofing material. The shortage of other locally available materials delayed the implementation of the project.

	Roof trusses (3)	Zinc roofing sheets (10)	Roofing nails (100)	Metal wire (2kg)	Wall poles (10)	Purlins and rafters (3 bundles)	Plastic sheeting (1 sheet)	Tools (shared between families)
<b>Mixed house (3m x 6m)</b>								
Totally destroyed 	Y	Y	Y	Y	Y			Y
Roof missing 	Y	Y	Y	Y				
<b>Traditional house</b>								
Totally destroyed 				Y	Y	Y	Y	Y
No roof covering 				Y			Y	
No roof structure 				Y		Y	Y	

## A.7 Rwanda - 2008 - Returns

### Materials distribution and technical guidance

#### Project type:

Community mobilisation  
Establishment of beneficiary associations  
Technical guidance  
Materials distribution

#### Emergency:

Forced repatriation of people of 'Rwandan origin' from Tanzania to Rwanda

#### No. of people displaced:

Approximately 60,000 people considered to be illegal immigrants in Tanzania were required to return to Rwanda. 8,000 people had been forced to return by June 2007.

#### Project target population:

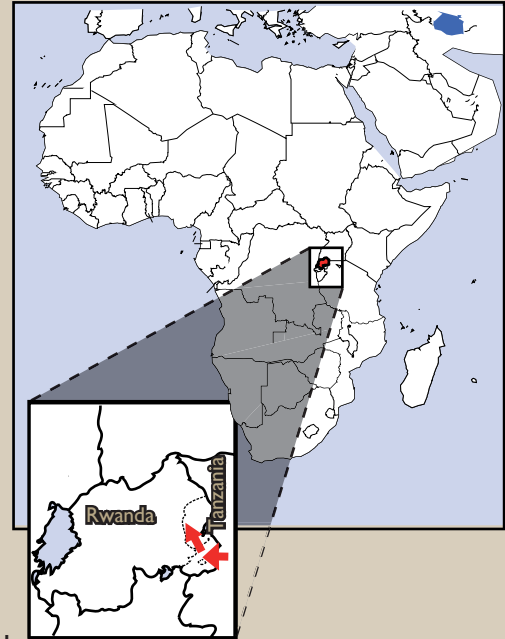
469 households

#### Occupancy rate on handover:

All 220 shelters completed by August 2008 were occupied.

#### Shelter size

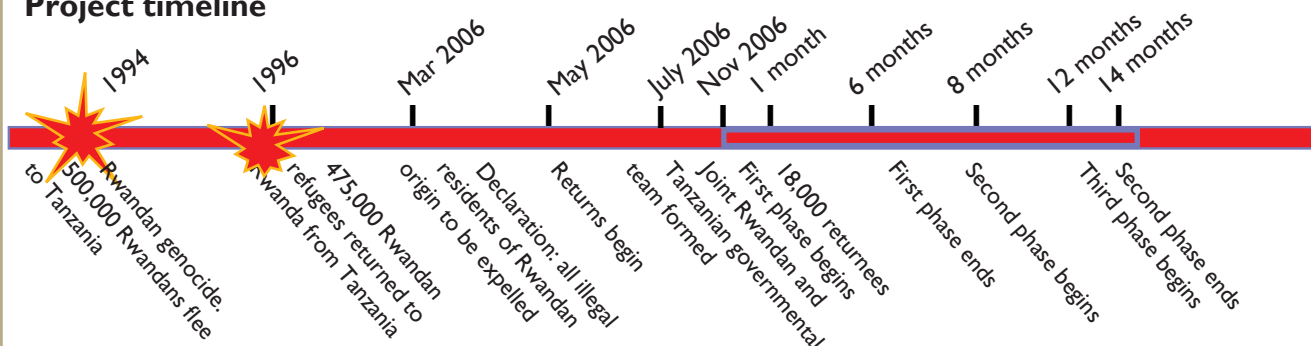
48 m<sup>2</sup> (6m x 8m)



### Summary

This project provided support to people of Rwandan origin expelled from Tanzania by providing materials for house building, masons and providing shared services at the site of return. Communities were mobilised by forming beneficiary associations in consultation with the local government. The role of the associations was to collectivise the tasks required for house building.

### Project timeline



### Strengths and weaknesses

✓ By collectivising activities in mixed beneficiary associations, shelter was built for all members of the community without requiring a different construction process for vulnerable households.  
✓ Participation of vulnerable beneficiaries in the construction process was possible and necessary.  
✓ Integration of returnee families and local families in one resettlement site meant that the association approach increased opportunities for integration.

✗ Some houses were quickly attacked by termites as timbers had not been treated or protected.

✗ People had to resolve their current shelter problems as best they could until their house was completed. For some families this meant living in makeshift shelters for nearly two years.





Photo: Matthias Wohlfel

Completed shelters

### Situation before emergency

Despite a long history of welcoming Rwandan refugees, the Government of Tanzania decided in March 2006 to expel people of 'Rwandan origin' who had arrived in Tanzania at any time from the 1920s onwards and who did not have legal permission to stay.

Four categories of illegal immigrants were defined: migrants from the 1920s, 1959 refugees, 1994 refugees and those that had arrived from 2005 onwards. Most of these people lived in the Kagera region of north Tanzania (which borders Rwanda) and many did not speak Kinyarwanda, the primary language of Rwanda. Only a few hundred of those specified by the criteria lived in the refugee camp in the region. The vast majority were integrated into the local Tanzanian communities.

Forced returns began in May 2006 and many of those forced to return experienced violence in some form and had their property seized. Many returnees, the majority of whom were women and children, arrived in Rwanda empty-handed and without relatives to stay with.

### After the emergency

A return process was agreed to by the Rwandan and Tanzanian governments in July 2006. Returnees passed

through a transit centre in Kiyanzi, in the Kirehe District of Rwanda, where they would wait before being allocated land in the east of the country by the government.

The Rwandan government identified a number of resettlement sites, including Rugeyo and Ndego. Joining 208 returnee families in Ndego were 156 poor households from the surrounding area, which the Rwandan government hoped would help with integration in establishing the new 'villages'. In Rugeyo, 105 returnee households were settled on their own.

Although each household was allocated its own plot of land, the resettlement sites lacked both water and sanitation. In cooperation with the local district authorities, the project agency provided accommodation and latrines to 469 families in the Rugeyo and Ndego resettlement sites.

While the beneficiaries completed their houses, they lived in temporary, makeshift mud huts with roofs made of plastic sheeting, which was distributed as part of a return package.

### Selection of beneficiaries

With returnees having to rebuild their livelihoods from scratch, the project used the construction programmes to create a sense of

solidarity among the returnees and the local families that had moved to the new villages, and to support the returnees in providing for themselves.

Both returnees and local families living in the resettlement sites were considered as beneficiaries of the project, with all households requiring shelter. Vulnerability criteria were used to decide which houses would be built first.

### Implementation

Beneficiary associations were established by the agency in collaboration with local authorities. The associations were small groups of beneficiary families formed to collectivise the tasks required for house building. Peer pressure within the group helped to ensure that tasks got done.

The formation of associations was accompanied by an intense community mobilisation campaign. Representatives of local authorities and community leaders conducted meetings with all beneficiaries to explain the aims of the project and how the project would be implemented.

Beneficiaries were free to choose which group they wanted to join as long as each group had a mixed membership. Each group had to include women and men, young and old people,

those of different physical abilities, as well as able people.

Each association produced the necessary materials to build houses for all the families in its group. They produced the clay bricks needed (1,800 for a house; 200 for a latrine), dug latrines, de-barked timbers to be used for construction and cleared and levelled sites. Associations were registered with the local authority and all work was unremunerated.

***‘Nobody is vulnerable! You can always give something to your community!’ -Slogan of the mobilisation teams in the returnee communities***

Through the collectivisation of tasks it was possible to build houses for all members of the community. This would not have been possible if families had worked alone. Materials that could not be produced were provided: cement, foundation stones, sand, construction wood, doors and windows, roof sheeting, as well as tools and other non-food items. Materials were provided at the appropriate stage of construction.

Before house building began, the agency contracted skilled masons to build latrines, each shared by two households. Once the latrines were completed and the necessary construction materials were produced, house building could begin.

Although no other shelter materials were provided for the transitional period between arrival in the new villages and construction of new houses, the agency supported initial livelihood recovery with a distribution of seeds and food rations.

The construction of each house was overseen by a skilled mason hired by the agency and paid a total of US\$ 240 in five instalments for each house. Each household appointed one person from the household to be an assistant to the mason, who monitored the attendance and contribution of the assistant. In return for providing their labour, the ‘assistants’ learned basic construction skills as well as improving their physical living conditions.

The associations were supported by agency field workers who dealt with questions and resolved problems.

#### Technical solution

After approval of the house design by the Ministry of Infrastructure, the building of houses was monitored by the agency, with inspections made by local authority representatives.

The design is based on local building traditions but with some upgrading, such as cement plastering.

Each house provides 48m<sup>2</sup> of covered living space (6m x 8m) and has four rooms and one corridor with two doors. A foundation of hardcore, sand and cement is laid for each house and the exterior of the mud-brick walls is coated in ‘rough-cast’ – a mixture of cement and other materials to provide protection against the weather.

The roof is made of galvanised roofing sheeting and additional roofing sheets were used for the guttering.

Each house is equipped with a rainwater catchment system, storing up to 1.2 cubic metres of water. The system follows the local design and uses cement layers cast together over a reed mould. Local technicians were hired to produce the mould and others to make the cement layers.

To reduce the fuelwood used for cooking, the agency has developed a stove design in collaboration with the Kigali Institute for Science and Technology. The stove can be built out of local materials and has greatly improved fuel efficiency, protecting the community’s natural resources from deforestation.

#### Planned shared services

In its third phase, the project is now concentrating on the following shared services:

- A multi-purpose community centre to be shared with surrounding villages. It is intended be a semi-open hangar accommodating up to 300 people with storage rooms for materials and products of local workshops.
- A day centre for children whose parents worked in the fields.
- Boreholes are also planned to improve access to clean water.

#### Logistics and materials

Some materials were transported directly to the site and distributed to each plot. Other materials of high value or requiring special storage were stocked in a nearby warehouse and distributed on demand.

Beneficiaries were involved in the quality control of materials and were responsible for ensuring the security of the warehouse.

Materials	Quantity
<b>I) Foundation</b>	
Twine for setting out	2 balls
Cement	2.5 sacks
Plastic sheeting for roof	0.2 roll
Hardcore	10 m <sup>3</sup>
Sand	5m <sup>3</sup>
<b>II) Walls</b>	
Brick mould	1 piece
Plastic sheeting for water	1 piece
Timber planks	5.5 pieces
Breeze blocks	8 pieces
Poles for scaffolding	4 pieces
Mud bricks (20 x20x35 cm)	1800
<b>III) Roof</b>	
Poles for truss	26 pieces
Nails 15cm	3 kg
Nails 12cm	3 kg
Nails 10cm	3 kg
Nails 6cm	2 kg
Roofing nails	3 kg
Roofing sheets	29 pieces
Strip iron - for binding joints	18 pieces / 1.5m each
<b>IV) Exterior</b>	
Cement	3 sacs
Doors	2 pieces
Windows	4 pieces
<b>V) Other</b>	
Roofing sheets for gutter	2 pieces