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

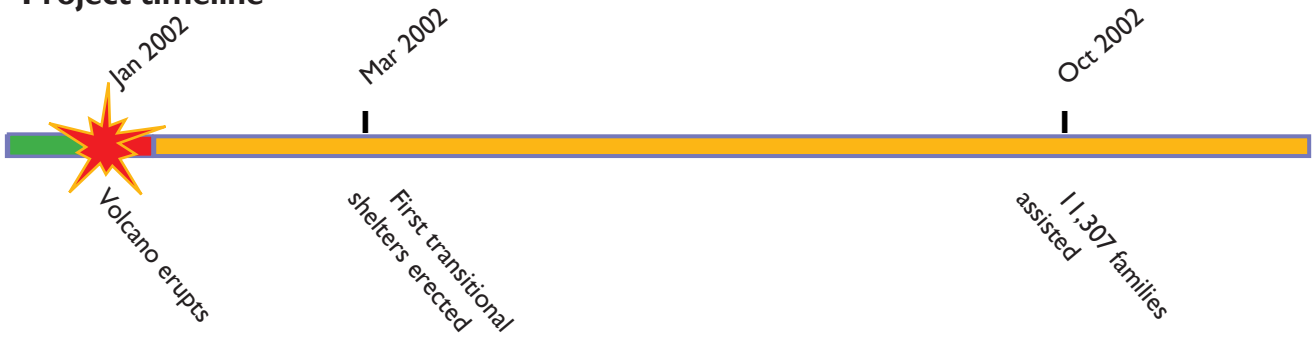
Occupancy rate on handover:
All shelters completed

Shelter size
24m²
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

X Adapting local design meant that shelters were easily constructed and durable enough to be adapted to long-term use.

X 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.

X Local authorities and communities were involved in the development of selection criteria and the dentification of land plots. A good flow of information between agencies and beneficiaries through community mobilisers meant that few complaints were made about beneficiary selection.

X Open dialogue between agencies meant that coordination was effective.

X Environmental impact was minimised through the adoption of managed local construction practices and materials and the provision of pit latrines.

X 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.

W For families of eight or more people, space was insufficient.

W 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^2 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^2 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.