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 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.

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.
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.

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 31.5m² 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.

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.

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

A household in a neighbourhood
could make an application for assist-
ance once they could prove they had
negotiated a new plot of land for re-
building. 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 assist-
ance, 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.

The transitional shelters measured
5m x 4.8m, provided 24m² 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 tradition-
al 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 robust-
ness, without the need for cast foun-
dations, so it could be dismantled and
moved if necessary. Beneficiaries were
instead encouraged to build up founda-
tions with rocks and earth in order
to reduce surface water inside the
houses.

The roofs were covered with cor-
rugated 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 un-
modified. 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.

’ex Goma’s recovery was
dependent largely on
economic regeneration.
By concentrating the
activities within the town
itself, this project consid-
ered the sustainability of
regeneration’ - Donor

Environment

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

Beneficiaries sometimes strength-
ened the frame with bush sticks.
Although the potential environmen-
tal 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.

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 compe-
tition 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 im-
provements 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 beneficiar-
ies 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 im-
plemented alongside a DRR project to
support the Goma Volcano Observa-
tory’s hazard monitoring and a com-
community-based early warning system.