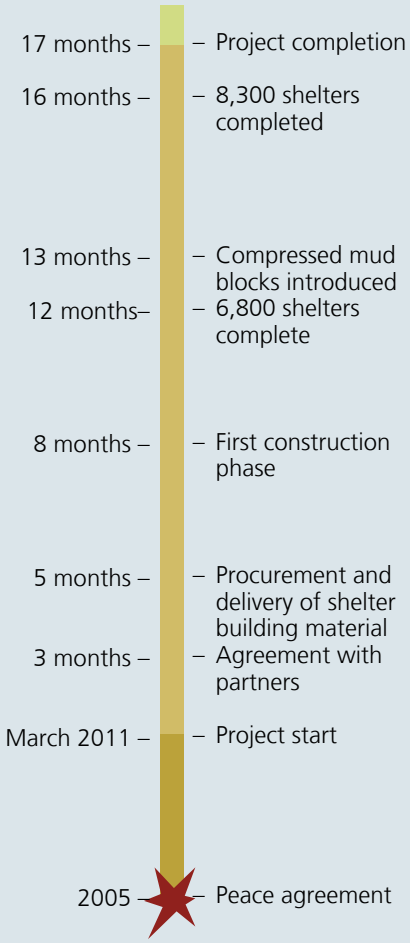
A.29 Republic of South Sudan – 2011 – Conflict

Update:

Keywords: Returns, Resettlement, Construction materials, Core housing construction, Site planning, Infrastructure, Training.

Country:
Republic of South Sudan
Conflict:
Post-war reconstruction
Conflict date:
1983 to 2005
Number of people displaced:
2,000,000
Project target population:
70,000 (includes beneficiaries of quick impact projects)
Project outputs:
8,300 shelters
2,200: Compressed mud blocks
6,100: Bamboo / wattle and daub
Occupancy rate on handover:
95 per cent
Shelter size:
16 m² - up to four people
24 m² - five people or more
Materials cost per shelter:
US$ 400 - 600: poles and bamboo
US$ 800 - 1100: compressed mud blocks
Labour: US$ 260
Average: US$ 1,100
Project cost per shelter:
US$ 600-1,200

Project timeline



Project description

The project supported reintegration of returnees. It constructed 8,300 shelters on new land plots provided by the government. Basic urban services such as school buildings and boreholes, were constructed through parallel programmes. Two shelter designs were employed: bamboo and thatched-roof shelters (6,800) that could be built quickly to respond to large-scale returns and compressed mud block shelters with CGI sheet roofs (1,500) to provide more durable structures.

Strengths and weaknesses

✓ Communities participated in the selection of vulnerable households and in designing shelters.
✓ Good coordination prevented returnees from being sited in areas too far from transport or services.
✓ Shelter construction was linked to projects to deliver basic services and livelihood opportunities.
✓ The project was able to respond to input from authorities and change the shelter design.
✓ Training of affected populations improved their construction skills.
✓ Partners were required to submit phased progress reports for each household to keep the project on schedule.
× Communities demanded incentives for their involvement in the construction phase.
× The target number of shelters was reduced by 35 per cent due to rising costs and delays in block production.
× Construction using compressed mud blocks required a highly-skilled lead builder. In some early cases, skills were lacking and build quality was poor.
× Due to unexpectedly slow block production, the number of mud block shelters was cut by 800.
× Plans to use drainage activities to supply the mud required for blocks failed due to the lack of organisation at the community level.
× The project was too big and created unsustainable demands for materials, leading to concerns over the destruction of national forests.
- Compressed mud-blocks needed to be plastered with burnt oil, sandy soil and Arabic gum.
- As the compressed mud-block technique was new to some areas, its performance over time remains untested.

Approximately 25 per cent of the shelters were built using compressed soil blocks. The technique represented a financial and environmental improvement, but was slower, requiring significant efforts to introduce as a new technology. Photo: Fernando Murillo

Before the conflict

South Sudan became independent from the Republic of the Sudan in 2011 following two civil wars (1955-1972 and 1983-2005). The Comprehensive Peace Agreement in 2005 signalled the beginning of a return process.

In 2011 Sudan, (north and south combined) had an Human Development index of 0.408 placing it in the "low human development" group. South Sudan is relatively less developed than the north and faces considerable challenges in terms of infrastructure development and poverty reduction, with many people unable to access social services or education.

After the conflict

The conflict between The Republic of Sudan and South Sudan stunted development in the South and most returnees had no shelter or land to return to.

2011 marked the peak in return as it coincided with the deadline for southern Sudanese to leave Khartoum, where the majority of IDPs had fled to during the war. There was also a significant return of the diaspora in neighbouring countries, Europe and the USA.

Implementation

The project built 8,300 shelters (6,800 in 2011 and 1,500 in 2012) and more than 42 community buildings (mostly schools) across the 10 states of South Sudan. Land was allocated by the Ministry of Housing and Physical Planning.

The project also implemented quick-impact projects and livelihood schemes.

The project was coordinated by an international agency (with two technical and two administrative staff), and implemented by partner NGOs and community organisations. Construction teams were made up of nine people, including engineers, construction supervisors, masons and carpenters.

Materials were procured by the main agency on behalf of the partners. The materials were distributed as self-construction kits. Experienced masons and carpenters were identified to provide "on-the-job" construction training for young people from both the returnee and host communities.

Construction progress was monitored by giving each shelter one of four statuses:

- To be done: Beneficiaries not yet identified
- In progress: Beneficiaries identified and land title received
- Under construction: Structure and roofing complete
- Finished: Beneficiaries have moved in.

Selection of beneficiaries

Project areas were determined by the agency in collaboration with the Ministry of Humanitarian Affairs. The shelters were distributed according to the proportion of returnees in each county.

Individual beneficiaries were selected jointly by the implementing partner agencies and the government. Criteria included households that were headed by children or women, households with individuals with disabilities and those who had no visible means to support the construction of their own shelter. Beneficiary lists were then verified by the main agency's field staff.

The beneficiaries came mostly from the returnee community but 10 per cent of shelters were constructed for families from the host community.

Associated projects such as borehole and school construction benefitted both groups. Land allocation was made through a government lottery process.

Households with special needs had their veranda, kitchen or oven built for them.

Coordination

Coordination was critical since so many actors were involved. The coordinating agency not only had to ensure coordination within the project in terms of working with implementing partners but also had to work closely with national and state authorities who were developing their planning and building regulations from scratch. Despite many delays the land allocation was completed in time for the shelters to be constructed.

Beneficiaries and host communities were also involved in prioritising the type of quick-impact projects to be implemented.

Hazards

There were a number of site hazards, including severe flooding, that prevented access to some areas. Introduction of significantly stronger compressed mud block foundations helped to mitigate the flood risk in shelters. Beneficiaries with technical supervision, voluntarily dug site drainage channels to reduce flooding risks.

"Return back home is easy when someone supports you to build your shelter."

Beneficiary, Central Equatoria State.

New settlement, in Central Equatoria state, showing a bamboo, wattle and daub shelter (far left), and compressed mud blocks (right).
Photo: Fernando Murillo

Technical solutions

Shelters had a single slope for the roof to improve water harvesting. This design was replicated by other returnees who were not beneficiaries of the programme. A small water tank, that could later be upgraded by homeowners, was provided with every shelter.

The shelter could be expanded with a veranda and an external kitchen to reduce the health risks of smoke from cooking indoors.

Sample shelters were built for the community to examine and comment on. Following feedback, shelters were plastered with burnt oil, Arabic gum and sandy soil.

Different foundation designs were developed for different ground conditions. In poor soil areas, wider foundations were built on top of large stones.

Bamboo model

Initially, shelters were built using poles and bamboo wattle and daub walls. These were relatively quick to build but required significant procurement of timber and bamboo.

Bamboo-based structures required "mudding" to complete and seal the walls. In a number of cases beneficiaries used plastic sheeting for walling instead.

Shelter costs rose during construction due to rising bamboo prices and unplanned transport costs of soil and water for mudding.

Due to the local environmental impacts of using timber, and new conditions set by the government to protect timber sources, it was decided to switch away from these materials.

Compressed mud blocks

Government representatives were aware of a project in the Republic of Sudan which used stabilised soil blocks (SSB) and expressed an interest in this alternative. SSBs had been used for public buildings but were too expensive for domestic purposes.

Using the same press, and mostly black cotton soil, it was possible to make compressed mud blocks without a cement stabiliser.

It was possible to produce 400 compressed blocks a day. While the technique is slower than traditional mud brick production (1,000 per day) it used much less water.

The government was positive and felt that the technique created a new type of industry.

Mud-blocks were less prone to attack by insects compared to bamboo, and enabled construction of strong, load-bearing walls. They were cool by day and warm by night, and did not have to be transported over long distances.

The project also demonstrated to each community how blocks could be used for energy efficient ovens.

The introduction of compressed mud-blocks in 2012 resulted in different reactions from communities.

In some areas, people already built using dried mud-blocks. In other areas the technique was new. In some cases there was resistance to the use of the blocks, as production involved considerable heavy labour. The introduction of the block presses and the realisation that mud-blocks were a relatively efficient material in terms of water use, led to a more positive view of the mud-blocks.

The holes left behind by the production of mud blocks were an issue in some areas, and more effort could have been made to combine drainage digging with mud block production to facilitate a more efficient use of both labour and soil.

In the first year of using compressed blocks, 500 fewer shelters than planned were built, and the project had to return to the bamboo design instead.

Logistics

Bamboo and compressed mud blocks were procured or produced locally. Plastic sheeting and ironmongery were imported.

Materials list

Materials	Quantity
CSB (mud) blocks (foundation)	414
Polythene sheet (1m wide)	15m
CSB (mud) blocks-walls/columns	1034
Corrguated iron sheets x 4m	8 pieces
Timber 125mm x 50mm x 4m	4.2 pieces
Timber 100mm x 50mm x 4m	2 pieces
Timber 100mm x 50mm x 4m	4 pieces
Timber 75x50mm x 4m	11 pieces
Timber 50x50mm x 4m	4 pieces
Galvanized drainage zinc 2m	2.5 pieces
Hoop Iron (50m roll)	20m
Nails 4"	2kg
Nails 3"	2kg
Nails 2.5"	1kg
Galvinized spiral roofing nails 3"	2kg
Hinges and bolts	5+1 pieces
Chicken wire	1 piece
Cement (plastering) (1/6 cement/soil)	2 Bags
Soil/sand for mortar	$1m^3$
Anti termite treatment	2 litres