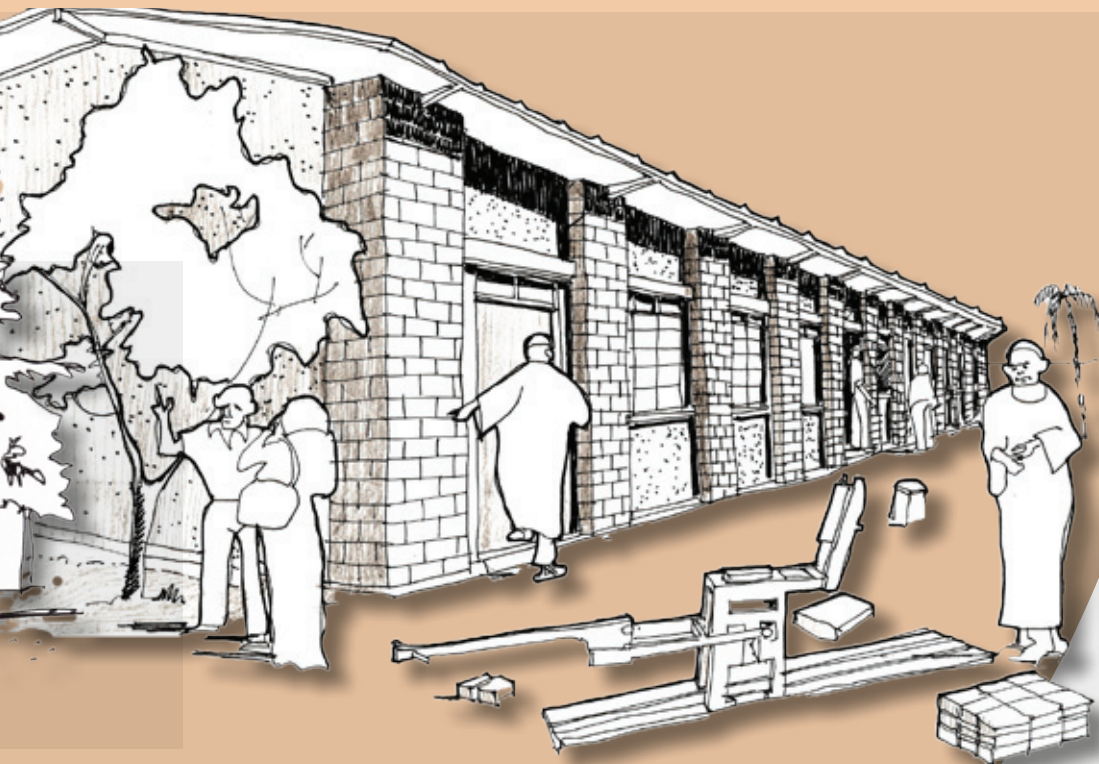




DARFUR EARLY RECOVERY, STABILIZED SOIL BLOCKS FOR SUSTAINABLE URBAN GROWTH



UN HABITAT
FOR A BETTER URBAN FUTURE



DFID Department for
International
Development

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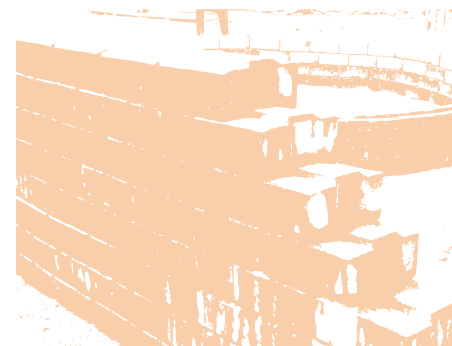
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1. HISTORICAL BACKGROUND

Darfur (“land of the Fur people”) is in the western region of Sudan, divided into three states: North, South, and West (figure 1). It has an area of 493,180 kilometres² (196,555 miles²). It is largely an arid plateau, with the Marra Mountains (Jebel Marra), a range of volcanic peaks rising up to 3,000 metres (10,100 feet), in the centre of the region. North Darfur is a sandy desert, while South Darfur is a bush forest (*source: Wikipedia*).

FIGURE 1. MAP OF SUDAN, SHOWING DARFUR



Its history is rich and fascinating, linked to remote kingdoms and civilizations that flourished in an environment in which humans have always struggled to survive.

FOLLOWING IS A SHORT HISTORICAL TOUR:

- 14th century.** Islam is introduced. First Tunjur King, Ahmed el Makur, reduces many chiefs to submission.
- 1791.** Abd er Rahman establishes a new capital in El Fasher and in 1799 cooperates with Napoleon to defeat the Mamluks.
- 1856.** Al Zubayri Rahma starts trade operations in the south of Darfur, selling slaves and ivory bound for Egypt. Natives from Bahr El Gazal (southern Sudan) pay tribute to Darfur.

- 1881.** Under Egyptian rule and after many popular revolts, Gordon appoints Sir Rudolf von Slatin as Governor of Darfur, instead of the royal family as requested.
- 1899.** Ali Dinar is declared by the Anglo-Egyptian authority as Sultan of Darfur.
- 1916.** The English invade Darfur and incorporate the region into Sudan again to prevent it from falling under the influence of Turkey.



Landscape in Nyala

- 1956.** Sudan achieves independence.
- 1960.** Darfuri groups question the neglect of the region by the central government.
- 1969.** Tension with the Government of Chad after military activities on the Darfur border.
- 1972.** The first Sudanese civil war ends.
- 1983.** The second Sudanese civil war starts.
- 1994.** Darfur is divided into three states: North, South, and West.
- 2003.** The Justice and Equality Movement and Sudan Liberation Movement agree on accusing the central government of oppression in Darfur. The government retaliates by attacking these groups.
- 2006.** The Sudan Liberation Movement signs a peace agreement with the government.
- 2009.** The International Criminal Court issues an arrest warrant for Sudanese President Omar Al Bashir on counts of war crimes and crimes against humanity, but rules that there is insufficient evidence to prosecute him for genocide.



Aerial view of Darfur

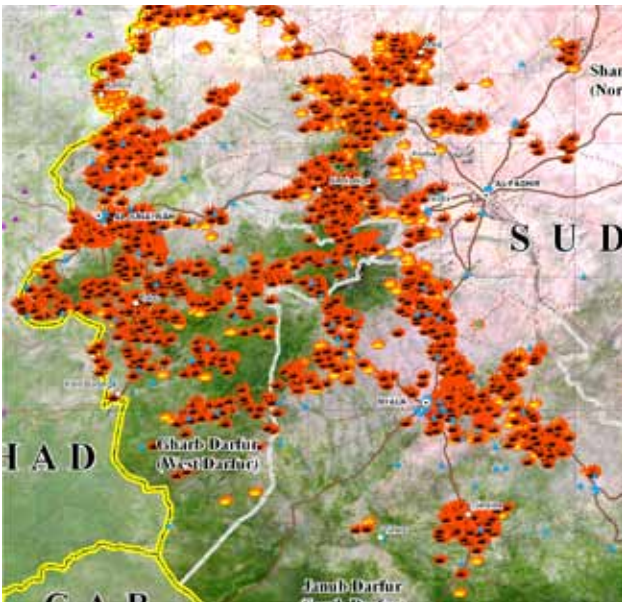
2. CONTEXT

KEY STATISTICS:

- 6 million people inhabit the three states of Darfur
- 2 million (one-third) are internally displaced persons (IDPs)
- 4 million (two-thirds) depend on humanitarian aid
- Humanitarian aid reaches only 1 million people

(Source: World Vision UK)

FIGURE 2. MAP SHOWING CONFIRMED ATTACKS IN DARFUR CITIES AND VILLAGES



Source: www.unsudanig.org

FIGURE 3. MAP SHOWING THE LOCATION OF IDP AND REFUGEE CAMPS



Source: Medecins sans Frontieres msf.ca/blogs/StevenC/2007/11/2/



IDP squatter area in Nyala

Sudan has the largest population of displaced persons in the world today. Nearly two million are in Darfur, in large settlements such as Abu Shouk IDP camp in El Fasher, North Darfur, where exponential population growth and related environmental stress have created the conditions that trigger conflict, which is then sustained by political, tribal, or ethnic differences. This can be considered a tragic example of the social breakdown that can result from ecological collapse. Long-term peace in the region will not be possible unless the underlying and closely linked environmental and livelihood issues are resolved.

Source: UNEP, *Post-conflict Environment Report for Sudan, 2006*



Forced migration and the fragile environment of Darfur

It is estimated by different sources that a third of the forests in Darfur was lost between 1973 and 2006. The population is very aware of the problem; maintaining forests is a priority of the local population. However, fired bricks continue being the preferred construction material in Darfur and are widely used, with serious environmental and social consequences. UN agencies are aware of the importance of facilitating the shift from

fired brick to stabilized soil blocks. However, current limitations on stabilized soil block production (lack of machines and skilled labour) still tend to increase the price, meaning the product cannot compete with fired bricks as a permanent construction material.



Protection of trees using burnt bricks and typical IDP temporary dwellings using wooden materials

Both dry and rainy seasons create a serious threat to human survival in the region. During the dry season, drought very much affects agricultural activities and, of course, the production of building materials. But rainy seasons are characterized by torrential raining, followed by frequent flooding. In both cases, the need for water resistant building material is of paramount importance.

Desertification is pushing the Sahel further south and this encroachment creates a shortage of grazing areas and induces migration. This natural phenomenon suggests that drought, famine, migration and internal displacement have environmental roots and are historical. It is the combination of these and other factors that make Darfur such a vulnerable and unique area. But it will be shown that despite these frailties, the resourcefulness of the population is tremendous as they work hard to eke out a living in a sea of adversity.

Source: UN-HABITAT, 2009

THE COMBINATION OF SEVERAL FACTORS SHAPE THE PARTICULAR PROBLEMS OF DARFUR:

- 1) Massive migration of IDPs and landless poor to urban areas
- 2) Lack of affordable food, exacerbated by World Food Programme's reduction in food aid distribution due to insecurity and soaring prices
- 3) Drought, which delays crop harvest
- 4) Creation of IDP camps, which generate serious tension with local residents
- 5) Water shortage, as a result of the population increase
- 6) Deforestation, as a result of the massive use of fired brick in construction

Brick making provides a livelihood to many IDP camps residents but also contributes to severe localized deforestation. If it were properly managed, however, the forestry sector could represent a significant opportunity for economic development and sustainable north-south trade.

Source: UNEP, Post-conflict Environment Report for Sudan, 2006



Evidences of environmental threats: Water distribution, wooden transportation and burnt bricks oven.



Boys preparing soil to burnt bricks



3. PROJECT BACKGROUND

“If all estimated 400,000 families currently displaced in Darfur return to their places of origin and reconstruct their destroyed homes utilizing the traditional building practices, with wood as the main structural element, they will need to find and cut an estimated 16 million mature trees. In light of the ongoing documented deforestation, this would be an environmental, social, and economic disaster that must be avoided” (source: project document).



Community meeting to discuss SSB

In line with this, the UN-HABITAT preparatory programme proposal is responding to one of the main recommendations of the 2006 report by the Darfur Joint Needs Assessment Team, which stated that a key priority is to enable a critical mass of people to apply “woodless” building technologies in the reconstruction and swift restoration of community infrastructure.



Aerial view of Geneina

THE PROJECT OUTPUTS SUPPORT:

1. Millennium Development Goal 7, Target 11, on reducing the number of slum dwellers and preventing new slum formations
2. The national poverty eradication strategy, through arresting environmental degradation and empowering local communities, vulnerable groups, and civil society organizations
3. An enabling environment for the development and promotion of the private sector, building institutional capacity in terms of land tenure reform

The overarching objective of the project is to raise awareness about and build consensus on the adoption of alternative building technologies, in order to lay the foundation for a sustainable recovery process and the good management of land following the large-scale return and reintegration of IDPs in Darfur.



Building with alternative technologies

UN-HABITAT has identified stabilized soil blocks as the most viable alternative building material for the reconstruction challenges facing the returning population in Darfur.

The technology allows for zero consumption of firewood and structural timber in building construction. There is also a consistent reduction in water use up to 60 percent less than the amount needed for the production of fired bricks.

The cost effectiveness of stabilized soil blocks has been proved by comparing the bill of quantities of construction involving soil blocks with that of fired brick. There is no cost increase with stabilized soil blocks.

4. APPROACH

Training of trainers has been used to disseminate skills in the major cities, towns, and villages in Darfur. More than 1,800 persons received training both training of trainers and on-the-job training at the pilot demonstration buildings and public utilities, which were built with locally produced soil blocks. The training targeted masons and technical schools seeking to introduce stabilized soil block technology as a replacement for fired brick.



A training session in Nyala Technical College

KEY STATISTICS PER REGION

TABLE I. TRAINING AND PDB PER REGION

Area	TOT	OJT	Total	PDB
Nyala	410	240	650	11
Zalingei	0	0	177	2
Geneina	147	150	120	9
El Fasher	263	225	488	16
Villages	60	320	380	48
Total	880	935	1815	86

FIGURE 4. MAKING STABILIZED SOIL BLOCKS

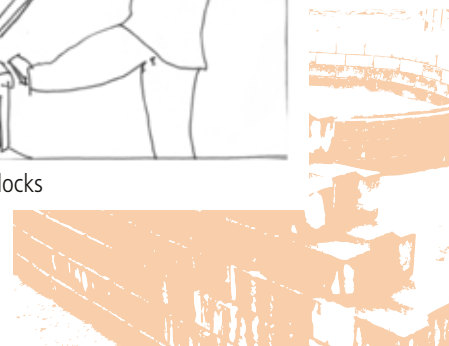
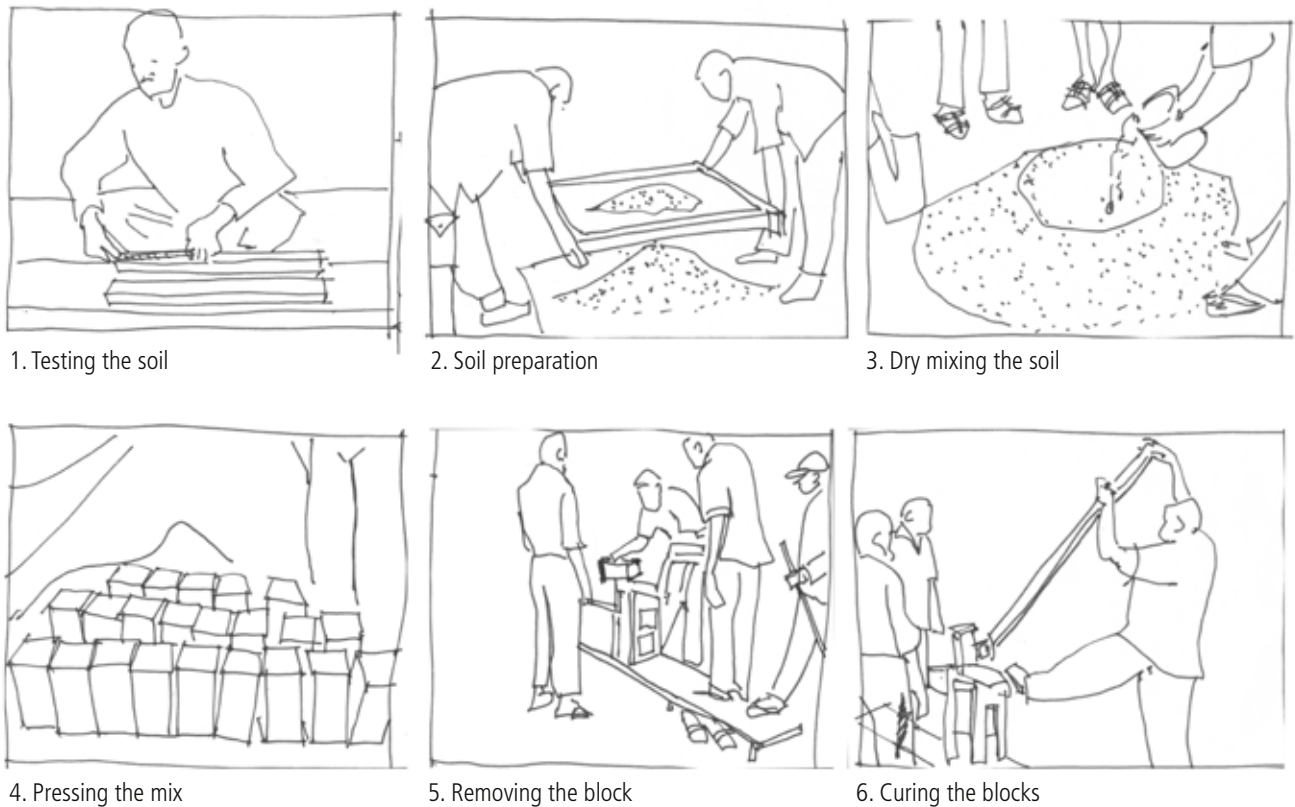
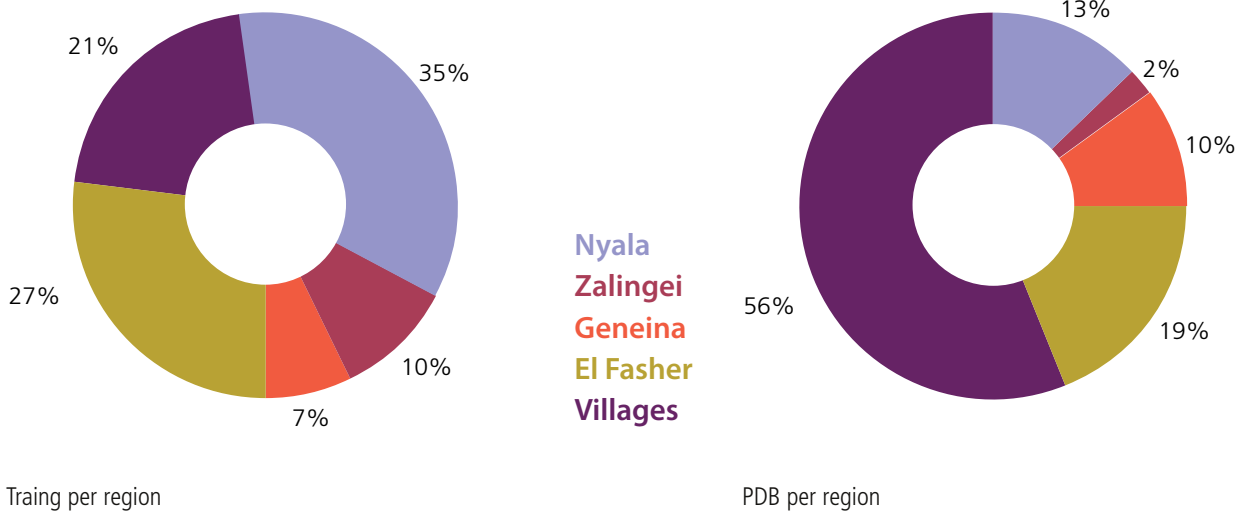


FIGURE 5. TRAINING AND PDB PER REGION



TOT, OJT AND PDB PER IMPLEMENTING

TABLE II. TRAINING AND PDB PER IMPLEMENTING PARTNERS

Implementing partners	TOT	OJT	Total	PDB
Local academia	550	199	749	16
SMPPPU	270	216	486	14
Local NGOs	0	300	300	17
INGOs	60	220	280	39
Total	880	935	1815	86

FIGURE 6. TRAINING AND PDB PER IMPLEMENTING PARTNER

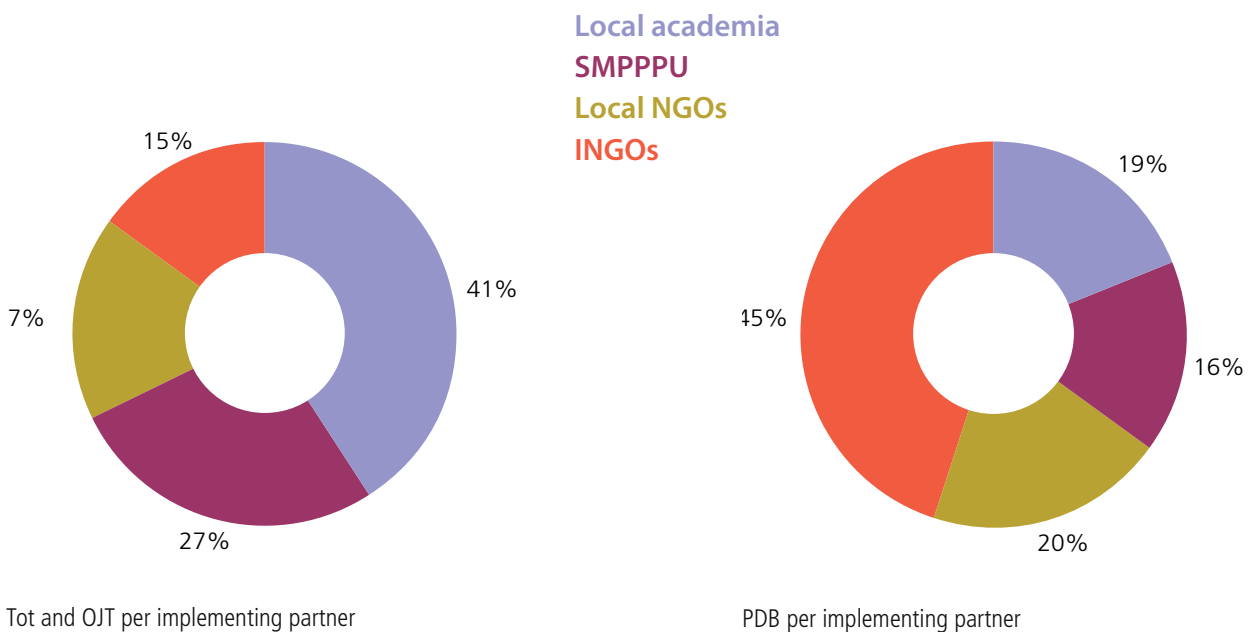


TABLE III. TRAINING AND PDB PER DATE OF CONSTRUCTION

Date of construction	TOT	OJT	Total	PDB
2008	63	0	63	2
Jan-March 09	127	195	322	22
April-June 09	316	360	676	47
July-Nov 09	374	380	754	15
Total	880	935	1815	86

FIGURE 7. PDB PER BUILDING TYPE

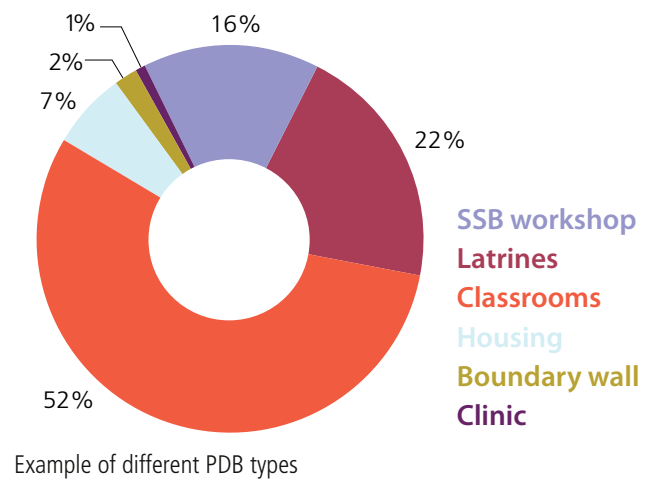


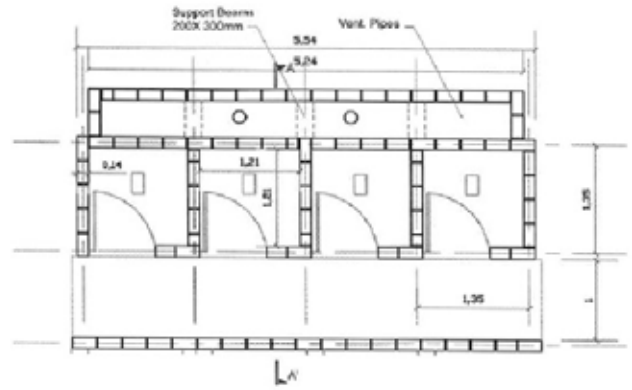
TABLE IV. PDB PER BUILDING TYPE

	SSB workshops	Latrines	Classrooms	Housing	Boundary wall	Clinic
Total	14	19	44	6	2	1

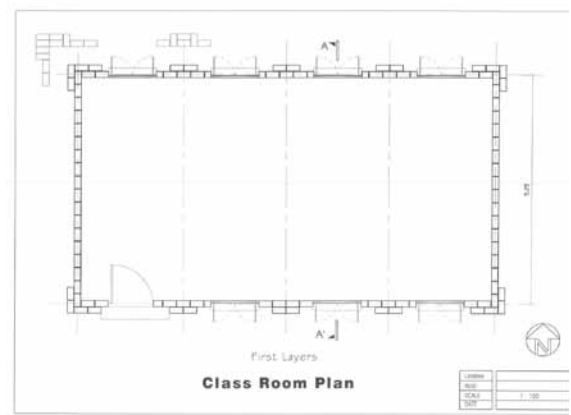
EXAMPLES OF DIFFERENT PDB TYPES



LATRINES



CLASSROOMS



WORKSHOPS



BOUNDARY WALLS



CLINICS



HOUSING



Regarding equipment, 120 stabilized soil block machines have been purchased and imported; 60 have been shipped to the three states of Darfur. Twenty-four of the machines are leased to international NGOs, 20 to the State Ministry of Physical Planning and Public

Utilities, 40 to academic institutions, and 36 to local non-governmental organizations. The lease requires that the machines be well maintained and returned after the agreed-upon number of blocks has been produced for the pilot demonstration buildings.



Scene of team work using a SSB machine



6. LESSONS LEARNED

Introducing stabilized soil blocks in the context of Darfur provided strategic lessons:

1. **Technological:** The soil in most areas of the three states is appropriate for producing construction blocks. Training demonstrated that the basic skills for production are acquired in short time.
2. **Economical:** Compared to fired bricks, stabilized soil blocks are 30 percent cheaper and are faster to build.
3. **Social:** Producing stabilized soil blocks is labour intensive. Test cases have shown much potential as a microenterprise activity.
4. **Environmental:** Stabilized soil blocks have a positive impact through counteracting deforestation and reducing water usage.



Arabic Gum



A model of SSB

Training (training of trainers and on-the-job training) has covered the three states of Darfur, reaching remote villages and localities, thanks to well-designed soil block machines that are easy to transport, use, and maintain.

The project has challenged technical schools to research new technologies to build affordable housing for the most vulnerable groups. Different experiments have been carried out, including making stabilized soil blocks with gum arabic, a promising material from the region, and using different roofing systems.



Metal roofing for PDB

Although the finishing of stabilized soil blocks is waterproof and good looking, in some areas people prefer to plaster the walls, both external and internal, to allow for painting (especially in schools and clinics, which do so for health reasons).

ALTERNATIVE SSB TYPES



Interlocking SSB



SSB machine



Several SSB types

Stabilized soil mixed with a percentage of cement shows optimum results for plastering; this opens another window of opportunity to provide environmental friendly, affordable building technology for low-income groups.

The stabilized soil block machines were adapted to make the blocks easier to build with and to waste less material, moving from the interlocking model to the compact model.



Examples of plastering and finishing






CHANGE THE BUILDING TECHNOLOGY

UN-HABITAT has identified Stabilised Soil Block (SSB) technology as the one that can potentially provide an alternative building material for the re-construction challenge facing the returning population in Darfur. The technology allows for zero consumption of firewood and structural timber in building construction. The SSB cost effectiveness has been proved by comparing BoQ of fired bricks construction with the SSB alternative showing that no cost increase, and even it can be reduced a 30% through the adoption of the latter. A summary of the advantages respect burnt brick are presented in Table V.

TABLE V. COMPARISON BETWEEN BURNT BRICK AND SSB

Item	Stabilized Soil Blocks (SSB)	Burnt Bricks (BB)
Number per SM	26	213
Number for a House 4M x 4M	1,664	13,824
Cost of an SSB/BB	\$0.5	\$0.08
Total cost of SSB/BB	\$832	\$1,105
Mud Mortar	\$0	\$0
Construction Labor	\$200	\$400
Total costs	\$1,032	\$1,505
Difference in cost	\$473 (approx 30%)	
Estimated water required	6,000 litres	6,000 litres
Trees to be cut	0	14

TABLE VI. SSB COMPARISONS WITH BURNT BRICKS AND CONCRETE BLOCKS

Description	Stabilized soil block (SSB)	Burnt bricks (BB)	Hollow concrete blocks (CB)
			
Size	290x140x120 mm	180x90x50 mm	390x190x190 mm
Number per square meter	26	216	12.5
Number required for a 4 m x 4 m house	1,644	13,824	800
Price	\$0.36	\$0.08	\$0.9
Cost	\$599	\$1,105	\$720
Cost of cement sand mortar	\$142	\$750	\$214
Construction labor costs	\$300	\$400	\$200
Estimated amount of water required	6,000 liters	12,000 liters	6,000 liters
Estimated number of trees required	0	14	0
Total cost per house	\$1,041	\$2,255	\$1,134
Difference in cost to BB	\$1,214	0	\$1,121
Percentage in cost	Approx. 53.8%		49.7%
Comparison between SSB & CB	93\$		
Percentage in cost SSB vs CB	8.9%		

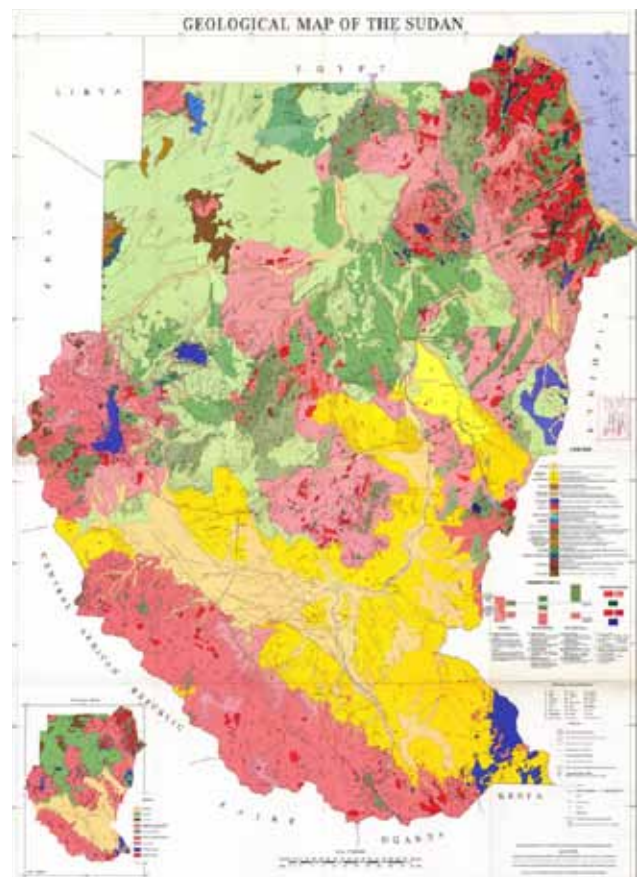


Curing SSB and burnt bricks

With the exception of cement, all the basic components for the production of stabilized soil blocks (clay, sand, and water) are readily available throughout Darfur, even though the physical and chemical characteristics vary from place to place.

As the cost of cement in Darfur is double the cost found in the rest of Sudan, a viable alternative needs to be found to keep the production cost of stabilized soil blocks competitive. Lime, volcanic ash, and pozzolana are viable alternative binders, and since several deposits of limestone exist in Darfur, UN-HABITAT is presently liaising with the state authorities to collect data for the mapping of Darfur's existing quarries.

FIGURE 8. SOIL CONDITIONS IN SUDAN



Source: Ministry of Mines, Sudan. Published by www.eusoils.jrc.ec.europa.eu

Training strategy has been designed and implemented as follows:

- A ToT is conducted for 10/11 days for an average of 60 individuals trained by an international consultant
- Agreements are signed between UN – HABITAT and national / international partners working on construction projects in Darfur who are willing to share the cost for the construction of SSB Pilot Demonstration Buildings
- UN - HABITAT supplies the equipment and trainers while the partners procure the materials and select the labour force for the PDB on-the-job training and construction works.

Three Training of Trainers (ToT) and 3 On-The-Job training have been conducted in three localities, El Fasher, Nyala and Zalingei, as well as different localities in their hinterland, for individuals selected among masons from IDP camps and host population who have become the trainers for on-the-job training of 20 individuals during the construction of each of the PDB being presently implemented in 35 localities of Darfur. Typically the material inputs provided by UN HABITAT for the SSB ToT are building materials (cement, soil and sand), equipment (SSB machines, trowels, etc), while the training structure is composed of:

- 1 international consultant, UN HABITAT
- 2 training managers, UN HABITAT
- 60 trainees

In order to maximize the use of existing Darfurian educational institution of secondary and tertiary level UN HABITAT has identified the following venues for the conduction of Tots:

- Nyala Technical College South Darfur
- Nyala Technical School South Darfur
- El Fasher Technical School, North Darfur
- Zalingei University, West Darfur

The selection of trainees has been conducted in conjunction with partners and based on their previous and present experience as semi skilled labourer in construction sector as the main criterion. When possible a gender factor has been applied for inclusion of female trainees.

In the evolution of the project it can be recognized a first moment, introductory, in which local organizations and international ONGs were contacted and arrangements were done to carry out the different activities. A second moment in which TOT provide the necessary foundation on production and construction with SSB in a significant number of trainees, who smoothly and after different training start to play the role of trainers, disseminating the new skills and even adapting the technology to the local conditions¹.

¹ It was reported from the field, the adaptation of the SSB machines, improving it to satisfy specific local requirements.

PROMOTING AVAILABILITY OF “WOODLESS” BUILDING MATERIALS

The training and PDBs implementation have so far shown that a much higher impact could easily be achieved by responding to the growing demand of SSB machines being generated by the exposure to decision makers, masons, contractors and users to the new technology and to this end UN – HABITAT procured 120 SSB machines under the Project to satisfy the local growing demand.

In addition the private sector has already started to include SSB for the construction of individual houses, mostly in Nyala, employing some of the UN HABITAT trained individuals and utilizing the equipment available at the local educational institution². On the other hand, discussions have been initiated on the use of these cases to update construction standards with SMPPPU, in order to replace fired bricks, normally used for construction of public buildings, for SSB.

DEVELOPING A LAND REGULARIZATION AND DISPUTE RESOLUTION OPTION

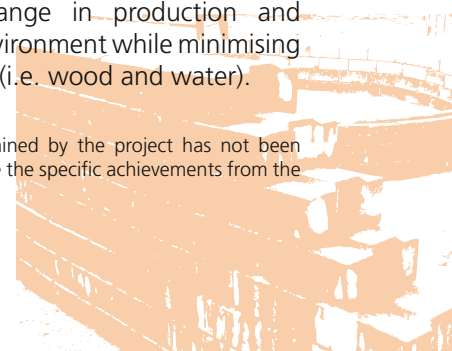
IDPs returns to their original villages remains very limited; on the contrary recent conflicts erupted in South Darfur have contributed to an increase of IDP flow in urban areas and camps. Consequently previous assessments conducted by UN agencies regarding IDP returning patterns need to be constantly updated and figures often result overturned by the recent incidents. Consultants have highlight in their report the land administrative and regulatory framework presently in place in Darfur including the Darfur Land Commission roles and responsibilities.

On the other hand, as it was mentioned, in the case of Nyala, the initiative taken by the Government to settle permanently people in Sakali is analyzed as a potential mechanism to address specifically the relationship of those IDPs willing to remain in urban areas accessing to secure land tenure. However bearing in mind the almost total absence of population and local authorities at village level it would be premature to draft any recommendations aimed at establishing a land dispute mechanism at this point in time.

INITIATING A RECONSTRUCTION SUPPORT SYSTEM

Through UN-HABITAT training programmes, construction of PDB and the increased local availability of SSB machines the direct beneficiaries are beginning to directly manage a change in production and construction of their built environment while minimising the use of natural resources (i.e. wood and water).

² Training provided by individual trained by the project has not been included in the statistics to separate the specific achievements from the multiplied impact of the project.



In partnership with INGOs, NGOs, South Darfur State Ministry of Physical Planning and Public Utilities UN-HABITAT have started the construction of Pilot Demonstration Buildings (PDB) using the SSB technology introduced during the previous ToTs and constitute the cornerstone of the dissemination of Appropriate Building Technology in Darfur.

Regarding sustainable human settlement management, it has been discussed resettlement model with public officials and authority, providing guidance to approach the issue in a systematic way, providing the necessary inputs for future projects of capacity building at SMPPPU.



SSB as community mobilizer

The programme facilitates the creation of an enabling environment for the development and promotion of the private sector; it also aims to build institutional capacity in terms of land tenure reforms.

SAKALI: A CASE STUDY

Sakali, which is a resettlement project on the outskirts of Nyala, is a test case. Its inhabitants are mostly IDPs from camps who wanted to be permanently settled.



A street in Sakali

The State Ministry of Physical Planning and Public Utilities has demarcated plots and the governor has waived legal fees.

The project has built six housing units for vulnerable families (widows and the handicapped), as pilot demonstration buildings to test the appropriateness of stabilized soil block and its cost and quality compared to other building materials.

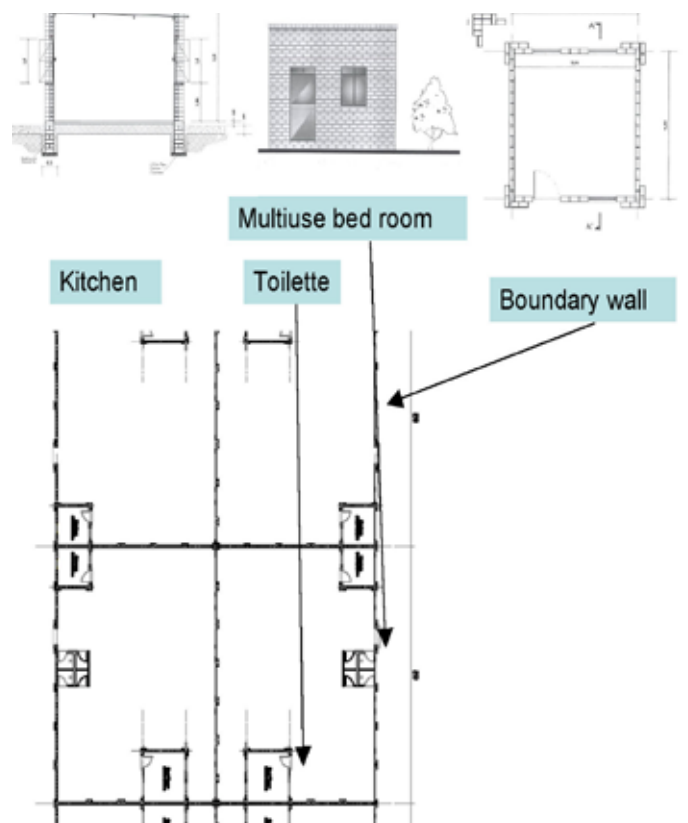
The project have one single room (4 metres by 4 metres), a toilet/shower, a kitchen, and a boundary wall.

Preliminary analysis:

- House: 2,400 stabilized soil blocks
- 20 bags of cement: USD 500
- 15 days, 5 persons, 1 machine (75 person-days)
- Surrounding wall:** 5,600 stabilized soil blocks, mortar, 16 extra days: USD 100
- Roofing (metal sheet): 18m²: USD 450
- 1 door and 3 windows: USD 350
- Subtotal: USD 1,400
- Water supply (1 small tank shared by 4 families): USD 650

- Ventilated latrine:** USD 450
- Sub-total: USD 1,100
- Total investment: USD 2,500
- Person-days of work: 155 (1 month for 5 persons)

FIGURE 9. PLAN FOR A HOUSING CLUSTER



SETTLEMENT PROJECT PRINCIPLES:

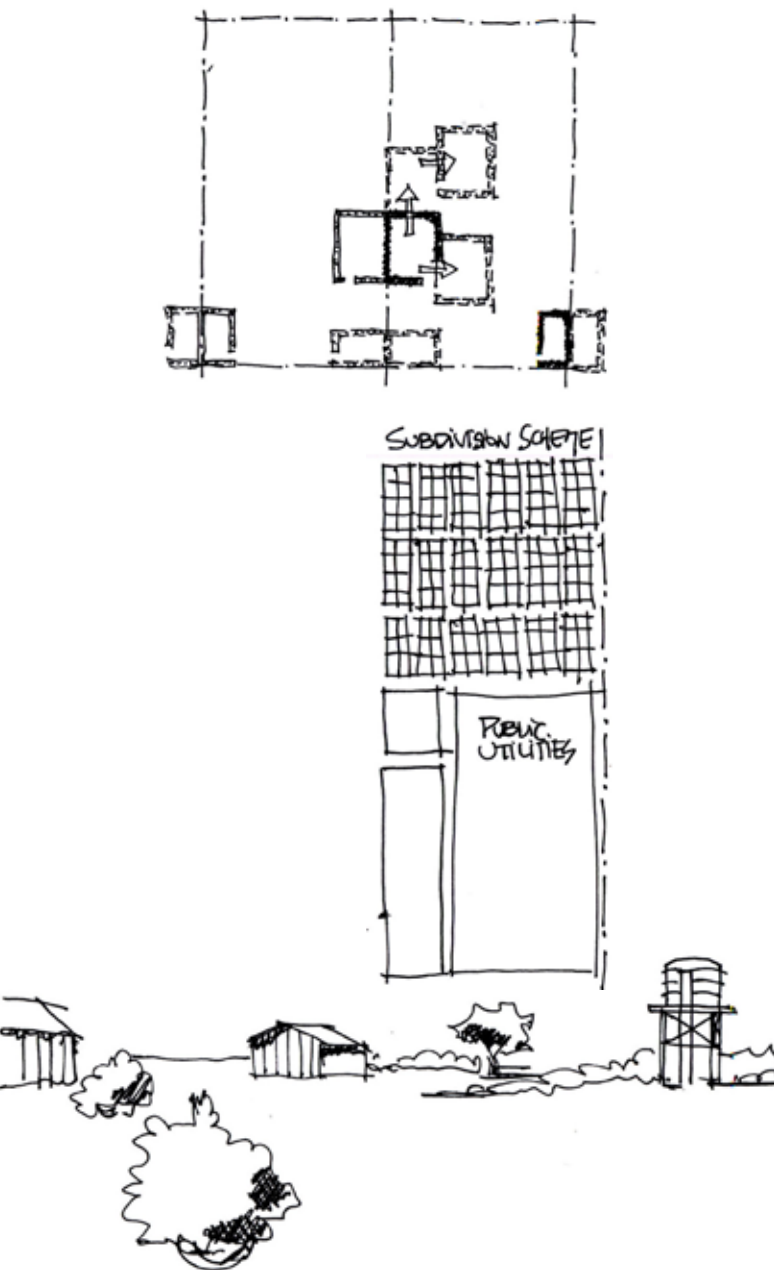
- Massive soil block production and a water and sanitation network, decreasing production costs
- Detached buildings, common walls (reducing walls by half)
- Shared water and sanitation services (every five households)
- Step-by-step housing growth (assisted by a design and planning team)
- Tax exception to imported cement and construction materials
- Subsidize cement, food, and stabilized soil block machines
- Materials bank: soil blocks stored by the community to support the replicability of the process

The UN-HABITAT team in Darfur has developed a methodology to work with the communities on participatory planning.



View of Sakali resettlement housing project

FIGURE 10. SITE LAY OUT OF SAKALI



PARTICIPATORY PLANNING

In Sakali, the team supported the community in developing criteria to identify the most vulnerable groups for habitat demonstration projects. Also with the community, the team has developed a housing model that can expand, adding rooms according to the needs and ability of the families.



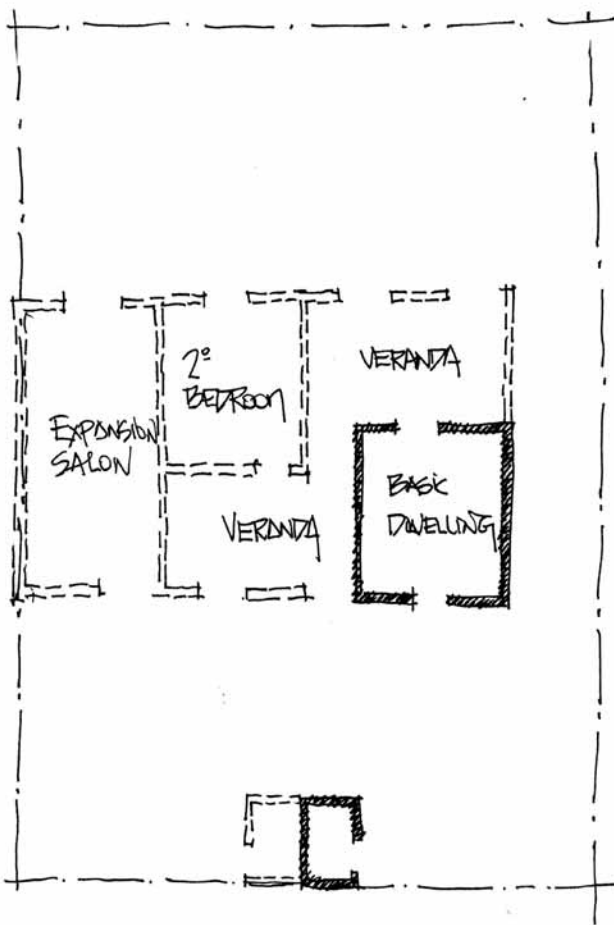
Participatory community planning



BIO-CLIMATIC ARCHITECTURE AND SITE LAY OUT DESIGN

Bio-climatic architecture and site layout and design: The UN-HABITAT team has been exploring different alternatives to reduce energy consumption in the pilot housing. The pilot-testing prototypes will provide a unique opportunity to research different architectural types and arrangements in Darfur. The goal is to maximize the use of available land, match cultural values, minimize energy consumption, optimize natural design strategies for ventilation, etc.

FIGURE 11. SEARCHING FOR BIO-CLIMATIC DESIGN



STABILIZED SOIL BLOCK PRODUCTION PERFORMANCE:

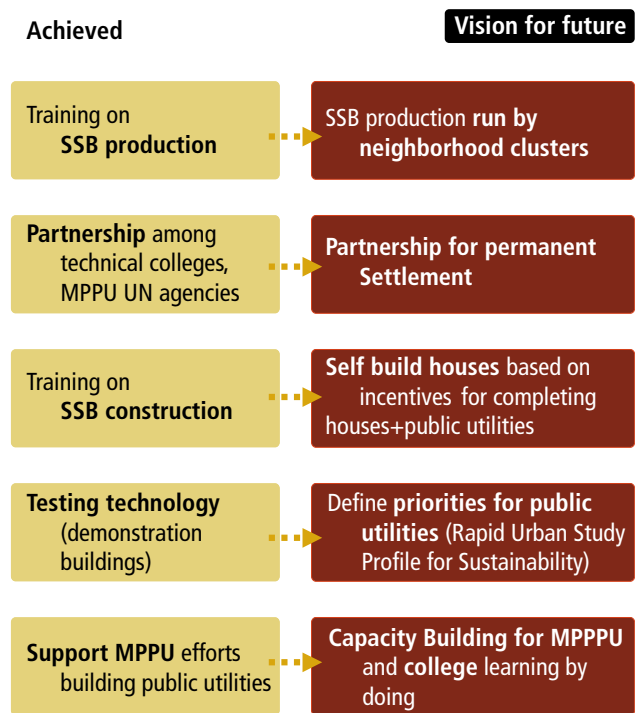
- 40 blocks per square meter
- 350 soil blocks produced daily per machine, with 5 workers
- 2,400 soil blocks to build a room (4 metres by 4 metres)
- 8,080 soil blocks required in total, adding a toilet and surrounding wall
- 23 days to produce the necessary soil blocks, plus 10 days more for construction (one month)



Community work producing SSB

Summary of project achievements and challenges ahead

FIGURE 12. ACHIEVEMENTS AND CHALLENGES



7. THE WAY FORWARD

The challenge the project faces is how to scale up from test cases and pilot demonstration buildings to massive construction, replacing fired bricks in Darfur.

The pilot demonstration buildings provide a valid source of information to build up a vision for expanding stabilized soil block use. It has targeted low-income communities as major soil block producers because of the potential for income generation.

However, it is still necessary to explore how stabilized soil blocks can be introduced to the market. In addition, creating microfinance skills for low-income groups must be looked at.

Studies on land issues suggest that SSB may work as a crucial facilitator for the permanent settlement of low-income groups, promoting sustainable urbanization.



Aerial view of Darfur during the rainy season

FIGURE 13. URBAN STRUCTURE OF THE MAIN CITIES

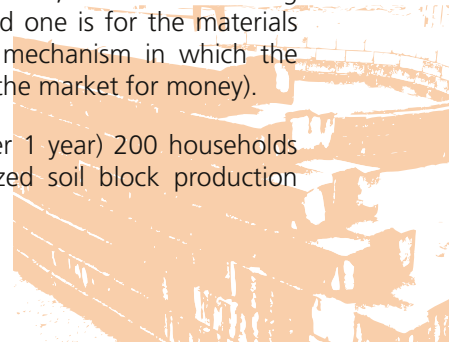


Expanding stabilized soil blocks in Darfur possibly requires a strategy for the progressive upgrading of settlements, starting with land tenure and moving to providing machines and logistical assistance to help produce soil blocks on a massive scale. On the other hand, microfinance initiatives that can compete in the market and generate income must be encouraged.

The works in Sakali provide the opportunity to expand the programme, supplying strategic resources that support governmental efforts to develop a popular habitat market, create income generation opportunities, and improve living conditions.

Discussions with the community on how to handle their many different needs culminated with the idea of creating neighbourhood clusters of six families, each of which would lease one stabilized soil block machine and receive the required support for production. The plan is that, for every three stabilized soil blocks produced, one is for themselves, one is for building public utilities (donated), and one is for the materials bank (a community saving mechanism in which the blocks can be exchanged in the market for money).

The strategy is to have (after 1 year) 200 households properly settled, the stabilized soil block production



infrastructure and skills provided, community savings as a revolving fund to continue the upgrading plan, and 40 microfinance start-ups competing in the market and introducing the soil block as a cheaper material than fired brick.

The State Ministry of Physical Planning and Public Utilities is a crucial partner in this process, as they plan to match these efforts by channelling public funds to develop the habitat of the lowest income groups (e.g. IDPs).



Public latrine in Nyala

FIGURE 14. 1 YEAR BLUE PRINT

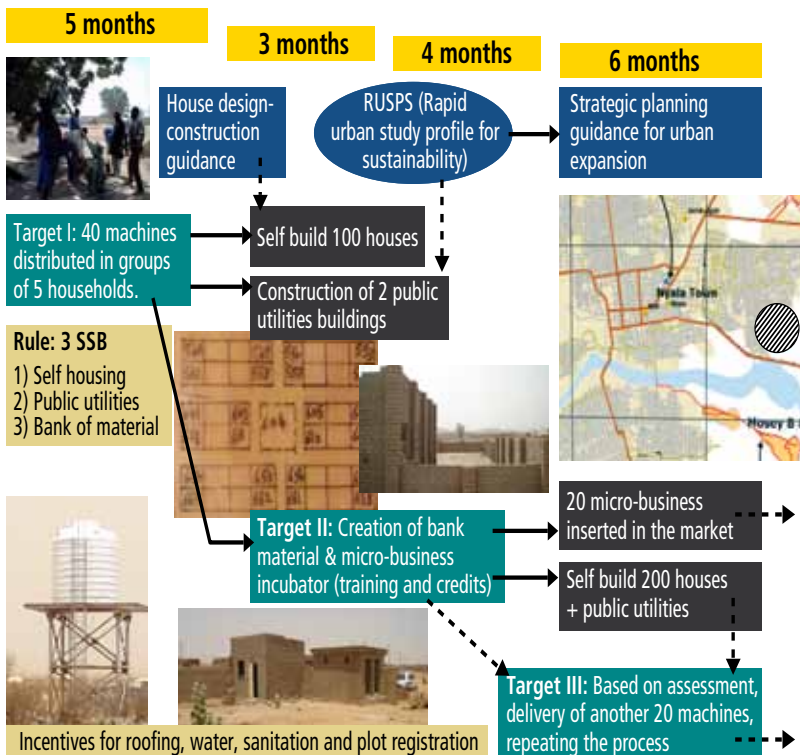


FIGURE 15. SETTLEMENT PILOT PROJECT

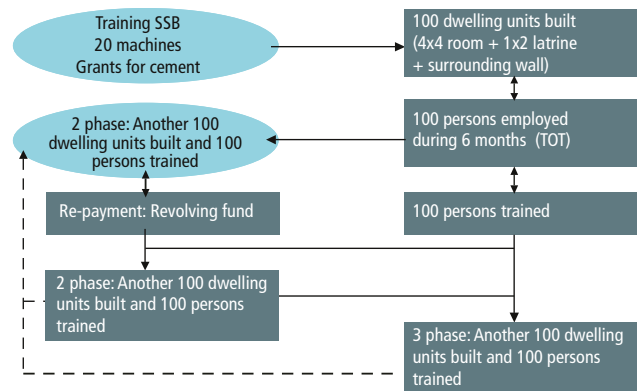
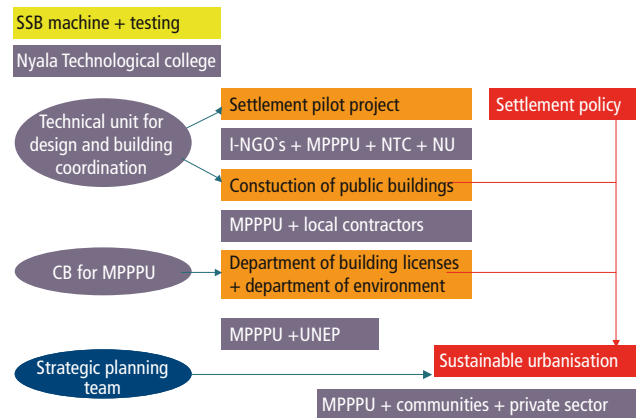


FIGURE 16. PROJECT CONCEPT



- Capacity building for the State Ministry of Physical Planning and Public Utilities seeks to empower this body to properly coordinate actions to cope with rapid urbanization.
- The experience of training and building pilot demonstration projects serves to lay the foundation upon which to carry out larger operations, bringing together the public and the private sector in a sustainable urban planning development plan.



View of the outskirts of El Fasher

8. DONOR PARTNERSHIPS

- The Department of International Development and the Government of Japan provided funds to UN-HABITAT to carry out the project in the three states of Darfur.
- Beyond providing funds, both donors partnered with UN-HABITAT to achieve the goals and understand the challenges faced.
- Working in partnership with the two donors resulted in an effective way to sort out bottlenecks in terms of delivering training and pilot demonstration buildings.
- The project faced initial difficulties starting operations; once it started, it lost some implementing partners because of the volatile political context in Darfur during 2008 and 2009.
- Such challenges resulted in delays that required the rescheduling of many activities.
- Follow-up and flexibility from the donors to agree on a no-cost extension of the project till December 2009 allows for the completion of the planned agenda, both in terms of training and the construction of public utilities.



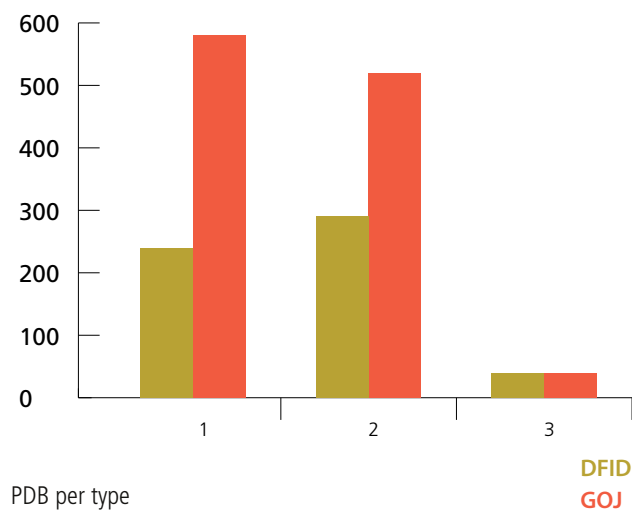
Self organized community work

Training of trainers, on-the-job training, and pilot demonstration buildings per donor (Table VI)

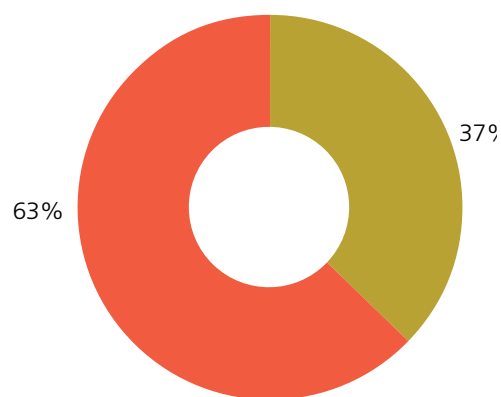
TABLE VII. TRAINING AND PDB PER DONOR

Donor	Training of Trainers	On-the-job training	Total	Pilot demonstration buildings
DFID	286	387	673	42
GoJ	594	548	1,142	44
Total	880	935	1,815	86

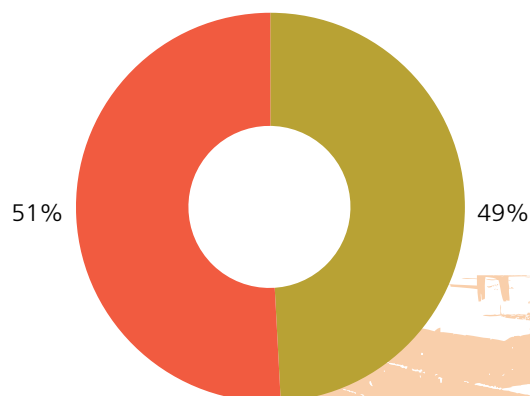
FIGURE 17. TRAINING AND PDB PER DONOR.



PDB per type



Contribution ToT, OJT per donor



Total contribution PDB per donor



9. FROM STABILIZED SOIL BLOCKS TO SUSTAINABLE URBANIZATION

- Stabilized soil blocks prove to be ecologically sustainable, socially inclusive, and economically competitive.
- It is encouraging for the young generation in Darfur to engage in a technology that improves their daily living conditions in the short term and provides income generation opportunities in the longer term.
- Technical college and academic institutions have been key stakeholders in the whole process, providing the foundation to support the development process in the short, middle, and long term, hosting community development initiatives to promote microfinance linked to the soil blocks, and networking with public and private institutions to encourage the introduction of the soil blocks in the market.
- Urbanization resulting from IDP flows demands an urgent technological shift towards stabilized soil blocks, together with proper planning regulations and land subdivisions. The Sakali resettlement scheme is encouraging because it shows achievements in terms of IDPs acquiring secure land tenure.
- Achievements in early recovery through stabilized soil blocks challenge development actors to take further action towards sustainable urbanization.



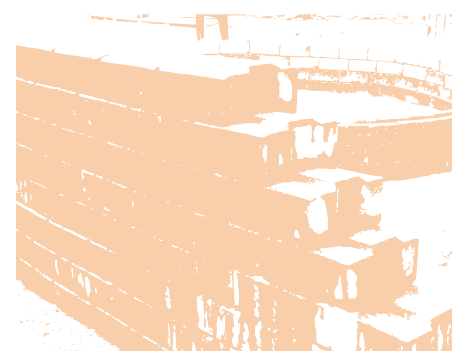
Boy playing with a SSB machine

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- UN HABITAT: Darfur: Profile of El Fasher Town and Abu Shouk IDP camp, 2009.

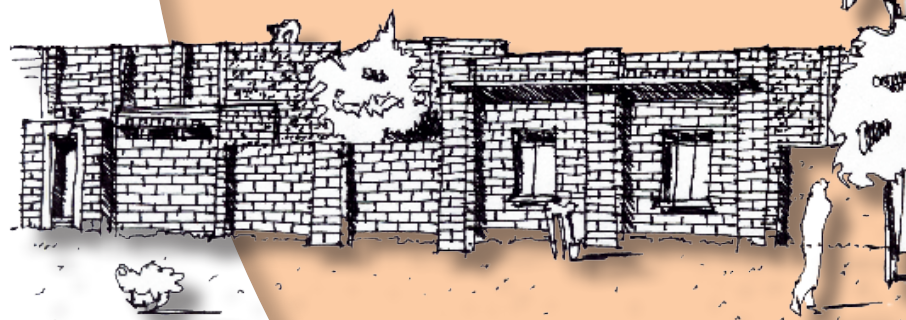
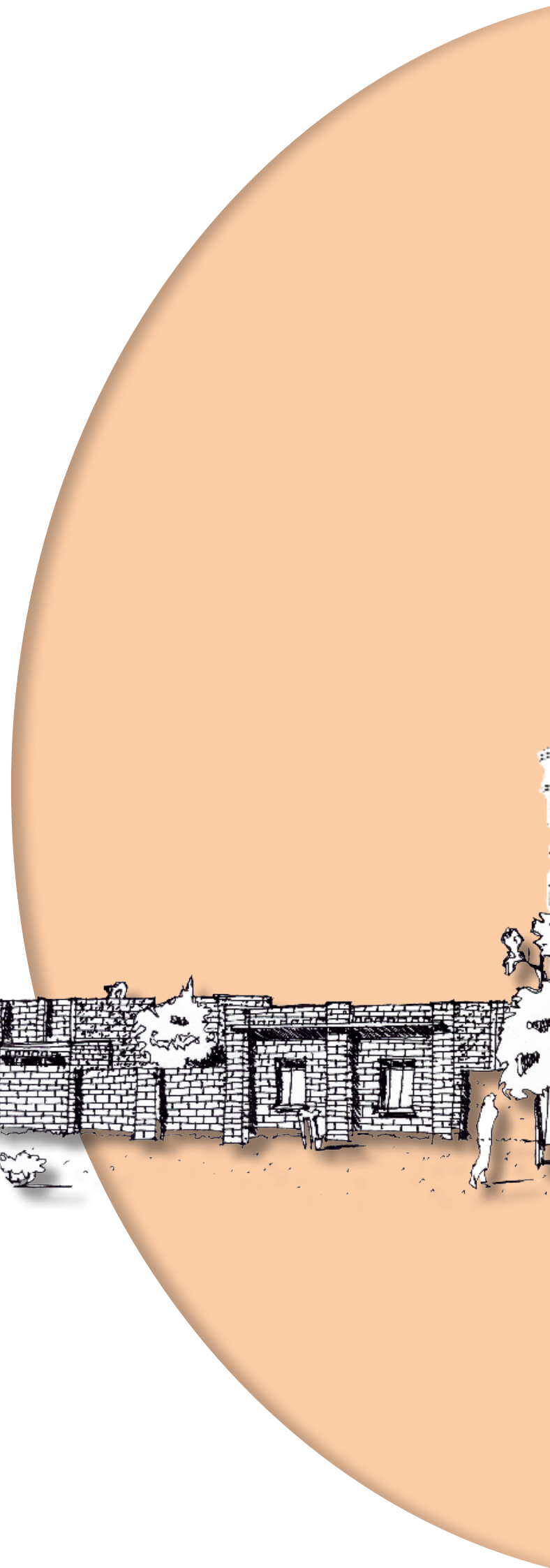
ACRONYMS AND REFERENCES

- SMPPPU. State Ministry of Physical Planning and Public Utilities (Nyala)
- RDN. Regional Development Network
- ToT. Training of Trainers
- OJT. On job training
- PDB. Pilot demonstration building
- GoJ: Government of Japan
- DFID: Department for International Development (UK)



ANNEX. LIST OF TOT, OJT AND PDB DONE PER LOCALITY AND IMPLEMENTING PARTNER

Place	Implementing partner	Number of participants/ trainees			PDB	Type					
		TOT	OJT	Total		SSB w	Latr	Class	Hous	B.wall	Clinic
Nyala	NTC	60		60	1			1			
	NTC		12	12	1	1					
	NTC	80		80							
	NTS		12	12	1			1			
	UNHABITAT/SMPPPU	96		96	6				6		
	UN HABITAT/SMPPPU	54	36	90							
Zalingei	University of Zalingei	67		67							
	University of Zalingei		10	10	1			1			
	University of Zalingei	80		80							
Z+Umshalya	University of Zalingei		20	20	1	1					
Sakali & Baba	SMPPU		60	60	5		2	3			
Sakali	SMPPU	120		120							
	SMPPU		120	120	3			2			1
Buram	Buram TS		20	20	1	1					
Kass	Kass TS		20	20	1	1					
Aldein	Aldein TS		20	20	1	1					
Nertity	Nertity TS		20	20	1	1					
Garseila	Garseila TS		20	20	1	1					
Fasi	DRC	60		60	12			12			
Trejje	DRC		20	20	4		4				
Abata	DRC		20	20	4		4				
Asoum	DRC		20	20	4		4				
El Fasher	El Fasher TS	63		63	1		1				
	El Firdous TS		20	20	2			2			
	El fasher TS		25	25	1	1					
	QIP RDN		20	20	2			2			
	El Fasher TS	80		80	1					1	
	El Fasher TS	120		120	1					1	
	QIPs (Ali Sanosy)		40	40	2	2					
QIP (youth Assoc)		40	40	2			2				
	RDN (mason As)		80	80	2	1		1			
Tawilla	Save TCS		20	20	4		2	2			
Kutum	Save TCS		20	20	4		2	2			
Golo	QIP RDN		20	20	2			2			
Kambi	SSCA RDN		20	20	1	1					
Um Gaedabou	SSCA RDN		20	20	1	1					
Wara	SSCA RDN		20	20	1	1					
Abunahla	QIP RDN		20	20	2			2			
Matbaa	QIP RDN		20	20	2			2			
Geneina	CRS		20	20	2			2			
	CRS		20	20	1			1			
	CRS		40	40	2			2			
	CRS		40	40	2			2			
Subtotals		880	935	1815	86	14	19	44	6	2	1



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