Niger Urbanisation project
Diffa Urbanisation project - EUTF

Support Municipalities in Diffa with high POC concentration:

- 6’000 households benefiting from a land parcel & potable water (42’000 poc)
- 4’000 of these households benefiting from social housing (28’000 poc)
- Economic recovery via. construction sector with 2,000 jobs & training
- Mobilization of funds for LA Infrastructure investment via. Income from land sales

7 communes: Maine Soroa, Chetimari, Nguihmi, Diffa, Kabelawa, Tounour / Bosso, Aassaga
Tillabery Urbanisation project - Giz

- Abala, Ayrou & Ouallam
- 6’000 households benefiting from a land parcel & potable water (42’000 poc)
- 4’000 of these households benefiting from social housing (28’000 poc)
- Economic recovery via. construction sector with 2,000 jobs & training
- Mobilization of funds for LA Infrastructure investment via. Income from land sales
Land division & construction phases

Phase 1 – Division of Land per Commune

- Available Surface Area: 50 hectares
- 30% roads
- 60% land parcels
- 10% communal infrastructure

15% land owners
40% social parcels
45% parcels for the municipality

Refugees / returnees: 90%
Vulnerable hosts: 10%

Phase 2 – Construction of Housing

- Construction of housing for the most vulnerable
- Housing for over 4,000 vulnerable families
- Employment of local population, refugees, and displaced
- Local materials and labor to support local economy
- Reduced use of wood

Refugees / returnees: 90%
Vulnerable hosts: 10%

- 15% Land owners
- 40% Social parcels
- 45% Parcels for the municipality
- 30% Roads
- 60% Land parcels
- 10% Communal infrastructure
Lotissement – Direction General du Urbanisme

Masterplan approach to settlement planning

The definition…

Master plan is an integrated settlement planning process…

- Long-term planning (humanitarian and development)
- Unique response vision aligned with dev. plans
- Minimizing conflict between displaced and host
- Integrating service and infrastructure delivery for both displaced and host population
- Provide spatial framework for new and existing interventions (upgrades)
5 house types – Planning w’shop Nov. 2017

Woodless construction (Chétimari and N’Guigmi model): low cost, requires maintenance on the part
Terracotta construction: high cost, low maintenance, lack of local expertise;
Stabilized earth construction: high cost, low maintenance, lack of local expertise;

5. Rammed earth construction: high cost, lack of local expertise.
6. Construction in cement + sheet: very high cost mainly due to the imported materials.

* Decided at that stage to proceed with option 1.
Rapport d'études géotechniques

Projet de construction de logements sociaux dans la région de Diffa (cadre de banlieue de Diffa)

Client: UNHCR
ISSB production and hardware
ISSB video
| ISSB do not need to be fired in order to gain weatherproof capability. | This technology provides an alternative to commonly used fired bricks. |
| ISSB reduces the amount of cement needed for mortar | The interlocking nature of the block increases the structural stability of the wall. |
| ISSB have high insulation properties | The block has higher thermal capacity than full cement block as it relies on the thermal properties of the soil. |
| ISSB have a high quality finish. | The use of plastering is optional. |
| ISSB blocks have acceptable bearing capacity. From 4 to 10 MPa depending on the amount of cement. | The blocks can be used for structural and/or infill purposes. |
| ISSB machinery is portable | The machine has wheels and can be moved by hand or towed. |

**Performance:**
Manufacturer states single machine (M7 model) production rate of 1,300 blocks per day however output seems ambitious, based on conditions encountered in field the daily production rate is closer to 500 blocks.

**Type and quantity of soil required per shelter:**
Soil test are mandatory in order to determine the soil composition. Suitable soil type should have clay content of between 15% and 35%. High-clay soils will require the addition of sand, and a higher cement content, to prevent blocks from cracking. Low clay soil may not sufficiently bind the block.
Each m³ of soil produces approximately 110 blocks.

**Cement required per shelter:**
1 bag of 50 Kg will produce 70 blocks.

**High level of skills is needed:**
Block making and laying require high level of expertise. Based on previous experiences at least 6 workers will be needed to operate in a block production yard. 4 will require specialist training.

**Machine cost:**
1 machine (M7 model) including a pan mixer, spare parts and other accessories such as trailer.

**4.4 machine days are needed to produce 2,200 ISSB required to build a typical house.**
(1 machine produces sufficient blocks to build up to 82 houses per year)

**20 m³ of soil are needed to produce 2,200 ISSB required to build a typical house.**
The above is the equivalent of a 5m X 4m X 1m depth hole.

**29 bags - 50Kg - cement are needed to produce 2,200 ISSB required to build a typical house.**

**1 Teamleader, 1 Trained foreman, 1 Trained mechanic and 1 Trained senior and assistant supervisor are needed to produce ISSB required to build a typical house.**

**USD 32,000 is the approximate cost of one machine that should be able to support the production of the equivalent to 82 houses per year**
(The estimate has been taken from Tanzania 2014 preforma invoice)
Methodology

The following initial actions were carried out:

- Purchase of the four Hydraform machines
- Purchase of three trucks
- Design of the standard housing plan
- Geotechnical study of identified quarries from which the clays taken have been approved by the national public works laboratory of Niamey.
- Construction of a Hydraform brick production center in Diffa.
- Hydraform brick production training
- Contracting a team of technical supervisors and work supervisors - PPA
- Strengthening the collaboration of state technical services (DRUH, DRGR and DRM)
- Consolidation of building standards and standards
- Formalization of mining exploitation licenses
- Construction of demonstration dwellings
- Launch of tenders necessary to maintain the pace of construction (materials)
- Launch tender for the construction of the brick production center
- Identification of multi-sector partners / collaborators (WASH, Livelihoods, etc..)
Designs
Relevance:

• Technical capacity - Masterplan, enhance indigenous solutions

• Strategy – Sustainable & environmentally friendly, H-D Nexus, Inclusion / inter-sector

• Response

• Effectiveness

• Time to listen to our kids, no one is too small to make a difference.
Thank you