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Clients: N'golofala village
Yelekebougou district
Republic of Mali

Partner: Africabougou onlus association
Total cost: 30.000 €
Project start: 2008
Project end: 2017

In a rural savannah context, the village of N'golofala has about 450 inhabitants belonging to the Bambara ethnic group, mainly dedicated to agriculture and farming. The community has no access to basic infrastructures. The project sustains a work of awareness and primary needs fulfilment. The aim is to realize a system of public infrastructures, in collaboration with Africabougou, an Italian non-profit organization that promote cooperation activities in the rural communities of Yelekebougou, in the western region of the Republic of Mali.

In 2008 the project started responding to the request of the villagers for the construction of a new health center to replace a small existing earth building.

With the proposal of a participatory approach, an open experience of working phases began with the direct involvement of the village population. The project tried to transform through work practice the strong motivation for social advancement of the inhabitants into an opportunity for an active and collaborative learning process.

PROJECT > PROCESS

In accordance with local community, the building intervention is based on the use of traditional material (earth bricks realized on site with traditional field tools) with the introduction of a locally unknown technical system: the Nubian vault.

The core idea was to propose a collaborative system that, over the years, has managed to develop self-produced constructions and practices.

The construction of the first part of the medical center equipped the population in the same time of a new infrastructure but also of new practical tools, experiences and awareness, promoting self-sufficiency.

The idea of triggering a process of self-development, trusting almost exclusively on the organizational and implementation capacities of the population, has been reflected in the results of the last nine years. The dissemination of shared knowledge made possible the autonomous construction of the extension of the medical dispensary and the transformation of the original old building in the new village library.

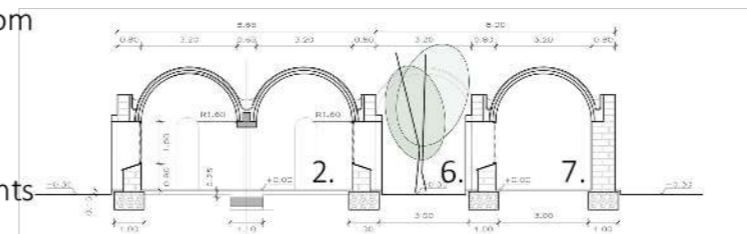
PHOTO

- 1. Hospitalization room
- 2. Operating room
- 3. North Facade



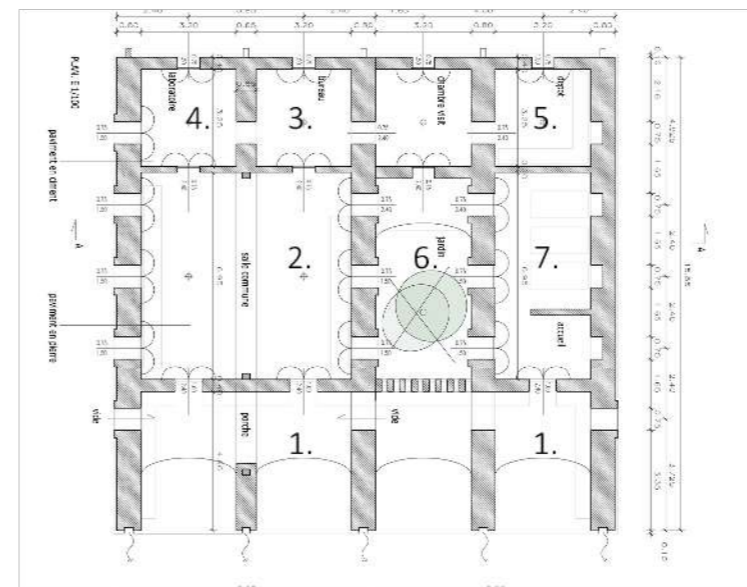
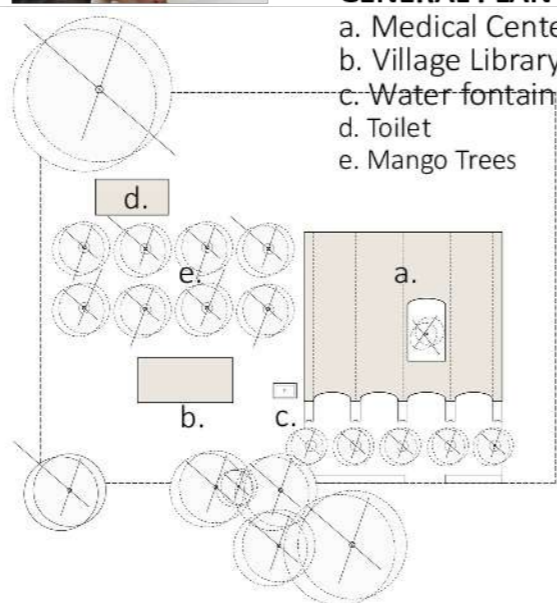
MEDICAL CENTER

- 1. Porch - Waiting
- 2. Hospitalization room
- 3. Consultation
- 4. Operating room
- 5. Pharmacy
- 6. Patio
- 7. Reception of parents



GENERAL PLAN

- a. Medical Center
- b. Village Library
- c. Water fountain
- d. Toilet
- e. Mango Trees



N'GOLOFALA MEDICAL CENTER

A COMMUNITY SELFMADE INFRASTRUCTURE SYSTEM IN THE SAVANNAH

Village of N'golofala, Republic of Mali

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**PRINCIPLE 5**

Facilitate the use of appropriate technologies, materials and labour adequate to local values, to the cultural specificity and responsive to the natural environment.

In this region, earth construction technology is expressed in architecture of great character and extraordinary beauty.

The project desires to limit the use of expensive imported methods (such as metal and concrete buildings), detached from the rural population's attitude for handmade constructions, and scarcely suited to the harsh African climate. For this infrastructure project a primitive technique is used: a system of earth vaults.

The Nubian Vault (NV) technique is an age-old method of timber less vault construction, originating in Upper Egypt. The entire construction system is simple: common mudbricks are used for load-bearing walls, while courses of thin bricks are stacked atop one another for the vault without using shuttering.

In order to create spaces of higher dimension, in this building the system uses a technical hybridization based on a concrete beam-column element realized on site. This approach allows to construct the buildings (walls and roof), with earth bricks for over than 97%.

The health activities of the new medical centre found extraordinary appeal also in the communities of the surrounding villages.

After only five years an extension was necessary. The local committee was able to manage independently the construction implementation, which involved only the villagers' labour.

The flexibility of the construction system facilitated the self-expansion of the building from two to four vaulted spans.

A central patio distributes consultation and hospitalization spaces, a pharmacy and a room dedicated to the reception of parents.

Technique, common experiences, easy availability of the materials are the basis of the result achieved.

PHOTO

1. Vaults sketch
2. Nubian vaults construction system
3. Village builders
4. Mud bricks
5. Building site
6. Nubian Vaults



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4. brosse	petite dabet	4. fil à plomb	niveau	7. moulage des briques	après un temps de séchage à plat les briques sont mises debout	7. grattage et nettoyage des briques	grosses briques pour murs petites briques pour voûtes
4. corde	anneaux	4. clous	fil de fer	8. Les fondations	tracer les fondations	8. creuser les trous des fondations	poser les grandes pierres combler les vides avec du banco
5. Choisir l'emplacement et l'orientation du bâtiment	la mauvaise place	5. la bonne place	la mauvaise orientation	9. Les murs extérieurs		9.	
5. la mauvaise orientation	la bonne orientation	6. Quels sont les matériaux utilisés?	la bonne terre pour banco et mortiers	10. La voûte nubienne	fabrication du guide	10.	vérifier que le cercle est droit avec un niveau
6. les pierres pour les fondations.	la bâche plastique	6. eau	paille	10.	briques coupées + mortier de terre	10.	
7. Etapes de fabrication des briques		7. piétiner le mélange	nettoyage et préparation du sol	11.		11.	Et maintenant, qui prend soin de l'entretien du bâtiment?

CHILDREN WORKSHOP - VAULTS SYSTEM MANUAL

PRINCIPLE 6
Share knowledge, promote discussion, reflection and awareness, and collaborate in the advancement of the social production of habitat.

Promote the use of the VN technique as a valid alternative to other building methods through pilot experience also aims to:

- organize the selection and training of the future VN builders
- coordinates and provides quality construction control
- help trained builders to become independent entrepreneurs
- create and feed a socio-economic environment in which a self-sustaining building market can be developed.

Within this context, the building project is an opportunity to experiment all phases of a process of participative collaboration with the inhabitants and future users of the structure.

The schedules, materials and construction methods have been shared during meetings and gatherings, and the works have been planned to assure compatibility with the availability of materials and workers, mostly during the seasonal work break.

Women have provided the water supply for the production of bricks and earth mortar.

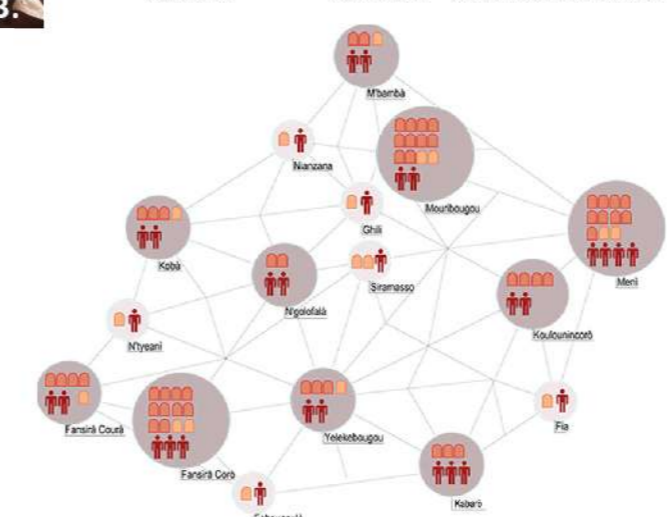
The whole village, including children, has participated and assisted in the construction, assuring the contribution and presence of young apprentices who have begun to learn the first basics principles of the building methods.

The result of this continuous exchange between planning and construction process is a growing number of persons interested in learning the technique: this aspect is confirmed by the large number of self-constructed vaulted houses built in the last years in the village and its neighbourhood.

This work experience has given the possibility to train new skills into the community and to benefit from a sensitive infrastructural improvement.

PHOTO

1. Ancient medical earth building (2007)
2. Villagers meeting
3. Annual training
4. Village council
5. Selfmade vaults
6. Children workshop on building system



YELEKEBOUGOU DISTRICT
NUBIAN VAULTS AND BUILDERS (2012-2016)

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A COMMUNITY SELFMADE INFRASTRUCTURE SYSTEM IN THE SAVANNAH

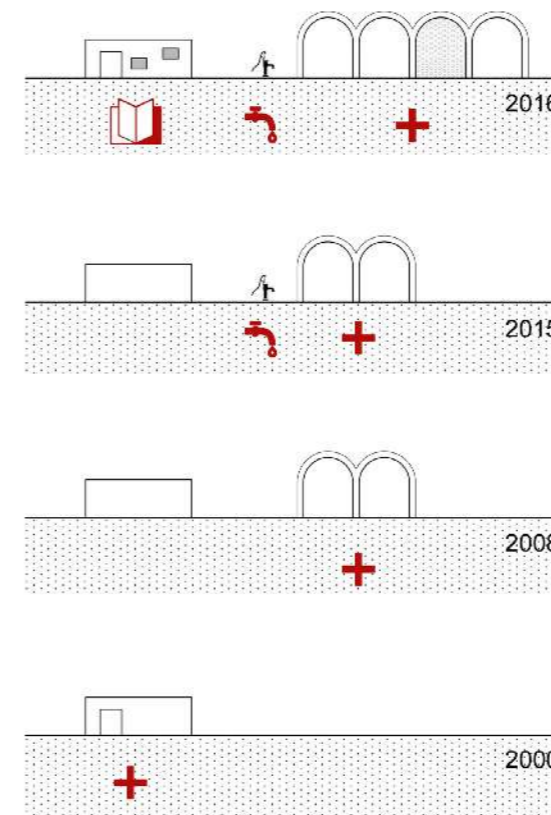
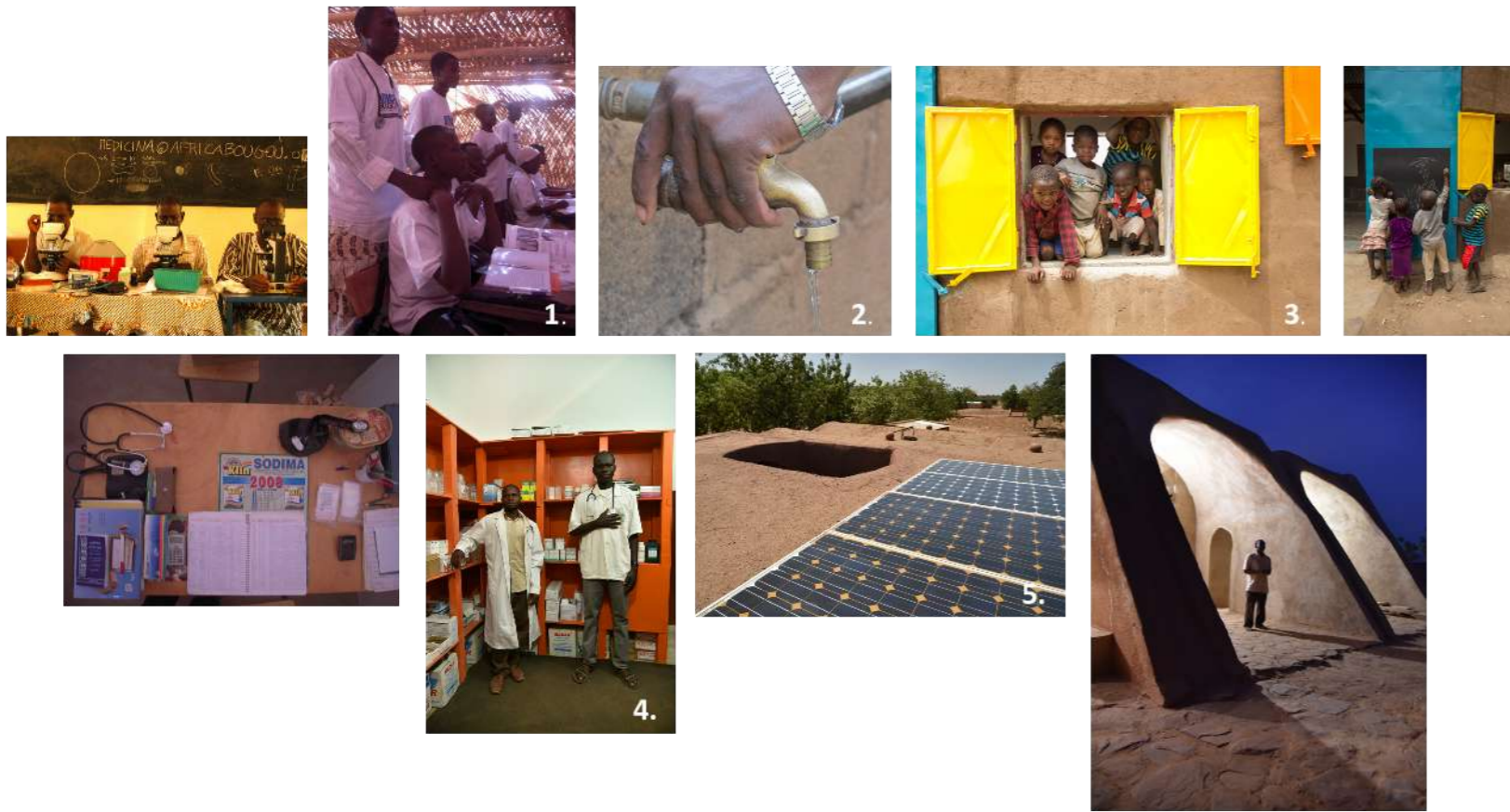
Village of N'golofalà, Republic of Mali



PRINCIPLE 8
Support participatory, democratic, multicultural and interdisciplinary processes and approaches in strengthening community solidarity as a factor of rural and urban social development.

The aim is to set up a process where each construction could be also an opportunity for a social and sustainable development. Working on a small scale in order to produce with villagers a better building, finally involve the entire community. This permits them to identify themselves with the construction, as the result of a collective and shared effort. The project widens its purposes to social relevance: acquire sustainable buildings, improve the local economic conditions, the quality of life, and the environment of the community. The participatory process triggered multidisciplinary approaches around the new building, capable to produce additional significant results. Over the last nine years, the dynamism of the community and an open collaboration with the project team have set in motion a virtuous cycle process.

Training health courses specifically dedicated to medical workers working in savannah environments were organized. Thanks to the improved economic capacities of the committee, the center is now equipped with a solar lighting system and with a refrigerator for vaccines. A water system powered by solar panels distributes drinking water with taps spread out through the village. The process has also facilitated the approach to the village community of other support realities. In this way, for example, thanks to another NGO, the new latrines block has been made inside the perimeter of the center. Finally, the original small dispensary was converted into the first village library, managed by a committee of inhabitants and opened to consultation of books for the whole community. The next goal that the community will try to reach during this year will be the realization of a 150 meters fence to protect more properly the patients of the center.



INFRASTRUCTURAL PROCESS PHASES

- PHOTO**
1. Training Health courses
 2. Water system
 3. Village Library
 4. Pharmacy
 5. Solar lighting system

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