



*La Voûte Nubienne is an NGO that develops an architectural alternative to expansive, imported, timber and sheet metal roofing in subsaharan Africa.*

*It is one of the most innovative tools for sustainability in this region of Africa*

# Earth Roofs in the Sahel

*« Providing Sustainable Housing for Families in the Sahel »*

...no more destruction of trees for building...

...sustainable development...

...integration into the local economy...

...self-sufficiency...

...more comfortable homes...



## Problem : habitat in the Sahel



Traditional building techniques in Sahel rely on the use of large quantities of bush timber for roof construction. As the trees have vanished, impoverished **rural families have no alternative but to scrape together, or borrow, enough cash to buy imported sheet roofing and sawn timber to roof their homes.**



But sheet metal roofing:

- puts families into debt for its purchase
- weakens local, family, national economic systems (import costs)
- amplifies extreme climatic conditions of heat and cold inside dwellings
- engenders severe noise disturbance during the rainy season
- cannot support the traditional Sahelian flat roof terrace

## Solution : building earth roofs

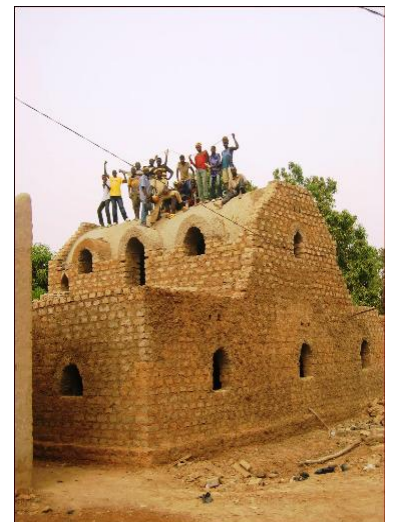
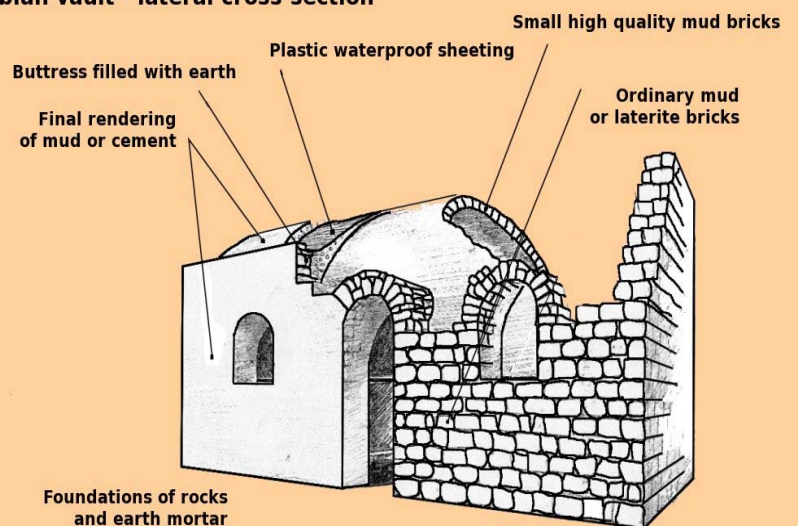
The VN technique is derived from an age-old method found in the Upper Nile region; as such it represents a perfect example of South > South technology transfer.

The original technique has been modified to fit with local sub-Saharan building and apprenticeship traditions. The result is a streamlined technique, relatively easy to implement and to learn through practice.

Houses built using this technique are better insulated (from heat, cold, and noise), healthier, longerlasting, can incorporate the traditional flat roof terrace into the structure, and can include a second floor.

In addition, as most of the costs incurred are for labor and use of readily available materials, the technique helps to strengthen local economic circuits and self-sufficiency.

Nubian vault - lateral cross-section



## the Earth Roofs in the Sahel Program

The *Earth Roofs in the Sahel* program is built around the **training of craftsmen to become independent contractors**, and annual promotional campaigns aimed at rural populations. Its aim is not to become embedded in a given zone, but rather to pump-prime the adoption of the VN technique by local people, before gradually withdrawing.

Teams of builders who have learnt the technique supervise the building sites and help train the apprentices; their salaries are almost completely covered by the clients.

The Association carries out any necessary design and cost studies for specific jobs such as community buildings, churches, mosques, or NGO premises.

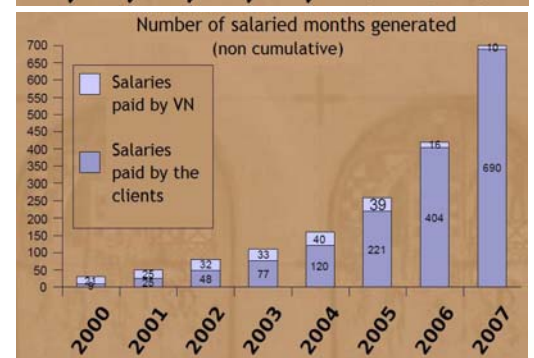
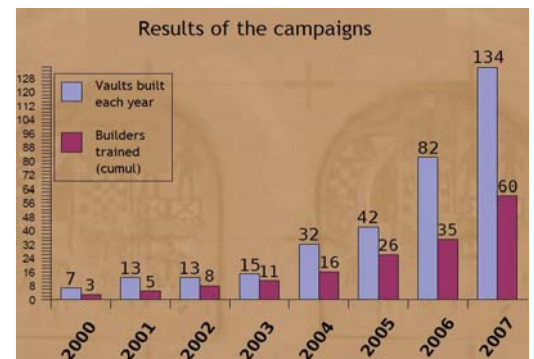


## Results : 10 years of exponential growth

- 80,000 people in the Sahel have heard of VN
- 4,500 people benefit directly from the Program
- 550 vaults built in 6 countries (Burkina Faso, Mali, Senegal, Togo, Guinea, Ivory Coast)
- 115 builders trained
- 200 apprentices in training

### - 70% year on year growth in numbers of macons trained & vaults built

- International recognition : Ashoka-Changemakers Award 06, **Tech Museum Award 07**
- Support from Veolia Environnement Foundation for 07 & 08, and SolidarCité-PPR in 08
- Ashoka Impact Laureate 08
- Several partnerships with NGO's





**With YOU,**

**In the medium and long term, we hope to :**

- spread the Program to other sahelian countries
- further develop our **training** and **promotional** activities
- strengthen the Association's management, operational, and communication activities

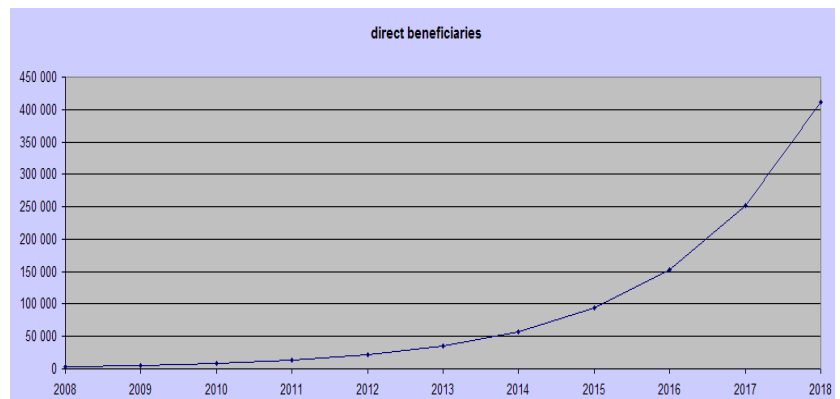


**Before 2025, we would aim to see :**

- around 80,000 builders trained in the VN methods, and
- at least 2 million VN buildings in the sub-Saharan region
- 12 million people benefiting from the VN concept.



The over-arching aim is to **ensure the complete adoption of the VN technique by the local population**, so that, eventually, the Association can withdraw its support and transfer its activities to other regions.



**To achieve such objectives, the program needs to develop and multiply its partnerships, and to seek out further sponsors and institutional co-investors**

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