

Large-scale dissemination of a low-carbon eco-construction technique adapted to the socio-economic and climatic context in the Sahel

Programme of the Nubian Vault Association (AVN)

■ The Association

Founded in 2000, the Association la Voûte Nubienne/ AVN has set itself the mission of deploying suitable, sustainable and low-carbon construction techniques in Sahelian Africa and more broadly in the dry climate territories of the African continent.

With an international office in France, AVN is today represented by national structures or partners in six countries: Burkina Faso, Mali, Benin, Ghana, Senegal and Mauritania. In 2023, the Association employs around sixty people in France and West Africa.



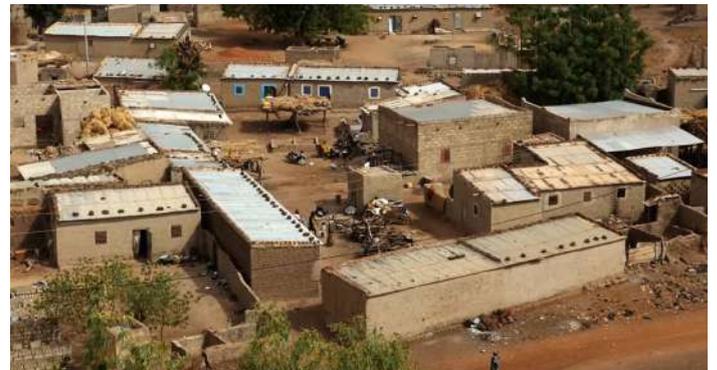
■ The construction and housing sectors: orphan issues

In Africa, the questions of evolution and adaptation of the construction and housing sectors are not sufficiently perceived as essential and urgent issues by public decision-makers and their development partners. However, **these questions form an integral part of systemic major issues, themselves largely taken into account: population growth, economic instability, climate adaptation and mitigation, stabilisation and resilience of populations, etc.**

In the Sahelian regions, desertification has led to the disappearance of bush wood used in traditional architecture. "Modern" architectural proposals, largely dependent on imported materials (cement, steel, sheet metal, timber) or over-exploited resources (gravel, sand), are increasingly unsuitable in terms of cost, thermal comfort, sustainability and environmental impacts.

Moreover, by prioritising the purchase of materials at the expense of the labour force, they worsen the employment situation.

Thus, in terms of housing and infrastructure needs, the alternatives developed by construction and public works players are not up to the challenges: as a result **millions of families are plunged into a vicious circle of poverty and discomfort**, increasing their vulnerability, and with no satisfactory architectural alternative.



Our motto:

"A suitable habitat for the greatest number, as quickly as possible"

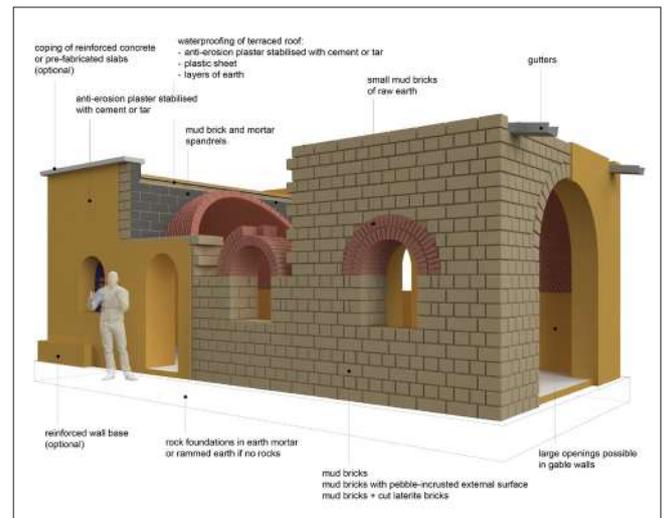


■ An African, ancestral and innovative architectural solution: the Nubian Vault

At the centre of the AVN programme: the Nubian Vault/NV. This ancient construction technique uses only widely available local materials (raw earth, water, rocks) and basic tools for the realisation of all the major construction work. It relies predominantly on an endogenous rural labour force and accessible know-how.

The main benefits of this alternative architecture are:

- **Access to comfortable, resilient, affordable and efficient buildings and housing** and offering a gain in thermal comfort of +/- 7°C. ;
- **Strengthening of the economic fabric:** emergence of a "green" sector, creation of permanent off-season jobs (particularly for young rural people), reinjection of construction costs into familial and national economies;
- **Improving the resilience and stability of communities:** comfort and durability of buildings, adaptation to climate change, reappropriation of an "archiculture";
- **Mitigation of GHG emissions:** low-carbon eco-construction.



■ An eco-construction model allowing many uses

Rural Private



Community

Agricultural/Livestock



Health



Education



Urban Private



Administrative



Hotel



Culture



■ The large-scale distribution of the NV architecture: a market dynamic

Whatever the relevance of a solution, only its appropriation by the greatest number can validate its interest over time. Since the beginnings of its programme, AVN has chosen market dynamics as an indicator of the validity of its technical proposal and as the main vector for its large-scale distribution. This emerging market for low-carbon eco-construction is built on three main axes:

The Offer

Deployment of a structured NV sector, integrating builders from informal economies as well as those from the construction industry, and whose growth is supported by specific players and systems for dual and inclusive vocational training.



The Demand

Responses to the construction needs of different clienteles and project owners (private or community, rural or urban) in both informal and formal economies, and distribution of financial incentives for green construction for rural families.



Business Environment

Mobilisation of a wider panel of stakeholders contributing to the dynamics of development and adaptation of the construction and housing sectors and appropriating the mechanisms for large-scale dissemination of an eco-construction market.



Each of these three areas is broken down into different mechanisms and means of action that combine in a systemic and cross-cutting approach to give full coherence to the overall programme while promoting its adaptation to varied and evolving contexts.

■ Results of the programme (march 2023)



6 countries of action - **1,654** localities
62,300 users beneficiaries
6,700 worksites / **210,900** m² including
750 community buildings



In 2021-22 :
more than **1,300** active apprentices, masons,
artisans and entrepreneurs including
more than **700** trainers involved in training courses
60 Trainer Masons having provided
391 training modules



0 trees cut for construction
173,000 tons of CO₂ eq. and
5,350 MWh potentially saved since
the beginning of the programme



20% average annual growth of the NV market
(since the last 10 years)



€5.9 million generated in local circuit
40 Operator Partner structures mobilised

SUSTAINABLE
DEVELOPMENT
GOALS

AVN's action for the Sustainable Development Goals



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