

## Use of green technology/sustainable materials in rural housing

### Introduction:

Rural development schemes can help widely disseminate information on green technologies and give an impetus to environment friendly innovations in agriculture, processing, housing and construction of rural roads. Green housing in particular holds the potential to address rising energy costs, improve health outcomes of inhabitants, and optimize finite natural resources in a holistic manner. However, while the goals of green housing are easy to embrace, the realities of constructing green units, particularly in rural areas, are often difficult. Barriers to green housing in rural areas include capacity and spatial realities of rural communities which may work against some basic principles of green development.

### Background:

Housing is vital, yet over half of Sahel's population (100 million people) lacks access to decent housing. Poverty, demography and deforestation-led disappearance of natural timber resources used in traditional architecture and urban growth prevent access for millions of families to decent housing. To house themselves, these families have no other choice but to raid their limited healthcare, food and education budgets to purchase expensive imported - and unsuitable - corrugated iron roofing sheets.

In response to this, the Nubian Vault Association (AVN) has been implementing the Nubian Vault Project since the year 2000, in five West African countries: Burkina Faso, Mali, Senegal, Benin and Ghana. The project seeks to develop a market for adapted rural housing in West Africa which brings together issues of housing, professional training, economics, environment and climate change.

### Details of the Intervention:

At the heart of the programme is the Nubian vault, an architectural concept that is both ancestral and innovative. This construction technique requires neither timber nor metal roofing sheets but uses mud bricks and mortar as the raw material. Local labour is trained in the technique, providing much needed employment and a professional skill base of Nubian Vault (NV) masons. The NV building sector uses mainly frugal techniques (non-mechanized processes) and local materials with a light carbon footprint (local circuits, non-transformed materials, etc.), inducing strong passive performances, and answering commitments made regarding reduction of greenhouse gases emissions. It represents an alternative to the use of ligneous resources (brushwood and straw) in building and therefore preserves forest cover and biodiversity.

### Impact:

In 2016-17, the NV Project reached out to 30,000 beneficiaries who lived or worked in NV buildings. 2,500 construction sites were completed, and 3 million euros were created in local economic circuits. Using or living in a NV building had beneficial impacts in economic terms for the user beneficiaries, who were able to economize on imported and therefore expensive materials (cement, sheets, lumber). The construction of an NV costs up to 60% less than other construction solutions.

Further, the NV beneficiaries were able to benefit from the climate resilience of the buildings they inhabited or worked in. The NV buildings have been adapted to various climate and uses- they are comfortable (internal temperatures more stable against external variations), durable (resistant to wind and rain erosion), modular (which can be enlarged according to changing needs) and offer special uses such as the rooftop terrace. As a result, 75,000 tonnes of CO2 emission have potentially been economized. Thus, many families have been able to access affordable and comfortable homes adapted to the consequences of climate change and extreme weather phenomena; in addition workers have benefitted from the creation of 'green' jobs, in a sustainable construction sector.

*Source: Nubian Vault's Association. (2017). Better Building in Africa. Retrieved from <https://www.lavoutenubienne.org/-the-programme-62->. Accessed on 22/06/2020; Council, H. A. (2007). Affordable Green Building in Rural Communities. Washington, DC. May.*