

REGENERATIVE ARCHITECTURE

By Social Housing in Tropical LDCs

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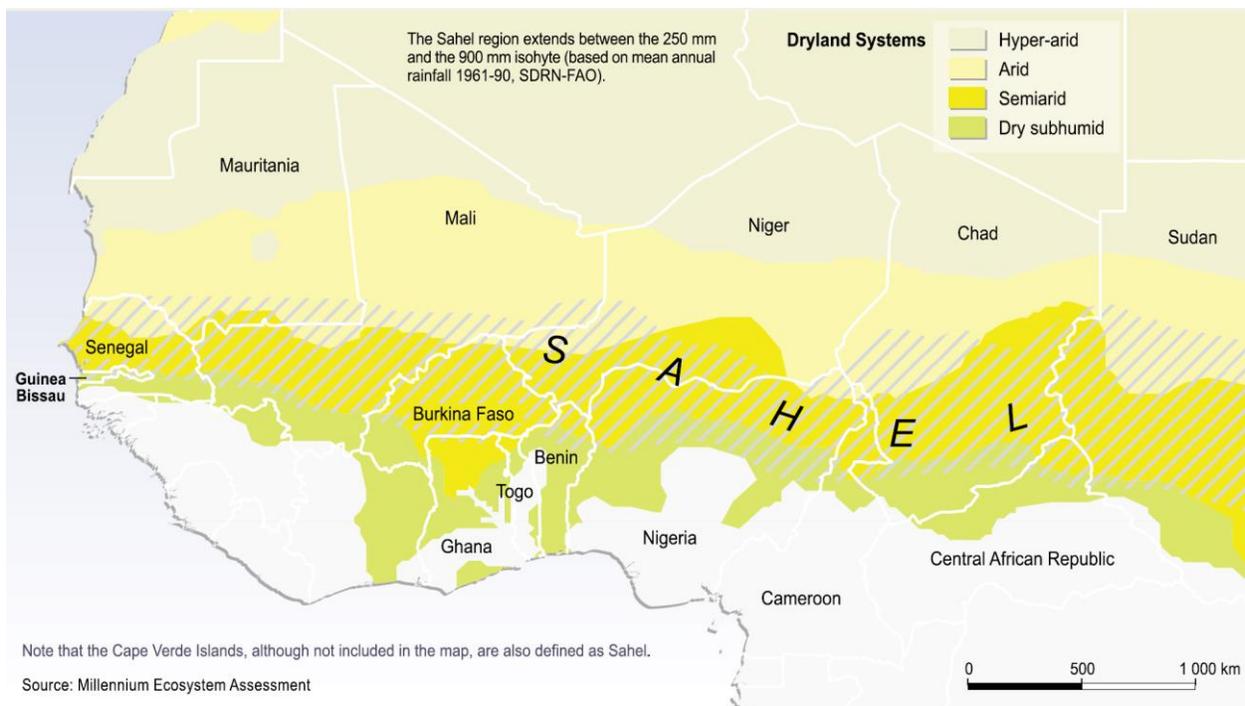
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Introduction

The fight against desertification as a response to climate change is hindered by the constant urban growth in the developing world. The more a city is urbanized, the less green it becomes.

By 2050, Africa is projected to increase to 2.4 billion from 1.1 billion today, making it the region with the largest population growth and most least developing nations in the world (34 of 48 countries). Whereas most of the region is faced with underdevelopment, local adaptation and conservation practices should be in place to mitigate some losses of dryland ecosystems in these areas despite strong thirst for development.

Since the building industry is responsible for a large part of the world's environmental degradation, regenerative design would play a great role in the mitigation process of combatting desertification within urbanized developing regions as the Future of Green Tropical Living in urbanized developing regions.



Background

The developing world is further characterized by a lack of infrastructure and basic services, and of the capacity and resources to improve and maintain existing infrastructure, let alone cope with the demands of rapid urbanization. The Gambia, one of the world's poorest countries, is faced with rapid population growth which is putting tremendous pressure on its few resources and remaining forests. Over the past generation the environment in Gambia suffered from fuelwood collection, subsistence agriculture, and clearing for livestock, as well as hunting and desertification.

Banjul, the capital city is an island located $13^{\circ}27'11''\text{N}$ $16^{\circ}34'39''\text{W}$. It has a very warm climate year round. Under the Köppen climate classification, Banjul features a tropical wet and dry climate. However, in 50-60 years' time, the city of Banjul has been predicted to be covered with sea water due to climate change (Jallow, 1999).

Approach

The proposed wants to promote urban regeneration within affected regions of desertification around tropical sub Saharan Africa. The proposed also wants to demonstrate a change in social living spaces within urbanized regions of least developing countries affected by Desertification. Promoting regenerative architecture for combating desertification especially in threatened regions will help mitigate climate change even at a global scale. The project intends to use locally found materials which are readily available around that region. The promotion of clean energy would be integrated to lift social well-being.

Concept

The Gambia, one of the world's poorest countries, is faced with rapid population growth which is putting tremendous pressure on its few resources and remaining forests (Hodgkinson, 2004).

Gambia has a tropical climate. A hot and rainy season normally lasts from June until November, but from then until May, cooler temperatures predominate, with less precipitation (The World Factbook. Central Intelligence Agency, 2008).

My design strategy is inspired from the conceptual idea of a tree. Replacing the concept of a tree as a substitute for social housing symbolizes various meanings. As in traditional African society, the social and cultural values are highly regarded. The tree represents a unique feature of Life. Its branches connect to the stem in my point of view symbolizes strong social connectedness.

Design Feature

i. Stabilized Mud block technology



Energy efficient- 70% savings when compared to burnt bricks. It is Economical (20-40% when compared to brick masonry). The net financial advantage in terms of labour per block is Rs.1.50 whereas in conventional methods is 30-40p. Plastering of walls can be eliminated. Highly decentralized production with better block finishing making it aesthetically pleasing. Lower amount of mortar required for wall construction.

- ii. Permeable paving; the paving systems within the site is permeable which would allow the movement of stormwater through the surface. In addition to reducing runoff, this effectively traps suspended solids and filters pollutants from the water.

- iii. Water Capture; The main water pipeline is stored in the rooftop reservoir of each building unit. It later filtered down to the underground storage tank for human usage after treatment. Rooftop and household gardens also capture rainwater for flow irrigation before flowing to sprinkler system for the landscape and neighboring environs. With water pipes accessible via walls, systematic indoor water spray system mixed with room ventilation will prove comfortable and cool during temperate periods which is projected to save up to 70% electricity for air conditioning.

- iv. Clean Energy; The building's electricity is produced by renewable means. Wind and solar energy is utilized to its fullest. The building's massing program is designed with the sun radiation effects in mind. The use of solar panels is strategically positioned to supply clean energy to the proposed social housing complex. Wind turbines are equally strategically placed to boost the clean energy production.

- v. Passive energy; The shape of the structure is oriented to suit good ventilation patterns and sun lighting. Each building unit is cylindrical enabling smooth ventilation passages within the overall structure.

The separation between the mud blocks, combined with the channels that make up the irregular scalene triangles, allows ventilation to pass through the mud blocks, quickly

dissipating the stored heat and reducing the amount of thermal energy emitted into the interior of the building.

Solar water heating (SWH) is also utilized for the inhabitants.

- vi. Social connectedness; the design offers inhabitants their desirable and balanced living by encouraging outdoor activities, interaction and communication between neighbors, community events and diversity of cultures. A gymnasium at ground floor to keep up with well-being. A structure built at the center of the site to access each building unit promoting a platform for socializing and gardening.
- vii. Replicability; At an Urban scale, the proposed social housing shall integrate with its environment to boost urban regeneration. The proposed provides different flexible layouts to enable combination of site with nearby communities.

Conclusion

Green architectural social housing, as we imagine, should go beyond the conventional idea of a mere dwelling space. It must integrate with its environment to equally enhance human well being and the environment. Assuming this design deems workable, replicability of the design around desertification threatened regions would introduce mass urban regeneration partaking on the main goal of carbon emission on a global scale. Clean energy and water recycled will be enough to share with nearby communities contributing on social wellbeing and urban regeneration systems.

References

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