

## Toward applicable green architecture

***Citation for published version (APA):***

El Fiky, U. (2002). Toward applicable green architecture: an approach to colonize the desert. In J. E. M. H. van Bronswijk, C. H. Doevendans, J. J. A. M. Smeets, & J. Verbeke (Eds.), *Contributions to the 2nd USO-Built research conference* (pp. 69-71). (USO-Built Report Series; Vol. 01). Technische Universiteit Eindhoven.

***Document status and date:***

Published: 01/01/2002

***Document Version:***

Publisher's PDF, also known as Version of Record (includes final page, issue and volume numbers)

***Please check the document version of this publication:***

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

***General rights***

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

[www.tue.nl/taverne](http://www.tue.nl/taverne)

***Take down policy***

If you believe that this document breaches copyright please contact us at:

[openaccess@tue.nl](mailto:openaccess@tue.nl)

providing details and we will investigate your claim.

# Toward Applicable Green Architecture

An approach to colonize the desert

*Usama El fiky*

*Department of Architecture, Building and Planning, Eindhoven University of Technology; Eindhoven, The Netherlands*

## Introduction

Actually, Egypt urgently needs to colonize its vast desert because of the high-density population in the occupied areas, which concentrates in Delta region and around the Nile river valley approximately 5-7 percent of Egypt's area. For that reason the Egyptian government built new fourteen cities in last two decades. Unfortunately, those cities didn't solve the problem because the cities were built close to the old cities. To change this policy, the government is currently developing a new region called TOSKA in the southwest desert of Egypt. The government chose this region because of plenty of water behind Aswan High Dam that creates new three lakes beside Lake Nasser in 1996. And the arable lands in this region that are suitable for agricultural use. There are several problems related to the colonization of this region and there are a great number of aspects that must be considered all affecting each other.

First of all, the new region is far from the occupied old areas of Egypt - the nearest city to the region is 300 km away. So it will be difficult in the first stage for building in this region to transferee building materials, which have to be transferred from old cities.

Second, the project depends on pulling up water from lake Nasser behind the Aswan high dam using a pump station that is expensive and poses a substantial risk in case of failure. The transfer of energy to the region is a challenge. Another aspect is that the region is located in an arid hot Zone.

Concerning the high cost and difficulty of supplying the energy, water and building materials to this far area, the project faces economical problem. So, it is very important also to study the effect of economic factors on those climatic and environmental strategies for this Area.

There is also a conflict to apply green architecture strategies in this new region, depending on the fact that the Egyptian government will relocate people from many areas around Egypt to this new area. People might bring their building practices to the new area ignoring the climatic and environmental factors. Regarding that there are many examples of settlements around the world that people don't respond to climatic and environmental issues but cultural and economic considerations, it is very important to study building practices of people suggested to be relocated in this new area and existing people. And to know how extend people respond to their culture instead of climate and environment. The main problem is how to reconcile economic, climatic, moral, and social tradition with green architecture concepts.

## Aim

The main aim of this research is to achieve sustainable community in this new region of TOSKA in the South west of Egypt. In order to achieve this mission the research's mission is to design suitable prototype for this new region using culture as approach to study the economic, climatic, and environmental factors that affect any urban planning in this new region.

## Methods

To achieve the goal of this research, seven steps have to be taken.

### 1 - Analyzing the characteristics of TOSHKHA region

Collecting data about environment, climate, geography, and culture of TOSHKHA region.

### 2 - Toolbox I

Creating the base that we can use to design a prototype for the new region throughout good design of a toolbox for hot arid zone (the matrix) - in another meaning, collecting all strategies of the design in hot arid zone that will be the base to design the prototypes for this region.

### 3 - Survey and Questionnaire I

Studying the building habits and techniques in general and looking for building cultures that are close to green concepts in both old areas where the people will come from and the existing building practice of the area's current inhabitants (Nubians). The questionnaire I will collect information from professional people like decision makers, architects, planners, and building contractors.

### 4 - Toolbox II, III

Creating other two toolboxes the first for the design in old regions that people suggested moving to the new region of TOSHKHA (Egypt the North). The second will be for the design in the new area of TOSHKHA (Nubian people). Comparing between the two toolboxes to identify the best strategies that fit with toolbox I of the design in hot arid zone.

### 5-Questionnaire II

It is to evaluate the new and the old toolbox for the design in hot arid zone from cultural point of view. The questionnaire II will collect information from public people who suggested moving to the new region in TOSHKHA. People will relocate to the new region by two ways. The first and the old one that used before in similar project in Egypt is that the government offers a piece of arable land 5-10 acres and a house for young graduates they have the right to accept or not. Every graduate has to pay the price after 3-5 years. In this case the government set up infrastructure for agricultural and housing use. The second is that the government offers a grand area of land for big investors who will set up the infrastructure for that area includes agricultural and housing use. The big investors will employ young people to work and house in their farms.

### 6-Designing the Prototype

The prototype will span the fields of building techniques and urban design. It will not be a design, neither a specific plan, nor a general set of principles, but rather a common language, which helps the planners and architects to be close to sustainable solutions and green architecture that respect the culture of people who suggested to be live in this new region.

### 7-Test the prototype

It will be through:

- Questionnaire III that will question people who will move to the new region in TOSHKHA to test the final form of the prototype.
- Accumulated experiences of colonization of hot arid areas around the world as a comparison study.
- Theoretical analysis for some details of the prototype.

## Progress

- The researcher defined the main problem and the methodology of the research.
- The first two steps are finished. Collecting data about environment, climate, geography, and culture of TOSHKHA region in the south west of Egypt.

-Collecting all strategies of the design in hot arid zone that will be a base to design the prototype for the new area of TOSHKKA, throughout good design of a toolbox for hot arid zone (the matrix). The toolbox is designed to show up 64 strategies and cover the areas started from individual building ended with whole region passing through street, neighborhood and the city. Every strategy is examined from cultural, economical, climatic and environmental point of view.

## Results and conclusions

- From studying different data about the region and the nature of the new project, the researcher figured out that the colonization of this region has cultural, economical, Environmental and climatic aspects.

- In order to achieve sustainable community in this new region of TOSHKKA in the South west of Egypt, one must study climatic, Environmental and economic issues through out cultural point of view. It is very important to study building practices of people suggested to be relocated in this new area and the existing building practice of the area's current inhabitants (Nubians). And to know how extend people respond to their culture instead of climate and environment.

- It is very important also to study the effect of economic factors on those climatic and environmental strategies for this Area.

## References

Clark, K.N. (1994). Sustainable community planning. *Arid lands*, 36.  
<http://ag.arizona.edu/OALS/ALN/aln36/TOC36.html>

Fathy, H. (1986). *Natural energy and vernacular architecture principles and examples with reference to hot arid climate*, sheater, W. and Sultan, A. (eds), Chicago: The university of Chicago Press.

Hamdy, I & Amer, E. (1998). The formulation of planning and design principles for building in desert climate; application: the new valley of Upper Egypt, Alex. *Egypt Alex Engineering Journal*, 37(1).

Hough, M. (1993). *City form and natural process: toward a new urban vernacular*. London: Routledge.

New Gournia Village, ArchNet, [http://archnet.org/library/sites/one-site.tcl?site\\_id=156](http://archnet.org/library/sites/one-site.tcl?site_id=156).

Pearlmutter, D. (2000). Patterns of sustainability in desert architecture, *Arid land*, 47.  
<http://ag.arizona.edu/OALS/ALN/aln47/toc47.html>

Rapoport, A. (1986). *Settlement and energy: historical precedents, Environment-behavior research*. Tucson: University of Arizona.

Register, R. (2002). *Ecocities: building cities with balance with nature*. Berkeley: Berkeley Hills Books.

Wates, N. (2000). *The community planning handbook, how people can shape their cities, towns & villages in any part of the world*. London: Earthscan.

