TOWARDS A SUSTAINABLE HOUSING DEVELOPMENT:  
A CASE OF LIBYAN HOUSING

Ramadan Taher Belgasem  
Department of Architecture and Urban Planning  
University of Al-Fateh, Tripoli, Libya.

ABSTRACT

This paper aims at finding means for restructuring residential areas in Libya so they can became sustainable. It will employ a method of evaluation to achieve its objectives. Libyan housing programs lack studies that focus on the quality of housing environment. In Libya, design profession is faced with continuous criticism for their design inefficacy. They are also confused with what constitute sustainable housing. Architects and planners, by and large, depend on their image of the world while designing.

The objective is to determine sustainable elements of housing design and to reach some conclusion that can be useful for enhancing the design quality of living environment. The characteristics of existing built environment are vital to the design and sustainability of new housing development.

A study of some housing projects reveals a number of hypotheses to improve housing milieu and in turn the quality of life of its residents. Project size and open spaces can be reduced to increase users control over their surroundings. While elevation and floor plan of individual units can be designed in relation to family and individual needs for privacy, comfort, and expression.

Keywords: Housing, Housing design, Sustainable housing, Government housing, Libya.
Introduction

As a part of distributing wealth and power, Libya like many other countries, undertook a large program of developing mass-housing. [1] Great parts of its cityscapes were marked by different types of housing blocks. However, few housing projects really satisfied their user expectation. Most of these housing developments were often too concentrated, monotonous, and alienating. These characteristics were fueled with poor management, inadequate maintenance, and lack of social services and poor pool of residents. These problems turned most of the original design of housing into hued variety. Openings were closed and walls were added. Open spaces became full of trash. Recently, people seem to show a strong tendency to keep avoiding public housing. The Provision for housing, in fact, was unable to shorten the long list of people demand for shelter.

Architects and planners are faced with criticism and considerable suspicion by society. Architectural professionals realized that traditional approach for housing design needs revision.

Considering the complexity of the problems a single effort does not facilitates solutions. There is a need to incorporate the concept of sustainability into design process. According to Elizabeth Klein four elements are crucial for a sustainable community. They are economic security, ecological integrity, empowerment and responsibility, and quality of life. [2] Quality of life involves the support of peoples evolving sense of well-being which include sense of belonging, sense of place, sense of self-worth, sense of safety, sense of connection with nature, and provision of services which peoples needs. Examining these issues in real design settings helps reconstitute a system of inquiry, provides helpful information for designers, and enhances interaction between built environment and its users.

Research Method

The method of this research rests upon interview and/or observation. A survey was carried on three selected housing projects in the city of Tripoli; Airport road housing project, El Hay El-Eslamy project, and a smaller housing project next to guest palace.

Since housing success depends by and large on incorporating principles of sustainability into housing development, the focus was on planning of site layout and elements of building design. Project size and open spaces belong to the former. Building appearance and affordance of indoor spatial features are aspects of the later. The assumption is that a housing development is sustainable when its planning conforms to these principles. If the living
environment is less sustainable, in terms of size, open spaces, building appearance, and indoor plan, it will not benefit itself in terms of quality and caused its residents to modify it to make it fit their needs. Sustainable development means quality planning and design that afford people’s needs for security, social inclusion and healthy natural environment.

**Objective**

The broader goal of this paper is to present aspects of sustainability connected with housing planning and design. The specific objective will be to assert the value of some design principles that can help make housing projects more sustainable and in turn more pleasant for living. It is also aimed that through a study of several housing projects, key environmental and social challenges can be outlined. Measures for improving housing milieu are also examined. Designers need valid information about what make housing sustainable; the way the design of housing impacts on people's lives. Moreover, the gap that exists between theory and practice can be narrowed. Verifying information in real setting helps better serve professionals in the process of decision making during design process.

**Site description**

**Airport Road Housing Project**

This development is located in the southern part of the city. This area is bounded by the Airport road to the west, a ring road to the north, and a green area and warehouses to the south and east. During the early seventies a plan was adopted and implemented by a Romanian construction company (Fig. 1). The project contains near two thousands units. Apartments were designed according to eight housing types. Buildings were planned with different size and height. Commercial and other community facilities were also provided within close proximity.
Hay El-Eslamy Housing Project

This project is located in the western part of the city. It is bounded by the old east-west ring roads, to the north and an express way in the south. Industrial area occupies part of the eastern boundary of the project. On the west side a residential area and some industries are separated from the project by a proposed two way street (Fig. 2).

The plan contains five thousands units in which three thousands were prefabricated and the rest were cast on site. The prefabricated blocks were rectangular and u shape, four and three storey high with two, three, and four bedrooms apartments.
Guest Palace Housing Project

The development is located in the eastern part of the city. It consists of twelve housing units surrounds by high-rise apartment blocks. The site is bounded by two streets Al-Shat Street to the north and Yousef Basha Street to the west. Private housing development bounded the site from the eastern and southern side (Fig. 3).

Fig. 3: Guest Palace Housing Project

Project size

Most Public housing developments were designed to be large scale, high density projects. Motivated by economical and some abstract aesthetic concern, the designers of these projects felt that such design will satisfy their user expectation. But that is not necessary so. The problems of large housing developments that exist in various cities are testament of building communities rather than merely grouping of flats. Scale is an important dimension of sustainability. Housing developments should not be so large that they alienate the people who live in them. [3]

The study was not able to identify, with high degree of certainty, residents' reaction towards projects size. People image of their surroundings is probably influenced by other factors. Only residents of the third projects expressed their satisfaction with the size of the development. At later stage of the study it was learned that all residents of the third project were employed at one place.
Residents' sense of community might have been influenced by their sense of belonging to similar workplace.

Open spaces

The demand for open spaces to provide fresh air and light is an important aspect of housing design. Its cultural impact is also significant. Traditionally, dwelling units is marked by its well-defined spaces. In contrast, modern housing development, while planned as free-standing monuments surrounded by large open spaces, is not responsive to local environmental and cultural condition and contains less opportunity for territorial zone. The study of the first two projects supports such claim. It indicates that areas left by designer for leisure activities encouraged unintended use like teenager hangout, trash, and street vendors.

Some residents fenced their apartments to reduce unacceptable behavior. They used these areas for growing vegetables, trees planting, and safe places for their belonging and social gathering. Some architectural professionals may condemn these changes for visual disorders. They see in these changes a lack of relationship to the original design.

Residents' interference could have been avoided by limiting the size of "no man's land" and locating such space into apartment block and individual unit. Subdivision of the researched area can use both real and symbolic means. Symbolic means contain planting, open gates, textures, and signs. The other means include fences, high walls, and buildings. Both means can be used to enhance residents' surveillance of their surroundings. [4] This feeling is easily noticed while visiting the third project.

The guest Palace housing project contains one major open space in the middle of the houses. The access to this space is controlled through open gates and pathways. From the central square, entrances to individual houses are raised by few steps. The overall sense of enclosure seems to strengthen the sense of security, belonging, and sense of interaction among residents of this development. One resident complained about the lack of not having enough space for children to play but he expressed his satisfaction with the arrangement of the houses around a well-defined square. Well-proportioned and maintained public spaces can add to the sustainability of housing environment. They are as important as private spaces in determining the success of housing environment. [5]
**Building Appearance**

The architecture of the dwelling, traditionally, forms rich harmonious integrated element within city fabric. On the contrary, public housing developments, for variety of reasons, were designed following specific model. Housing units were produced on the basis of universal standards. Adoption of standardization and mass production in housing design affects public housing of individual expression. It resulted in impersonalized monotonous image of many housing developments. Few attempts were really made at articulating individual units from its surrounding. Most architect, while designing mass housing believed in a universal solution transcending social and individual needs.

The first project includes more than one hundred identical blocks. A unified prefabricated appearance was given to almost every unit regardless to its size and location. Similarly, the second project plan includes more than one hundred and twenty towers. These towers, despite attempts at diversifying their appearance, appeared not to satisfy their users' expectation.

Residents of these two projects has been attempting at dissociating themselves from their surrounding environment by changing their building appearance. Few years after projects completion, drastic changes were introduced. Rooms were added. Balconies were closed and steel bars covered exterior opening. One remarkable activity that took place with addition and changes was people decoration of their home exterior. They wanted to express their needs for sense of individuality and identity which the original scheme failed to afford.

The present research revealed no major changes in the third project. At the guest palace project, residents were satisfied with the distinct look of their houses which resulted from vernacular appearance of their dwelling. The "Ghadames" character appeared to inspire a sense of pride among residents. A high quality of life will be supported through the creation of high quality environments, both natural and manmade, which reflect high quality attractive design and innovation to create a sense of place.
Interior Spaces

Interior spaces are more frequently used than any other space in the living environment. Its use has a strong effect on people's well being and general satisfaction. Sustainable housing should incorporates design principles to ensure that homes are flexible comfortable for peoples various socials and biological needs. [6]

Affordance of a place is regarded in term of light, view, privacy; visual and aural, comfort, size and flexibility. If the dwelling environment has less to afford its dwellers, they will act either by changing it or withdrew from it. Respondents to questionnaire seemed to be satisfied with their living environment. In their responses, most residents liked the healthful and comfortable quality of their houses. Although the overall house spaces appeared adequate, some dissatisfaction were shown particularly about lack of enough area for storage and living room. Other residents expressed their concern about inadequate soundproofing between apartment units especially in the prefabricated units; aural privacy is a major source of resident's satisfaction.

Since the living room is ceremoniously, the most often used room in the house by all family members, some residents stated their needs for larger room, and they seemed to justify their closing of balconies to enlarge living room space. Study of the researched site revealed unintended use for balconies. Only in very isolated cases one can find a balcony is used for seating. Balconies were used for storage and drying clothes. It appeared that balconies were not preferable design element for most residents. Perhaps this is due to the concern with visual privacy or to other cultural reasons. Consequently, in
more than one house, balconies were sealed off from surrounding and they were added to the interior spaces.

**Design Guidelines**

The study illustrated the importance of the concept of sustainability to housing development. It showed that sustainable housing development should be of limited size (lower density) and of a small scale. For existing larger sites, area can be divided and developed on different stages. Public and different architects should be involved in the production of each design stage. Participations of various public and design groups enrich the quality of sustainable design and preserve the spirit of living environment by making it more responsive to residents needs. The process of building cities and sectors has always been a collective process.

Existing projects can be subdivided into areas of different characters and activities. Using the properties of various materials clarify the image of existing project. Sensitive landscaping transforms unused static area into human environment. While providing well proportioned spaces for communal activities inspire sense of belonging among residents of a particular place. Outdoor open spaces should be brought under the control and uses of specific groups of residents. Controlled spaces are safer and well maintained. A clear hierarchical delineation of spatial organization creates a stronger sense of security and discourage outsider from abusing outdoor spaces. Streets layouts, spatial configuration, and pedestrian pathways should be distinguished within residential area using different materials for pavement and sign for orientation. Recognition of an open space as the indisputable territory of a group of dwelling provides for many residents and their children a needed sense of place. Utopian approaches to large size development proved to be inadequate.

Building appearance should recognize individual needs of personalization and identity. Visual diversity and variety of building height and types inspire residents' sense of pride of their place. Use of color, distinctions of building entrances, varied patterns of opening and building mass, and changes in materials are means for enriching the expression of individual dwelling. Units' plans can be designed according to individual and family preference for comfort, privacy, and expression. The house plan should deviate from rigid standards and be flexible to allow for alteration and change. Most people like to "put their mark" on their living environment. A resident may want to close a balcony, combine two rooms into large space, or change exterior appearance of his house. In doing so, a person is exercising one of his basic instincts; human needs for self actualization a higher form a series human need. For a long time, designer has been planning for minimum standards and lower level
of human needs, biological needs. For upgrading housing environment, there is a need to produce homes with flexible structures and to consider other aspects of human motivation in relation to cultural aspect. Sustainable residential development will provide not only healthy homes but also a living milieu which enhances sense of community.

Conclusions

Although the nature of this paper prevented the researcher from making conclusive results for design application, it seems at least to have shown the value of some design elements for making sustainable housing development. The research focused on four design aspects of living environment; project size, outdoor spaces, building appearance, and affordance of interior space. These elements are vital to the achievement of sustainability of housing.

The size of the project seems to influence housing sustainability. The study identified that most residents lived in the third project preferred the arrangement of limited number of houses around a well defined square. Such housing layout affords them a sense of belonging and proud. Study of larger project did not show conclusive response for what residents preferred.

Un-maintained open spaces can make housing development less sustainable. In the first two projects, residents' reaction towards outdoor space was expressed in their various attempts to obtain territorial control. Researcher observed that many residents conquered areas next to their apartments through various means of real and symbolic barriers. Open spaces of original design were used by various group of people while fenced spaces were used exclusively by the residents. Similarly, their reactions towards building appearance expressed resident's needs for personalization. This was best expressed in the various changes that residents have introduced on their housing facades and building layouts. The use of different materials along with the incorporation of principles of urban design will give housing environment unique and rich character and enhance the reputation and the image of the project.

The paper showed also that how a home functions internally is equally important and thus homes should have been inbuilt flexibility to cater for future changes in life style and use. Good quality design can successfully accommodate higher densities and overcome perceptions of overcrowding and can make a positive contribution to sustainable communities.

The research did not examine relationship between sustainability and other factors such as sense of community, and provision of services. Further research is needed to establish a hierarchy of variables and test the
relationship between resident's reaction and the impact of each variable. There is a need also to examine the impact of other factors such as maintenance, management, and investment on upgrading the quality of public housing.

References


