

THE OPPORTUNITIES AND CHALLENGES FOR SUSTAINABILITY IN OLD NEIGHBOURHOODS A CASE STUDY OF ABUROUF NEIGHBOURHOOD - SUDAN

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ABSTRACT

Aburouf residential area is one of the oldest neighbourhoods of Omdurman Town -Sudan. The neighbourhood enjoys an outstanding location facing the Nile with an organic planning pattern and a homogeneous society. The study aims to examine features and principles supporting sustainable neighbourhoods that prevailing in Aburouf and to outline challenges that prevent the neighbourhood to cope with the new demands of development and present some recommendations to upgrade the neighbourhood. The research found many features of sustainability in the neighbourhood such as: A high degree of integration of land uses and activities, narrow meandering roads and alleys which are interconnected and discourage through traffic, a flourishing economic activity, a planning pattern which follows land topography with natural rain water drainage channels. The neighbourhood is facing some challenges such as lack of sub-centres, absence of clear road hierarchy, unhealthy removal of human waste , air and noise pollution.

Keywords: Sustainability, Old Neighbourhoods, Planning Pattern, Social Fabric, Mixed Land Use.

INTRODUCTION

Sustainability has motivated and provoked scholars and practitioners in different disciplines to seek forms for human settlements that will meet the requirements of sustainability and enable built environments to function in a more constructive way than at present.

Urban areas in both developed and undeveloped countries increasingly feel the effects of phenomena such as climate change, resource depletion, food insecurity and economic instability. These are all factors that will significantly reshape towns and cities in the century ahead and all of them need to be effectively addressed if cities are to be sustainable, that is, environmentally safe, economically productive and socially inclusive. Mohapi (2001) stated: As a result of rapid urbanization, cities and towns are responsible for the environmental damage through depletion of natural resources, pollution and loss of biodiversity resulting from the rapid increase in areas covered by urban housing stock. The emergence of “sustainable development” as a popular concept has revived discussion about the form of cities.

World Economic and Social Survey (2013) pointed out the Sustainable Development Challenges as provision of sufficient potable water, safe removal of human waste, air pollution mitigation and noise control.

The Egan Review (2003) shows the components of a sustainable community in a simple diagram and divides them into seven factors: Social and cultural, Governance, Environmental, Housing and the Built Environment, Transport and Connectivity, Economy and Services.

Flint (2013) argued that successful sustainable development incorporates multiple characteristics that are contained within the community. The characteristics range from natural resources, to the weather, to the transport of people, to the way people build and create their environment.

In order to identify and promote sustainability in a community, certain urban variables should be selected to understand the extent of the urban fabric that creates the community. The three main components of urban fabric are housing, services, and transport. They are basic factors that are interoperated in a different way according to the context and then distributed to other factors.

In supporting sustainable neighbourhoods, UN Habitat in its new strategy of sustainable neighbourhood planning proposed five Principles: Adequate space for streets and an efficient street network, High density, Mixed land-use, Social mix and Limited land-use specialization. While Jabareen (2006) identified seven design concepts of sustainable urban form: Compactness, Intensification, Sustainable Transport, Density, Mixed Land Uses, Diversity, Passive Solar Design and Greening. While Milder (2011) added the important role of the economic relationship with the surrounding environment in his five key elements of urban form, urban form can influence the environmental impact, but it is people and their behaviour that ultimately determine the negative or positive environmental impact of urban areas. Dreier (2006) argued that Jacob saw the traditional multi-activity street and densely populated neighbourhood as the bedrock of urban living, she recommended four pillars of effective city and

neighborhood planning: lively and interesting streets, continuous network of streets, parks, squares, and public buildings being part of the street fabric and to foster a functional identity at the district level.

Ward (2006) stated Jane Jacob believed that cities were places for people and embodied the myriad economic and cultural exchanges of an everyday life. Nowadays the traditional neighbourhood development is characterized by compact, pedestrian-oriented developments that provide a variety of uses, diverse housing types, and are anchored by a central public space and civic activity. It is based on the principle that neighbourhoods should be walk able, affordable, accessible and distinctive. The UN Habitat policy framework for developing countries (2012) emphasizes the effect of diverse uses of blended neighbourhood which tend to support each other and reinforce a sense of neighbourhood while decreasing travelling long distances for goods, services or work, and provide a variety of plot sizes and housing types to cater for the diverse housing needs of the community. Transportation infrastructure should encourage the use of more sustainable modes of transportation including walking, cycling and public transit. As streets constitute a significant portion of land use, provide accessibility to, from and within the neighbourhood, and is a major determinant of neighbourhood form so that Engel (2005) focused on transportation infrastructure as an important element in neighbourhood design .

METHODOLOGY OF CASE STUDY

This study is based on literature review and field survey. The field survey was carried through regular visits, personal observations and interviews with the residents to point out several planning and design features that were present a century ago, since the evolution of the neighbourhood, and still remain.

ORIGIN AND SITE OF ABUROUF NEIGHBOURHOOD

After the fall of Khartoum in Mahdi's hand in 1885-Abu Salim(1979) reported that El Mahdi and his followers crossed the Nile seeking a simple, religious and humble life rejecting all influences of the Turko-Egyptian rule in Khartoum. a site for the new capital was selected, north of the original camp of El Mahdi's troops at Abu Said, and was called Al Bugaa. The population of Omdurman increased considerably during the Khalifa reign. Rosingnoei, (1967) stated that the urban planning patterns evolved during that period were guided by teachings of Islam and were the result of the interaction between the socio-cultural and physical factors. The outcome was the indigenous organic planning pattern, compact building structures with low profile of mud houses, interrupted by mosques, and narrow meandering roads and alleys.

Abourof is one of the eldest neighbourhoods of Omdurman Town. It was evolved during the Mahdia, the neighbourhood is named after one of the Mahdi's Omera (a system of naming residential quarters at that time). The new expansions of Omdurman town which dictated by permanent plan rather than shaped by organic dynamism, are mostly laid out in a grid iron pattern remain in a sharp contrast to the traditional pattern of the older town.

Aburouf is located on a valuable site with outstanding location facing the Nile from the eastern side, inhabited by 6904 people in an area of 932402m², sloping towards the east with the presence of several Khors (natural canals that accommodated the surface drainage and drain it to the Nile) .

The neighbourhood is facing the Nile from the eastern side; this encouraged the manufacture of timber and timber products, as the timber is delivered by boats from the North and South of the country. The Nile Road, separated from the newly constructed Cornish Road, links the area with all parts of Khartoum State. The agricultural area, east of the Cornish road, used to supply the old neighbourhoods with most of the inhabitant’s daily needs. The neighbourhood is surrounded by other old neighbourhoods .Beit Almal on the southern side separated by a local road where the Tram used to run, a century ago. Hai Aldebag, on the northern side is famous for the manufacture of commodities made from animals’ skin such as shoes and bags. Elhigra Road, west of Aburouf represents the main transportation route that links Aburouf to other parts of Omdurman Town and separates Aburouf from the neighbourhood of Wad Nubawi (home of AL Ansar, followers of AL Mahdi).

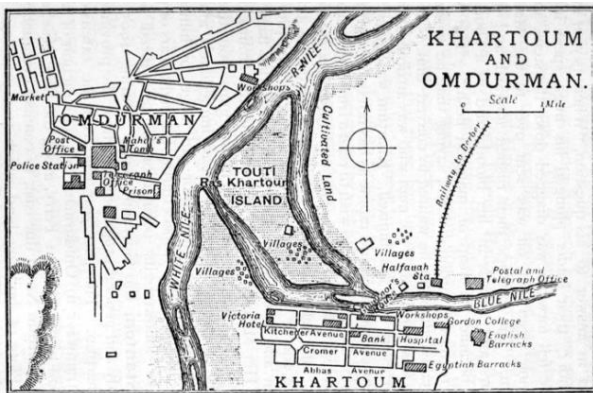


Figure (1): An Old Map of Omdurman

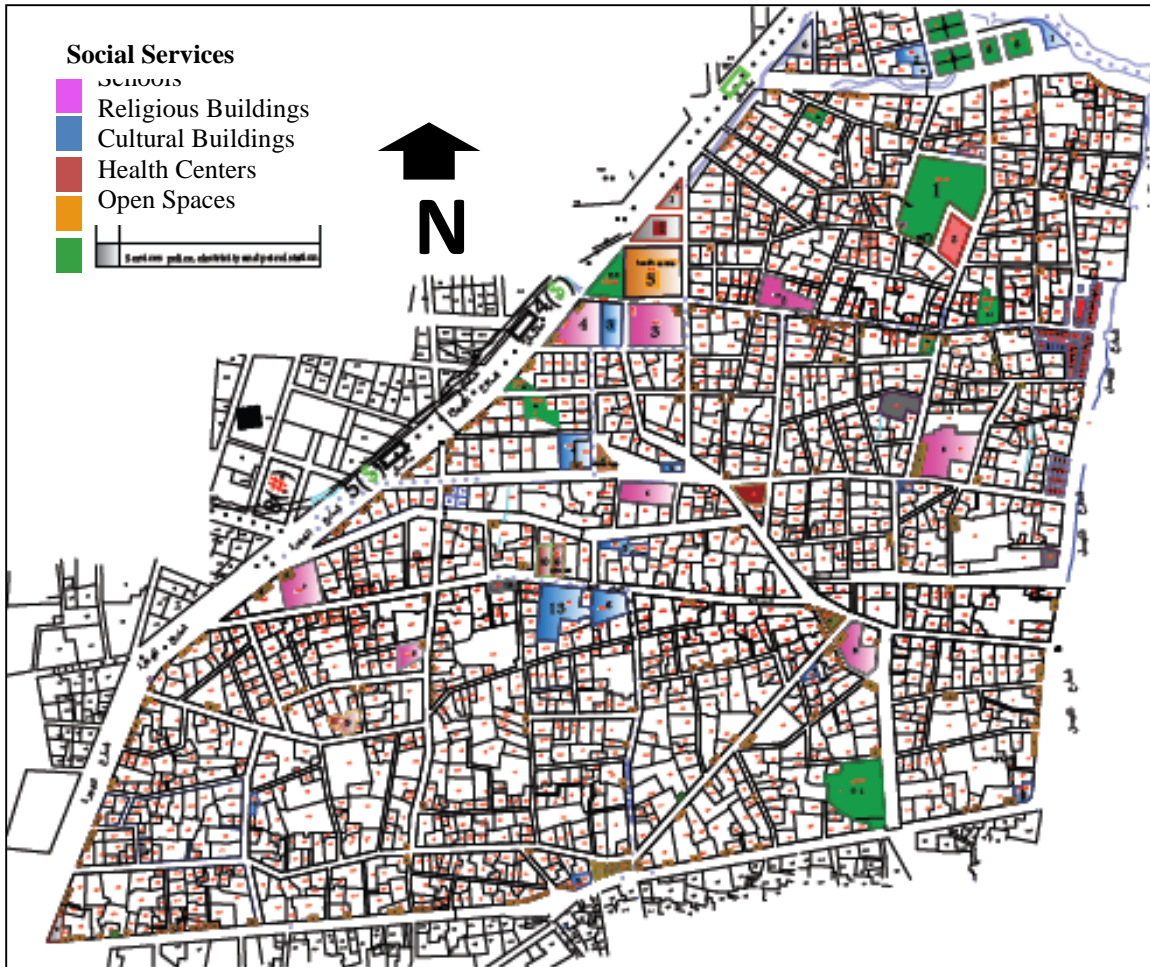


Figure (2): An Aerial View of Aburouf

ANALYSIS OF THE SUSTAINABLE PARAMETERS OF THE NEIGHBOURHOOD

Urban Planning Pattern:

The planning pattern is an organic urban vibrancy with a compact building structure (see fig (3)) The built area represents 76 % of the total area of the neighbourhood while roads and open spaces represent only 24%. The Population density is 135 m² /person that is very low compared with the recommended UN habitat optimum density for a sustainable neighbourhood (2012) which is 66 m² /person At least 15,000 people per km². This High density is an outcome of the compactness of housing which result from the fact that Aburouf is surrounded by neighbourhoods on three sides and the low land of Elkabajab on the fourth side so that horizontal extension is not possible and any population increase whether permanent or temporary is accommodated within the neighbourhood. High density promotes social mix, reduce car dependency, support better community services and decrease the cost of public services.



Figure

(3): Urban Planning Pattern of Aburouf

The neighbourhood is characterised by a low profile urban fabric as most houses are built of mud, some of brick and stone and a few of concrete buildings as shown in photo (1) and (2).the neighbourhood was formally inhabited by the low income families but nowadays there is a considerable portion of inhabitants of middle income occupying the area facing the Nile road this clear on the dominance of multi floors houses there.



Photo (1): A Low Profile of Urban Fabric



photo (2): A Multi-floor House

Plot sizes are variable ranging from 4000 m² to around 121m². This variation in plot sizes is attributed to the fact that most plots were inhabited by extended families and the formation of young families and the need for privacy necessitates the splitting up of large plots into smaller ones. Another reason for this variation is due to the distribution of the inherited large plots into different portions according to the legal right of each member of the family. Some families allocate parts of their houses for rent to raise the family income so that the neighbourhood houses are in different tenure type. Large plot sizes have numbers of courtyards inside so that social gatherings and ceremonies take place within the house premises. This variety of plot sizes and tenure types cater for the diverse housing needs of the community.

It is realized that apart from the small shops scattered throughout the neighborhood, no service centers within walk able distances are available, all service centers are located on the peripheries of the neighborhood, along Aburouf road and Alhigra road. The old shopping area- Soug Alshagara- is facing Aburouf Road, offers an excellent ground for social gathering that creates a good community. Most old-aged ladies are used to walk to Soug Alshagara to get their daily needs. Recently a new supermarket - The new Perlom Mall -was built in the area of Soug Alshagara, which supplies Aburouf residential area with all the residents' daily needs: commodities such as cereals, dates, spices, household utensils beside the grinders and small shops.

The area of the social services is a small and represents only 6% of the total area of the neighbourhood. The commercial facilities represents 35% of all services followed by the educational facilities 26% , the religious 21%, social ,cultural & sport activities 5% and other services 6% .

The contour lines reveals that the area is sloping naturally towards the Nile .The buildings are built on the elevated areas while roads and open spaces occupy the lower areas acting as natural drainage channels. The sustainable surface drainage follows the natural topography and thus protecting the neighbourhood from being affected by floods and rain waters. The Natural floor finish permits rain water penetrates into the water table avoiding flash floods.

Social fabric

Aburouf neighbourhood preserves its quality as a function of how well it can govern and protect itself over time, employing a combination of residential cooperation and financial vitality.

. The neighbourhood is a supportive community most plots accommodate extended and composite families due to the social commitment towards old aged and close relatives whose parents, for certain circumstances are away and are left behind. The neighbourhood encourages social interaction at the street level-a bustling pedestrian environment which make streets safe as well as supportive, as males have mornings and afternoons social gatherings, which take place in roads and alleys connecting the neighbourhood, with the Maziara near by providing cool water for passers-by. The society interactions are "intricate, almost unconscious, network of voluntary controls and standards among the people themselves, and enforced by the people themselves."

The roads and alleys are pedestrian friendly. They favor walking, biking and public transit over car also offer excellent playing areas for infants and children, being supervised by their parents and the public view. In Ramadan, (the fasting month) males of different age groups gather outside for the Mugreb prayer and Fatour (fast breaking meal, after sunset) food is being delivered

from many nearby houses(see photo (3) and (4)). Passers-by, who are late for Fatour at their destinations, are invited to join the meal.

Sidewalk life permits a range of casual public interactions, from asking for directions and getting advice , to nodding hello to passersby .Streets have a sufficient frequency of commerce, general liveliness, use and interest so as to sustain public street life. At the same time a bustling pedestrian environment is a prerequisite for neighbourhood safety; all the inhabitants are fully engaged in the community.



Photo (3): Fast breaking meal, after served in the street

photo (4): Mugrip prayer held in the street

sunset is

Road network and open spaces

Roads and open spaces represent only 24%of the total area of the neighbourhood which is very low hence UN habitat recommended that street network should occupy at least 30% of the total area of the neighbourhood and at least 18 km of street length per km². The surrounding roads are of variable widths: Aburouf Road is 15 m wide from the southern side, Higura Road 40 m wide from the western side, Elkabajab Road.25 m wide from the northern side and Old Nile Road 18m wide from the eastern side. Most of the roads crossing the neighbourhood are short, narrow and meandering with variable widths that, ranges from 5 m to 20m.they are not attractive for through traffic. The integrated road network facilitates safe, efficient movement and can be developed to encourage pleasant walking and cycling.

The neighbourhood is characterised by the present of several dead end roads which appeared gradually through time due to the splitting of large plots into small plots and the need for access from the road to each new section (see Fig (3)). Main public transportation routes are only on the boundary, along Aburouf Road and Elhigura Road, which cause difficulties for the residents to reach transit points but at the same time provide safe mobility within the neighbourhood either walking or cycling or using Rectia – a more sustainable mode of transportation.

The neighbourhood is characterised by few open spaces - represent only 7 %of the total area of the neighbourhood-with variable size ranging from 4271.7m²to 317m² with a total area of 17 304.00m²,including the graveyard at the northern side of the neighbourhood. This variety in size of open spaces is due to the fact that the old neighbourhood was not pre-planned but developed according to the vision of the local settlers and their intention to fulfil their social, cultural and environmental needs. Recently these open spaces accommodate different activities e.g. Sport, social, religious and cultural activities such as outdoor

cafes where tea, coffee and light food are served, while a few are utilized as parking space for cars and rectias where an adjacent maintenance shop is available.

Mixed land use

The neighbourhood enjoys a high degree of integration of land uses and activities such as residential, commercial, industrial and agricultural uses. There are flourishing and diverse local commercial activities with wide range of jobs fostering local employment, local production and local consumption not only for the neighbourhood but for the whole of Khartoum town. Such economic activities are prerequisites of a sustainable development as they make residents attached to their neighbourhood, offer job opportunities for residents within walking distances and preserve the neighbourhood from deterioration and blight. The location of Aburouf along the Nile has inspired the residents, more than a century ago, to develop local crafts along the river. The most well-known activities were wood trade and boat making, later on and throughout the years the area flourished and boat making was replaced by pottery and iron manufacturing. Iron manufacturing displays different commodities e.g. furniture, doors, windows, grills and curtain rails (see photo (5)). The development of the Cornish Road five years ago as a high-way connecting Omdurman town with Khartoum town, segregated the traffic and separated the neighbourhood from the Nile banks and pushed wood trade and pottery manufacturing to the northern side of the neighbourhood along Elkabajab Road (see photo (6)).

There is considerable number of cafes and small restaurants developed east of the neighbourhood along the Nile road. The adjacent agricultural land along the Nile is cultivated for the benefit of the residents.



Photo (5): Iron manufacturing along
The Nile road



photo (6): Pottery manufacturing and wood
trade along Elkabajab Road

Challenges for sustainable development

It is clearly noticed that the neighbourhood suffers from some problems that stop it from being a completely sustainable neighbourhood and it needs solutions to overcome these obstacles. The neighbourhood does not need the traditional urban renewal approach i.e. urban renewal bulldozer, but it needs a comprehensive re-planning scheme that will not destroy the community and its social fabric, these problems can be summarized as follows:

Concerning the urban planning pattern: the neighbourhood lacks sub centres as the inhabitants walk long distances to get their daily needs and some of them are forced to use cars to reach the nearest service centre. There is no clear road hierarchy that controls and organizes the flow of pedestrians and cars to the different sections of the residential area, as Angela (2012) argues that the way road system is designed can either help or hinder the use of public and alternative transport. Some of the narrow roads are not accessible to service cars such as ambulance and garbage collectors. Streets of the neighbourhood are unattractive especially in evenings because they lack landscape: greening, lightening and furniture. It was realized that all open spaces within the neighbourhood are barren and not well developed.

Concerning services: Most of the houses use the traditional Sewerage systems (pit latrines and cess pole) a few houses use septic tanks although these systems are using water efficiently as there are minimum utilization of water but they cause hygiene problems. The availability of public transport along Aburouf Road and Elhigra road causes difficulties for the residents to reach transit points. Concerning mixed land use: Iron and steel manufacturing located along the Nile Road cause sound and air pollution.

CONCLUSION AND RECOMMENDATIONS:

In recent years city planners, developers and policymakers have increasingly looked towards designing a more compact city in order to achieve a more sustainable urban form. It is realized that Aburouf residential neighbourhood has most of the sustainable features recommended by scholars and urban planners as it is:

- A mixed-use, compact high dense area with narrow meandering road network.
- A flourishing and diverse local economy with variable income levels among the residents.
- A vibrant, harmonious and inclusive society with a high degree of intimacy among the residents.

The neighbourhood should preserve and enhance its physical and cultural heritage with its distinctive organic planning pattern of meandering roads and alleys, natural floor finish and natural building materials and can thus be developed into a tourist ground by introducing a substantial quantity of stores, restaurants, cafes and other public places sprinkled along the Nile Road to attract visitors passing along the Cornish Road. This can act as a source of revenue to the entire population of the neighbourhood.

Here are some recommendations to improve the existing situation of the neighbourhood:

Concerning the planning pattern: Provide several sub centres within the neighbourhood to enable the residents to get their daily needs within walking distance not more than 400 m without the need to travel to the centres located at the peripheries, and Introduce street landscape, greenery, lightening and furniture so that roads and alleys become lively and vibrant. developed open spaces to accommodate different activities such as sports, children playing and recreation and move the graveyard on the northern part to another location and transfer the area into an open green, and convert the large low land north of the neighbourhood into a park that can turn into a pond during the flood periods as Copenhagen city did. Concerning services: Improve the infrastructure and provide public transport and bus stops on all the surrounding roads .Use

environmental clean means of transport within the neighbourhood. Provide parking lots on peripheries of the neighbourhoods, so as to discourage traffic as much as possible inside the neighbourhood. Locate secondary garbage collection points adjacent to houses clusters because most roads are not wide enough to accommodate large trucks, the garbage can then be moved to main collection points at wider roads.

Concerning mixed land use: Relocate the steel and iron manufacturing to the industrial areas and replace them by a light manufacturing which can be displayed along the Nile Road to attract people from all over Khartoum State and encourage residents to cultivate the adjacent agricultural land along the Nile, to satisfy local consumption of vegetables.

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