

Islamic Instruments for Sustainable Urban Spatial Planning and Management

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Abstract

This paper looks at the role of faith-influenced land use planning and management as solution to the seamless urban challenges of this century. In many developing countries master plans fail to guide institutions to engender sustainable urban environment even as environmental changes affect the quality of life. The paper posits that since urban population cannot exist in absence of qualitative natural environmental variables, then it becomes expedient to think of sustainable solutions. Islam as religion and social system regulates space organisation for harmonious coexistence of inhabitants and the natural habitat. This feature characterises many Muslim traditional cities before the 20th century when western planning theories and models become the brain-box of Muslim urban professionals and dream of governments. This paper examines the Islamic instruments of spatial planning and land use management which are enshrined in the concepts of harim, hima and fina. Northern Nigerian city of Kano is used as example for cross-examining these concepts in engendering urban spatial sustainability. The research couples analysis of images, interviews, field assessments and literature review to prop its findings. For many centuries, Kano city grew steadily with passion for the principles of sustainability which are understandable and implementable by grassroots and those in the power towers. At the moment, the three instruments are weak; hence, the city grows in pains of ecological imbalances and couple of land use challenges.

Keywords: *Harim, Hima, fina, planning, sustainable, land use, Kano city*

1 Introduction

Traditional Islamic urbanism in the contemporary times is confronted by challenges of demographic explosions, globalisation, ecological challenges and the general quest for institutionalising urban sustainability. The pressing urban challenges underscore the decision of the United Nations to tag this century as 'urban century' (UN-Habitat 2008). The Target No.11 of the Millennium Development Goals (MDGs) No.7: environmental sustainability also focuses on challenges of urbanisation such as slums, land tenure, sanitation, poor planning and poverty (Martine 2007). In spite of all efforts, urban land use planning fails to eliminate slums, poverty and chaos in third world cities (Voigt, 2006). Inhabitants of megacities are helplessly exposed to natural hazards and critical, chronic and long term damages to lives, health and other socioeconomic aspects (Hansjurgens, et al 2008). Spatial planning of urban areas remains at the core of policies. The UN-Habitat (2009) suggests use of strategic spatial planning for developing countries for sustainability as alternative to master plans. Therefore, belief systems, culture, norms and values can offer launch pads for strategic planning.

In the Muslim world, one of the major challenges of urban space making has to do with adoption of western urban land use models which prioritise economy in lieu of ecology, morality and equity (Barau 2010). Interestingly, the potentials of Islamic principles of land administration for managing urbanisation is emphasised (UN-Habitat, 2005). One major challenge of urban spatial planning in Muslim countries and other developing countries is the contemporary usage of computer aided urban modelling and simulation processes such as: Alberti and Waddell (2000); Martine (2001); Vanegas; Waddell et al (2008) and many others. No doubt, such models are appropriate for the challenges on the ground. However, the local people and even most of the appointed or elected decision makers for Muslim towns and cities in Muslim republics and kingdoms are not well skilled and informed about such computer driven models and concepts.

Any tool to be used in spatial planning and monitoring should have a clear consideration for the involvement of urban land users and must integrate semblance of the customs and values of the society. By and large, integration of Islamic land use principles into modern urban modelling would in no small measure be of great benefit to professionals, land use administrators and community as a whole.

This paper advocates use of Islamic land use principles for attaining urban spatial sustainability. The objectives of the paper are: to identify the relevance of Islamic instruments urban spatial planning and management namely, *hima*, *harim*, and *finā*; to explore problems and sustainable solutions for challenges of contemporary urbanism in a traditional Muslim city of Kano in northern Nigeria; to examine and assess usage of such models in Kano city in the past; and to examine current implications of misuse of the models in Kano. The paper tries to achieve that through explanations on the background of the concepts of western and Islamic spatial instruments; practical applications for spatial forms and

challenges from the case study site. Based on that, an empirical approach follows undertaking the research and its findings, conclusions and implications.

2 Conceptual Framework and Literature Review

Since the beginning of human settlements so many theories and practices define and guide how humans value and make use of space.

2.1 Urban Land Use Planning Theories

Contemporary urban land use studies emerged in the 19th century through David Ricardo's hypotheses that, the most fertile lands around the city attract highest rent (Chisholm, 1970; Ogbazi 2002). It was then followed by the Heinrich von Thünen's 1826 theories of land values and land use structure (Mather 1986). The main variable factor in von Thünen theory is transport cost in relation to production, and distance which in return determines semi- concentric land use patterns for a given city. Other related theories include those of William Alonso's land market model (1964). Walter Christaller (1893–1969) developed the central place theory to explain the location, size, function and economic relations between bigger and smaller urban centres using geometric shapes. August Lösch (1906-1945) modified Christaller's theory by considering effect of physical features on spatial distribution and hierarchy of settlements. Growth pole theory was developed by François Perroux explaining growth of cities through economic and industrial points which attract similar activities (Ogbazi op. cit). The central place theory was also modified by Vance (1970) who fashioned the mercantile model.

Concerning the city structure Burgess in 1925 suggested concentric model with an annular form that has the city's central business district (CBD) at the core. This rather simple and idealised model assumed homogeneity and defined boundaries alluded to various land uses in cities. Hoyt (1939) advanced an alternative model known as sector model. The model has sectors or wedges that radiate outwards from the CBD with lines of communications aiding distinct land uses from different directions. The third popular model was developed by Harris and Ullman (1945) whose multi-nuclei model stipulates that many cities do not grow outward from their CBD. Instead, as they grow they absorb other specialised land uses and consolidate them into separate nuclei that eventually become square, rectangular or irregular in shape (Mather 1986).

The models cited above have provided for zoning ordinances that separate various land uses through Euclidean zoning in 20th century (Burdette 2004). Such divisive land use planning based on non-market controls are designed in theory to minimise incompatibilities, though they promote unnecessary physical and social segregations (Fellmann et al, 2005). Similarly, the theories lack inherent and obvious considerations for ecological dimensions of the urban settlements as habitats.

2.2 Urban Land Use and Sustainable Urbanism

Majority of developing countries have adopted western urban planning concepts. Yet problems of abuse, corruption, squalor and pollution plague their cities (UN Habitat 2008, UN Habitat 2009). In many countries, huge metropolitan growth causes simultaneous displacement, deterioration, and devaluation of the inner core cities (Adhya, Plowright and Stevens 2010). To address these challenges, sustainable city theories emerged in the last 30 years to guide towards sustainable urban design (Lehmann, 2010). Three of the approaches enshrined in sustainable city theory are given by Martine (2001). The first is carrying capacity which entails estimating how much people and activity a given space can support; the second is ecological footprint which measures amount of land needed to sustain a city's population/consumption levels. The third approach is sustainable use of space which obligates: identification of the vulnerable populations with aid of tools like Geographic Information System (GIS); identification of ecosystems at risk and enforcement of their preservation; and search for viable options to expansion. In the same fashion, compactness (density) and biophilia (human access to nature) are prioritised values of sustainable urbanism (Adhya, Plowright and Stevens 2010).

Urban experts now create coupled models based on mathematical and information technology models to help in addressing the pressing urban planning challenges. Examples of such models include (Waddell and Alberti 2000; Martine 2001; McCarterny, Quay, Gries et.al. Vanegas; and Waddell et al 2008). However, Sabri and Yaakup (2008) caution on the high expectations from these models because they do not truly support the users' needs or support only part of plan development process.

2.3 Muslim City: From Rules to Spatial Design and Form

According to some opinions an Islamic city does not exist in a real sense, but some recurring mechanisms generate structure and expressions commonly found in Islamic cities (Abu-Lughod 1978). But this argument is countered by Abdulac (1984) who offers that Muslims designed and developed several garrison towns which include Kufa, Fusta, Basra, Medina, and Jabiya. Al-Hathloul (2005) states that, traditional Muslim city's design is generated based on customs and provisions of jurisprudence on how people use and develop space. Thus, it is not like a modern city whose physical form is predetermined by designer. In general, a Muslim city is characterised by sacred, spatial, ecological and socioeconomic dimensions. Ibn Khaldun (1332-1406) in his *Muqaddimah* (1978) outlines nine (9) requirements for designing urban land. These are: town walls; strategic location; consideration for prevention of air pollution; consideration for prevention of water pollution and infections; availability of water for the public; pasture ground for domestic animals; lands for urban agriculture; woodlands for energy and construction; accessibility and connectivity for external trade. These requirements are informed by provisions of Sharia on design of human settlement. Prophet Muhammad (S) arriving at Yathrib instantly changed its

toponym to Madinah Al-munawwara (Illuminated city) and declares as haram (inviolable) what lies between its two volcanic hills, Gayr to Thawr. Thus, the Prophet forbids removing plants, hunting game and curses introduction of any vicious act there (Albadar, 1429/2008).

Hakim (2007) praises the generative processes associated with most Arab and Islamic cities for being socially inclusive; for their agreed-upon ethical meta-principles; for originating in locality's history and customs; and for their appreciation of individual and collective rights and responsibilities. These principles make settlements look natural and sustainable in contrast to the western city models trademarked by 'master plans' which are static blueprints leading to formation of fabricated structures in cities. Sharia is a *sine qua non* for place design and making in Islamic countries. For instance, Naniya (2007) and Nast (1996) hint that, the design of the Emir's Palace Kano built in the 15th century reflects on war tactics of the second Islamic Caliph, Umar bn Khattab (634-644); and it is also oriented towards al Qibla - Makkah.

Traditional Muslim built environments characteristically not built by professional architects or planners generate their stable and sustainable form through public responsibility sharing among the people cohabiting the environment (Akbar 1988). In this respect, Hakim and Ahmed (2006) outline some of the rules that operated in the 19th century built environments of the Sokoto Caliphate in West Africa. They listed from Sultan Abdullahi Fodio's book, *Diya-al-Hukkam*, which explains rules for land uses and fundamental duties and responsibilities for management of water, domestic and industrial waste, common and public properties like access roads and rights of privacy of individual house owners.

2.4 Muslim City: Rules of Spatial Design for Sustainability

From northern Africa, through northern Nigeria, Arabian Gulf to Iran and Pakistan attributes of Islamic urban heritage that promote sustainability include: harim, hima and fina for land use allocation; compactness and privacy of the built environment; natural resources conservation; and city cooling mechanisms (Hakim 2004). The three tools or instruments commonly used in Islamic world for regulating built environments are summarised in terms of their function in table 1 based on Hakim (2004), Hakim and Zubair (2006), Gari (2006), and Barau (2009). Table 1 outlines the applications of the instruments for sustainable design and management of settlements.

Fina' as elaborated by jurists is the part near the house door, and does not extend more than half of the width of the street. In lanes and cul-de-sacs, the fina' covers the whole area abutting the house, and usually extends to include the whole lane's width. The fina', therefore, can be seen as a space belonging to whoever has a door opening onto the street (Al-Hathloul 2005). On the other hand, himā is defined as a reserved pasture, where trees and grazing lands are protected from indiscriminate harvest on a temporary or permanent basis. It existed in the Middle East before Islam; but it was treated as a private reserve for

powerful chieftains who were said to have used it as a tool of oppression. With the emergence of Islam, its function changed; it became a property dedicated to the well-being of the whole community around it (Gari 2006). Six types of hima are identified.

- 1) grazing is prohibited and cutting is permitted during specific periods;
- 2) Grazing and cutting is allowed only after flowers and fruits are produced. This allows natural seeding of the soil for the next year.
- 3) Grazing is allowed all year; the number and type of animals are specified with no restriction on grass-cutting.
- 4) Reserve for bee-keeping. Grazing is allowed only after the flowering season. These reserves are closed for five months (spring months).
- 5) Reserve for forest trees, e.g. acacias spp., haloxylon persicum. Cutting is only allowed for great emergencies or acute needs.
- 6) Reserve woodland to check desertification or sand dune encroachment.

Table1: Islamic instruments for spatial planning and monitoring

Models	Applications in Urban Built Up Areas	Potentials for Sustainable Urbanism
Harim	1.Carrying capacity regulation; 2.Pollution control; 3.Protection of local common resources etc	Sustainable use of natural resources and infrastructure at micro and macro ranges within and outside built up areas.
Hima	1.Urban green zone development;2.Biodiversitysinks;3.Wetlands conservation;4.Urban cooling; 5.Air pollution control;6.Recreational resorts; 7.Urban gardening by the poor;8. Land degradation control	Strategic spatial planning of urban spaces in arid and semi arid zones; and maintenance of ecological footprints in cities
Fina	1.Fostering privacy in neighbourhoods; 2.Grassroots sanitation;3 Roads and pathways management 4.Community conflict resolutions	Grassroots participation in space making, management and harmonious coexistence at the neighbourhood levels

The last of the instruments is harim which is defined as buffer zone surrounding a property or a piece of structure which is necessary for its effective function e.g. roads so that people are prevented from harming it. It also signifies

space surrounding a well, built environment, forest or a river that protects it from damage, maintain its integrity and prevents it from pollution and destruction (Zahradeen, 1990; Hakim and Zubair 2006).

Therefore, jurisprudential provisions of Islamic legal system (Sharia) and Urf (customs) administered through judges and jurists (Qadis, Muftis) and Muhtasib (community guidance officer) and community members is broad based, and participatory (Hakim 1996; Barau 2009) and that helps immensely in creating order in space use by all and sundry in the society and between it and the ecology.

2.5 Islamic Urbanism and Sustainability in Kano City

Like many Muslim cities, Islam influences the spatial organisation of Kano since 15th century (Nast 1996). Kano became a full pledged walled city since 11th century (Liman and Adamu 2003). The city was compact with gated walls covering 18 miles radius (Olofin and Tanko 2002). The ancient city of Kano was ranked in the 16th century as the third largest city in Africa after North African cities of Cairo and Fez (Dan Asabe 1996). Kano then might look like an eco-city, as only about 1,800 acres out of its 5,400 acres landmass was a built up (Frishman 1977). The existence of numerous ponds, open spaces and scrublands around that period gave Kano attributes of sustainable cities. The said features of sustainability were also consolidated by the 19th century centralised Islamic land policies of the caliphate which include rules of the built environment (Hakim and Zubair 2006). It easy to infer from Hamza (2003), that plantations like those at Dorayi were lands held in trust for society and as such could be regarded as hima lands that lost their original status with passage of time.

The erosion of the relevance of Islamic principles of urban space regulation can be attributed to the centralisation of the land tenure system in Nigeria through the 1979 Land Use Act (LUA) which invalidates all the indigenous land laws of Nigeria (Barau 2009). The LUA is responsible for the current multiple socio-ecological crises over space use in Kano which compounds the city's known features of sustainability. For instance, Maiwada (2000) finds that the open spaces drastically reduced along with their ecological significance. Now in Kano people seek land to build houses from substandard, chaotic and even illegal informal land market (Liman and Adamu 2003). Earlier on Ajayi (1997) observes that spatially Kano grows by 100% per decade. Similarly, Sani (2004) adds that Kano grows aimlessly without master-plan, without focus, or direction and little control spreading over 11 local government areas. But, UN Habitat (2009) criticises master plans and urges for use of strategic plans that tackle the informal urban sector. It is pertinent to add that densification, gentrification and plots fragmentation are common in Kano leading to increased shrinkage of the individual buildings even in the official low density areas (Barau 2008). Similarly, Oumar (2008) finds that over the years the room occupancy rate for Kano has ranged from 1.4 in 1963 to 1.9 in 1980 and 2.67 in 1994. These figures correspond with increasing figures of city from about 100,000 in early 1950s, 1.6 million in 1990s to current 3.0 million. This rapid growth undermines the

environmental quality of the city (Barau (2007). Spatially, the city of Kano deepens its growth from within its walled perimeter. Thus, spatial units like wards, zones and other metropolitan sectors continue to emerge from colonial through the post colonial areas (Liman and Adamu op. cit).

3 Data and Methods

In order to investigate the applications of the concepts of harim, hima and fina in the city of Kano in the past periods; and to as well investigate the city's contemporary spatial challenges in the light of absence of their implementation this study is pegged on coupling of field and laboratory methods.

3.1 Study Sites and Sampling

An air-photo mosaic Kenting Africa (1980) and Google Earth (2008) satellite image were used for comparative analysis of the past and present conditions of the city of Kano in respect of environmental variables in the last three decades (1980-2009) as they pertain to the influences of Islamic models of urban form and or spatial organisation and management (fina, harim, hima).

In order to achieve that, equal number of grid lines were drawn on the two images. The grids make stratified sampling the most suitable for consideration of changes that affect open spaces; undeveloped areas; ponds/wetlands; and thoroughfares/cul-de-sacs located within 18 miles radius of the walled ancient city of Kano.

Table 2: Sampling Points and Components

Hima	Harim	Fina	Harim	Harim/ Fina
Undeveloped area	Wetlands/pools	Alleyway/ cul-de-sac	City wall encroachments	Open spaces
Kabuga Lay- Out (Tal'udu)	Kofar Wambai Ward	Chedi Ward	Dukawuya City gate	Kano Municipal

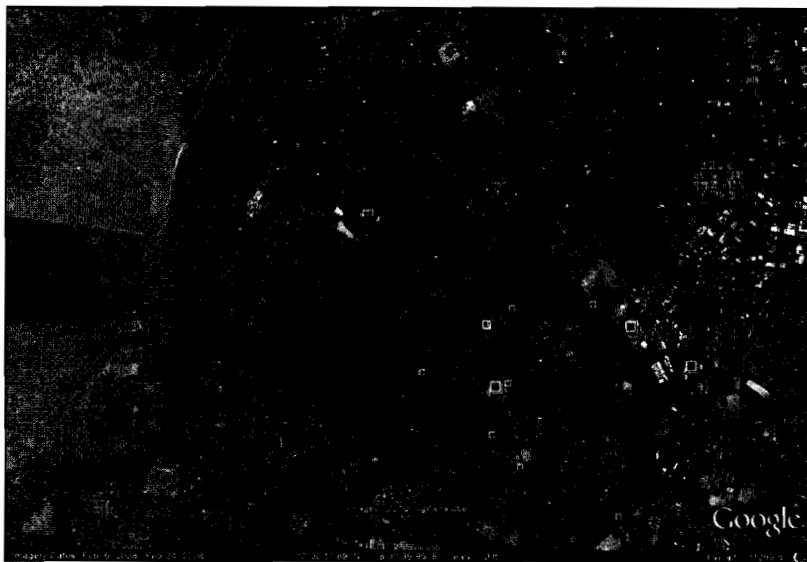


Figure 1: Google image of (heart like shaped) Kano walled city

3.2 Interpretation and Analysis of Images

For analysis and interpretation of the two images used in this research, visual cues such as tone, texture, shapes, and patterns of Kenting Africa (air photo mosaic 1980) and Google Earth (satellite image 2008) were considered.

3.3 Field Investigations and Interviews

Kenting Africa air photo mosaic was used as control and study aid for the field observation of roads sizes; encroachments on open spaces; undeveloped areas, and cultural structures like the city walls. Built-up structural relations surveys between individual and cluster of buildings within sampled points was also imperative in order to fetch idea concerning management of spaces and on the general observation of the Islamic instruments of space use. Participants for the interview were selected randomly from the study sites.

4 Results and Discussions

It is evident from the fieldwork undertaken at Chedi ward and its environs located within the ancient walled city, that the concept of fina is still very much observed and relevant in the spatial organisation of the area. The area has walkable passages that are non-motorable but usable by animals like horses, donkeys and camels. Chedi is among the ancient wards mentioned in Liman and Adamu (2003). Originally the houses there were built of mud, but subsequent reconstructions were done with modern building materials. It is observed that rarely the fina/pathways (with average width of 7 meters) are violated by

trespassers. Even within some cul-de-sacs (blind alleys) the situation remains the same. House occupants use the fina space for purposes that benefit the community e.g. installation of electric poles and transformers. The sustenance of this situation is linked to the active role of ward-head (Mai Unguwa in Hausa language) who serves as the local head and exercises the role of muhtasib. Stability experienced in such areas for long period is an element of sustainability that emanates through Islamic rules as noticed by Al-Hathloul (2005); Hakim (1996).

Analysis of the 1980 Kenting air photo shows that areas around Wambai city gate have wetlands and ponds which play crucial role in urban cooling and flood control. The wetlands observed are all missing in the Google Earth 2008. It is obvious that, if the concept of harim is utilised it would have demarcated no-trespassing zones which would have preserved these sites which are now well desiccated. The negative implications of this for Kano city has been noted by Maiwada (2000) and Barau (2007). The erstwhile ponds and wetlands are now replaced by buildings and other commercially related structures.

Kenting air photo mosaic of 1980 shows that about one half of the Kano walled city especially its western axis are lightly developed or undeveloped. The land use is primarily farmed parkland, gardens, scrublands and houses of the poor as well as few educational institutions. The area is part of what Frishman (1977) refers to undeveloped parts of the city and which in the context of this research could be considered as hima. However, during the mid-1980s the area was converted into medium density housing area known as Sabon Titi/Kabuga layout (Tal'udu). The reserve land was issued to the wealthy and influential individuals who relocated to the area from the inner core city and other areas. In this context, hima lands are lost through the process of gentrification which leads to land use and land cover changes. Some sections of these layouts do not have substantive traditional heads like Mai Unguwa who oversees the administration of affairs of the society as Muhtasib and last strata representative of the Emir of Kano. Consequently, unlike in the inner core city potential threats are visible between owners of adjacent houses especially with regard to the types of buildings. For instance, it is observed at Kabuga layout that some duplex houses overlook some of the adjacent bungalows and undeveloped lands (see figure 2 below). This contradicts Islamic traditional city setting which respects privacy of individuals (Al-Hathloul 2005). In general, lack of consideration to Islamic rules on the built environment is caused principally by lack of set of rules to be enforced through an overseer or muhtasib. This opinion is confirmed by some residents interviewed. In this planned layout some house owners extend their walls beyond the fina thereby encroaching on the road and this situation some residents attribute to corruption by some development control officers of the planning authorities and also lack of substantive muhtasib personnel (see figure 3), such situation may also create tension in the community.

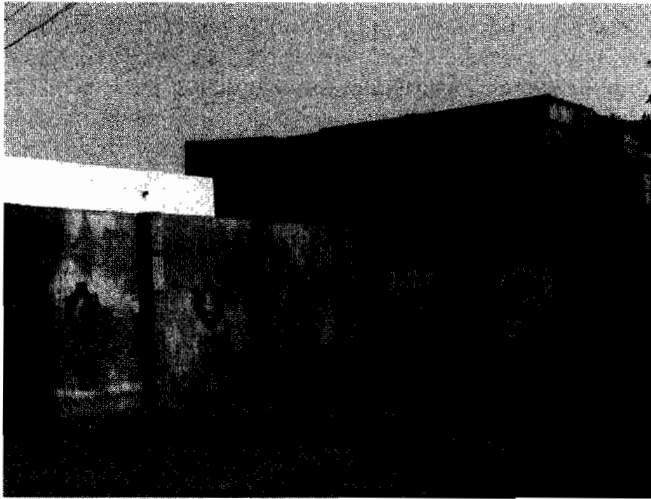


Figure 2: Potential conflict over right of privacy, windows overlook neighbours compounds



Figure 3: road encroachment by buildings violate fina concept as evident here

Another critical example on erosion of relevance of the concept of harim is manifested on the pervasive direct encroachment of buildings on the Kano walls and gates. The study examines this problem at Dukawuya gate which is one of the youngest gates and walls built in the 17th century. The Kano walls were never demolished or pillaged in the history, they had water filled moats and very wide buffers (harim) that protected them from encroachment. The buffer to prevent harm to all structures as noted by Zubair and Hakim (2006) is now very much

disregarded and hence the current negative condition of the walls. The walls also used to have active caretakers (muhtsibs?) until the time the Nigerian federal government took them over as national heritage sites in the late 1960s. However, the secular laws of Nigeria could not secure the walls simply because the laws are not divine. People rarely feel obliged to respect them. Today the walls lack real caretakers and hence the continuous erosion and demolition of the walls (see figure 4 below).



Figure 4: encroachments on the city wall and gate is common in Kano

From the comparative analysis of the two images used for this research, the relevance of the concepts of harim and hima in the management of spatial organisation and in maintaining ecological balance is clearly stated especially as regards open spaces and city ponds of Kano during the last three decades. No less than 70 open spaces and city ponds were counted on the air photo mosaic and this sharply contrasts the 2008 Google Earth image which shows extreme reduction in the number of open spaces and city ponds. Ground truthing conducted helped in identifying the real situation on the ground. Now, most of the city ponds have been desiccated, filled in or replaced by built up structures as the case is with ponds around Kabara, Sharifai, Zango, Yakasai, and Gwale wards are examples. For open spaces many are also lost through massive encroachments by public and private structures. Example of affected open spaces includes those at Kwalli, Gwale, Shahuci, and Yakasai wards. Both open spaces and ponds exercise some ecological tasks like flood control, cooling and waste management (Maiwada 2000). The rapid and continues diminishing of open spaces and ponds leads to massive intensification of the built up areas within the city. From analysis of the Google Earth imagery Kano looks too congested. It is earlier noted that densification is a process needed for urban sustainability (Lehmann 2010), but in the case of Kano urban compactness and densification

pose and deepen ecological challenges ranging from microclimate change, pollution and disease prevalence.

5 Conclusions

This paper attempts to identify the role of Islamic instruments of spatial organisation and management of urban spaces. This becomes necessary as the world searches for alternatives and solutions to engender sustainability in the face of widening challenges of seamless urbanisation across the globe. The major conclusions drawn from this study are as follows:

That Sharia and institutions of space control and management play a key role in urban design and forms in Muslim cities and towns. The strength of Sharia institutions for settlement regulation and the models that it promotes such as *fina*, *hima*, and *harim* lies in their sacred essence, simplicity and comprehensible nature. Every member of the Muslim community regardless of sex, level of education and other social variables could participate in their implementation even under minimum guidance.

Adoption of scientific and technical tools of urban spatial planning is becoming a bandwagon affair with so many Muslim countries. Such tools are exclusive enclaves of professionals but vast majority of the population who are the end users or receivers of any policy derived from such instruments are quite disconnected from such mathematical and computer based modelling systems.

Based on study of the situation of Kano city in northern Nigeria, it appears that the city developed its spatial organisation based on the Islamic rules of the built environment that operated in the past. The rules become eroded by the overriding and superior Land Use Act of 1978 and other land and natural resource policies of Nigeria which displace the traditional Islamic rules of the built environment. Now with erosion of Islamic spatial values in the built environment, the city and its population suffer from evident socio-ecological decay. Master plans have failed. Urban renewals are costly and unsustainable.

Open spaces, scrublands and city ponds evolve merely due to Islamic principles. These ecological ingredients are most desirable in dry land urban area like Kano in order to manage growth and development process.

As challenges of urbanisation persist, it is worthwhile for all Muslim professionals, governments and other related and relevant institutions to redirect their ideas, skills, policies and decisions towards Islamic mode of urbanism which underscores responsibilities for space management from individual through community, urban and government levels.

Based on the opportunities embedded in Islamic models of spatial organisation there is need for more advanced studies on how the Islamic instruments could be used as tools of promoting sustainable urbanisation in the developing countries.

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