

# Sharia Land Use Sustainability Model

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## **Abstract**

City is the final destination and civilisation hub of earthly life for the humans. But cities constitute the worst scenarios of abuse of humanity and the environment. The Third World cities in particular explode in size and inconveniences. This paper seeks to find alternatives to the western models of urban land use planning practices which prioritise urban land's economic values in lieu of ecology, equity, morality, security and sacred dimensions of the cities. The study is based on interview with a random sample of former pilgrims; field observations carried out at the research focal point Makkah as well as using the textual provisions of Sharia on land use for the most venerated sites in the Islamic world. The paper indicates that urban land use typology of Makkah is determined by a mosaic of spiritual and temporal activities, but Makkah's land value is largely determined by its spiritual characteristics. The bits of the findings of the paper generate a multi-component Shariah compliant urban model of sustainability. The model gives emphasis to spatial hierarchy of the urban lands, policies or sanctions that provide security for the humans and the ecosystem; participation of people in the social and spiritually valued spaces. The paper concludes that cities that adopt the Makkah's land use model would be sustainable and devoid of insurmountable socio-spatial and ecological challenges.



## 1.Introduction:

Sustainability is a core concept in decision making and research and it implies maintaining the capacity of ecological systems to support social and economic systems (Oravska and Chobotova, 2007). On the other hand, land use is the purpose to which land is put by humans e.g. agriculture, forestry and urban development (Short, 2007). Urban land use planning has been a leading elixir administered towards solving and mitigating spatial, ecological and social challenges that mess cities across the world. In many Third World cities, urban land use planning has failed to eliminate slums, poverty and chaos (Voigt, 2006). By and large, cities offer the best of humanity and worst of human security and sustainability problems (Bogardi, 2008). Based on the staggering rate of urbanisation and its multiple stresses, the United Nations christens this century as ‘urban century’ (UN Habitat 2008). Similarly, target No.11 of the MDGs No.7: environmental sustainability has a special focus on urbanisation: slums, land tenure, sanitation, poor planning and poverty (Martine 2007). These citations highlight the challenges of sustainability facing urban centres. In fact, city dwellers express distrust even on the technologies applied in the construction industries that aim at enhancing safety and security in their cities (Green, 2008). The prevailing inconceivable dimensions of urban growth pose and expose inhabitants of megacities to natural hazards and critical, chronic and long term damages to lives, health and other socioeconomic risks (Hansjurgens, *et al* 2008). New cities in most developing countries are planned and developed based on western models and that might not be unconnected to their colonial chronicles. Barau (2008) quotes Sa’ad (1986) on the invasion of Muslim cities by western styles of architecture. Interestingly, some global institutions see prospects in research on patterns of urbanisation in Islamic cities with a view to finding alternatives in them (UN-Habitat, 2005). In view of that, it is worthwhile to carry out research that seek for alternative paradigms that are socially inclusive, security and equity based, environment friendly, and ethically and pragmatically sound and sustainable. Sustainability in Islam recognises holistic approach. It covers the participation of the people, planning of resource use, implementation of decisions and monitoring of the development activities based on the teachings of Sharia (Barau, 2004).

The objectives of the paper are three: to create an alternative model of sustainable urban land use based on teachings Sharia; highlight the current challenges in urban land use in Muslim countries; and formulate a framework for best practices in urban land use planning and management.



## 2. Conceptual Framework:

### 2.1 Western Urban Land Use Theories and Models

Modern and post modern urban land use studies owe their origin to the 19<sup>th</sup> century work of David Ricardo which hypothesises that the most fertile lands around the city attract *highest rent* (Chisholm, 1970; Ogbazi 2002). But Mather (1986) points that, the 1826 work of Heinrich von **Thünen** pervade theories of land values and land use structure. The main variable factor in von **Thünen** theory is *transport cost* in relation to *production*, and *distance* which in return determines land use patterns within a given city. This theory gives birth to semi-concentric system of land use. William Alonso (1964) modified the works of von **Thünen** and Ricardo to develop his *land market model* for which he argues that change of income, population growth and technical advancement would all in the long run affect the patterns of land use distribution within cities (Ogbazi op. cit ). Using geometric shapes, Walter Christaller (1893–1969) developed the *central place theory* to explain the location, size, function and economic relations between bigger and smaller urban centres. Another German namely, August Lösch (1906-1945) modified the Christaller's theory after testing it in the real world situations. His modifications appreciate effect of physical features on spatial distribution and hierarchy of settlements. The central place theory was also modified by Vance (1970) who fashioned the *mercantile model*. Another person that re-branded the theory is Isard [1975] (www.uwec.edu 2008). Central place theory is used in the analysis of urban spatial patterns in many cities in Europe and United States. Another urban based paradigm is *growth pole theory* developed by François Perroux explaining growth of cities through economic and industrial points which attract similar activities and thus further the process of urban growth from such points (Ogbazi op. cit).

Mather (1986) relates that Burgess analysed 25 US cities in 1925 and suggested an annular form of urban land use model with city's central business district (CBD) as the core space of operation. The model is called *concentric model*. It was tried for Chicago city in United States. This rather simple and idealised model assumed among others, homogeneity and defined boundaries alluded to various land uses in the cities. These assumptions are also the major weaknesses of the model. Hence, Hoyt (1939) advanced an alternative model known as *sector model*. The sector model was developed based on study of American cities. The model is dominated by sectors or wedges that radiate outwards from the CBD. The sector model recognises that lines of communications help to develop other 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 shapes. It has to be noted that in the West, land use planning has provided for zoning ordinances that separate various land uses. Such 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). By the way of synthesis, the western urban land use theories and models cited above essentially delineate urban space based on economic interests and differences in social class.

In addressing ubiquitous problems of ecological degradation in urban lands, Martine (2001) highlights the approaches commonly used in managing such challenges. The first is *carrying capacity* which entails estimating how much people and activity a given space can support; the second is *ecological footprint* whose objective is to measure amount of productive land that is needed to sustain a city's population and its consumption levels. The third and latest 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 demographic and economic expansion. But the question is to what extent can these techniques solve problems of urbanisation? The problems are not exclusively ecological, but interwoven with other socioeconomic challenges.

## 2.2 Islamic Concepts and Models of Urban Land Use:

Sustainable urban land use planning and management in Islam starts at the dawn of Islamic state. Once, the Prophet Muhammad (S) migrated to Yathrib he instantly changed its toponym to *Madinah Al-munawwara* (Illuminated city). Albadar (1429/2008) in his *Fadlil Madinah* points that, the Envoy of Allah declared Madinah as his *haram* (inviolable land) thus mimicking Makkah's position. The haram of Madinah lies between its two volcanic hills, and between Gayr to Thawr. The Prophet forbids removing plants or hunting games between Gayr to Thawr. He is also reported to have invoked the curse of Allah, angels and entire human beings on any person that introduced vicious innovations into Madinah. Ibn Khaldun (1332-1406) in his *Muqaddimah* (1978) identified nine (9) requirements for the planning urban land use. These are: a) town walls b) strategic location, c) consideration for prevention of air pollution, d) consideration for prevention of water pollution and infections, e) availability of



water for the public, f) pasture ground for domestic animals, g) lands for urban agriculture, h) woodlands for energy and construction, i) accessibility and connectivity for external trade. 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 being originated from locality's history and customs; and for their appreciation of individual and collective rights and responsibilities. Such features tend to make such settlements to look natural and sustainable. Ibid (2007) criticises the western city models trademarked by 'master plans' for being static blueprints leading to formation of fabricated structures in cities.

Al-Faruqi and Al-Faruqi (1986) add that Islamic city is a negotiated habitat; its bazaar is not isolated from shops, banks, warehouses, caravansaries, apartments, mosques, gardens, and schools. Therefore, land uses interpenetrate each other in the Muslim urban spaces. Ibid (p.318) observe Qurtubah (Cordoba figure 3) as model of an Islamic city. Around 950 CE, Cordoba had population of 600,000 and its universities, public baths, libraries, shops, cemeteries and public gardens all spread across the walled city. Cordoba was a plural society with conspicuous presence of people from various social backgrounds. Figure 1 depicts almost all the requirements for city planning as outlined by Ibn Khaldun (1978).

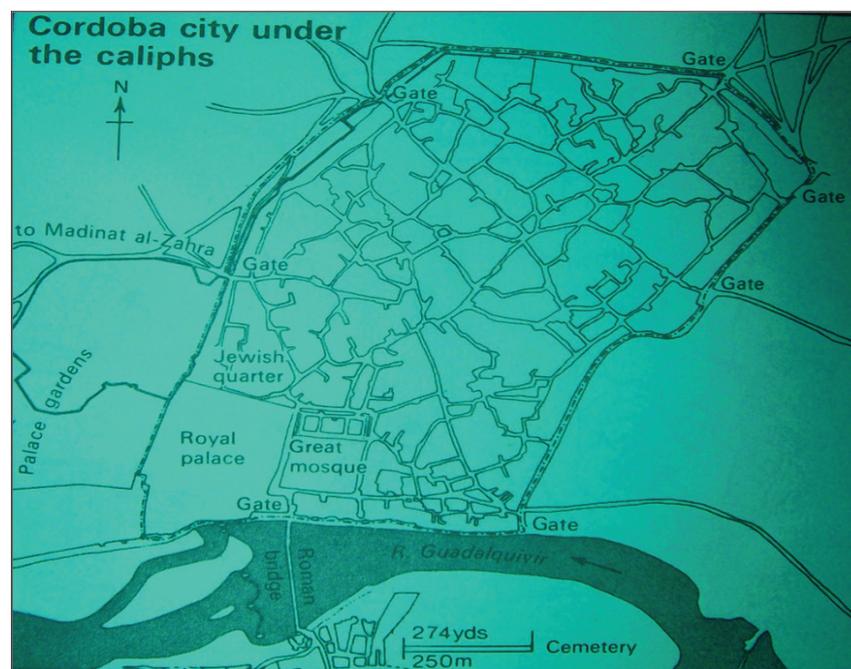


Figure 1: Map of Cordoba circa 950 CE (source modified from Townson, 1973)

Wherever Islamic civilisations flourish, rules of town planning are found to be well established in the built environment. For instance, Hakim and Ahmed (2006) outline some of the rules that operated in the 19<sup>th</sup> century built environments of the Sokoto Caliphate in Northern Nigeria. They listed some of



the activities that could cause damage to people and the environment according to Sultan Abdullahi Fodio's book, *Diya al-Hukkam*:

- Smoke from baths and bakeries
- Dust from threshing wheat
- Foul smell from tanner's workshop
- Building a stable near a neighbour
- Building a place for grinding or blacksmith workshop near a neighbour
- An act considered to be damaging and which is usually seen as recent
- Opening a window that overlooks a neighbour's private domain
- Building a gargoyle that releases water into neighbour's property
- A door of a house on a public street must not face another across the street to avoid a direct visual corridor. In a cul-de-sac owned by people one is not allowed to build a structure or open a new door with consensus of the people.
- Maintenance of sewer/waste water channel is based on the principle that each user is responsible for the portion that he uses, assisted by the neighbours upstream using the channel...
- The owner of a private property cannot change the location of public path that passes through his property.

Long before the Sokoto caliphate, some cities in West Africa had already cropped up based on the visible influences of Islam on the society. Naniya (2007) hints that, Kano Emir's Palace built in the 15<sup>th</sup> century reflects war tactics of the second Caliph, Umar Ibn Khattab (634-644). The design groups the army into units - vanguard (*maqaddama*), right wing (*maimana*), left wing (*maisara*), the centre (*qalb*) and rear guard (*saqa*). These arrangements were adapted in the construction of the palace. The central gate of the palace at the south represents *maqaddama*, the houses of the cavalry at the right stand for *maimana*, the warrior-slaves quarter at the left reflects *maisara*. The two gates in the north house the Emir's senior slaves stand for the rear guards while the Emir and his family reside at the centre (*qalb*). Corroborating the same view, Nast (1992) points that, the shape, alignment and placement of the Gidan Rumfa reflected the heightened influence of Islam on Kano, as the southern palace wall was aligned towards Mecca. However, a more fascinating fact comes from University of Arizona on account of Nast's research of 1996 which is recorded below:

I am therefore extremely grateful to Michael Bonine of the University of Arizona, Tucson for verifying this for me. In a recent



letter Bonine (1994) writes, «I calculate the direction to Mecca (the great circle route from Kano to Mecca) as 68», 30>. Now as to the Palace. . . . What is quite apparent is that the entire palace complex is oriented in this same qibla direction (as well as the outer city wall). . . . [W]e have an azimuth reading of 70» on the southern wall closest to the entrance, 75» on that next outer palace wall, and note that the long walls are basically at right angles to these . . . .»He goes on to express surprise at the exactitude of the orientation, something typically not encountered in North Africa until the eighteenth century (Bonine 1990) p.73.

Still, on the relevance of Islam in fashioning out built environment of Muslim cities, Barau (2007) explains that, the reported size of the ancient walled city of Kano in the early 20<sup>th</sup> century was put at 5,400 acres out of which, only about 2000 acres were built-up, the undeveloped space reveal the eco-friendliness of the city and the good insights of its planners. One may suggest that, the open spaces and ponds provided for in the city (until the recent unbridled city growth) might be guided by Islamic principles of *harim* (inviolable areas) and *hima* (reserved areas) which projected sustainability potentials of the city in the past. Abdullahi Fodio's book *Ta'alim-al-aradi* recommends that, a reserve space (*harim*) for houses (in city) include: its entrances, exists, outdoor stone benches, drainage system, and toilets but where there are more houses the *harim* becomes a public realm. Urban land uses like roads, river banks, springs and wells all have measured *harim* (Zahradeen, 1990).

### **3.Urban Land Use Sustainability Challenges in Selected Muslim Cities: Cairo, Kano and Karachi**

It is expedient to take stock of urban land use systems that arise from unbridled urban land use in some Muslim cities. In that regard, the cities of Cairo, Kano and Karachi are purposively selected on the basis of differentiation of their locations, bioclimatic and social environments. For instance, Cairo is an Arab cosmopolis located in a desert terrain; Karachi is a Pashtu speaking, located on a coastal and rocky rainforest; Kano on the other hand, is a landlocked Hausa speaking cosmopolis located on a semi arid sub Saharan Africa.

#### **3.1 Cairo (Al-Qahira), Egypt**

According to Galal-Edeen (2003), Cairo was formed around 969 CE as a model of Al-Mansuriyya city in North Africa. Cairo began as a walled city and administrative and educational hub with its Al-Azhar university founded in



970 CE. The urban logic of Cairo was dominated by that of the symbolic and ritualistic variety. Growth through time makes Cairo a tri-city divided into: the ancient Cairo, informal Cairo, and modern (westernised) Cairo (Demographia 2006). Projections of UN Habitat (2008) put Cairo's population in 2000 at 10.5 million; in 2010 it rises to 12.5 million, by 2020 it reaches 14.4 million and 15.5 million inhabitants by 2025. Cairo grapples with acute social and environmental challenges such as poverty induced migrants and people expelled by the moving sand dunes that hinder shepherding and planting, while the sea-level rise threats is termed as postponed risk (Afifi, 2008). In addition, it is noted that only one-third of Cairo's waste is collected and processed (UN Habitat, 2008). Similarly, climate change has manifested in the phenomenon of Cairo microclimate that unfavourably contrasts all climatic variables of the adjacent rural and suburban areas (Robaa, 2003).

### 3.2 Karachi, Pakistan

Karachi, the ex-capital is the most populous city of Pakistan which emerged in 1728 on the estuary of the Hub River. From 1841 to 1941, annual growth rate of Karachi was put at 3%. In 1947, the population rose to 1.4 million people, it was 2 million by 1961; and 5.3 million by 1981. Karachi is presently growing at an annual rate of 5%. Karachi city will have approximately 15 million inhabitants at the onset of this century (Global Network, 2007). Karachi's population explosion is the result of high fertility rates, national and international immigrations, trade activities related to the port, and the growth of information and communication technology industries (UN Habitat 2008). Only 30% of the houses in Karachi are well-built; water supply is less than 10 gallons per head; and only 28% of the houses are connected to a sewerage system with only 4% of biological waste managed (Global Network, 2007). Arsalan *et al* (2005) suggest that Karachi is growing haphazardly with bunch physical and socioeconomic problems, the city life is routing on undefined, unorganised, unsorted and badly governed lines. Vegetation is almost nonexistent in the densely built-up areas of old Karachi and road networks and high rises have occupied open spaces.

### 3.3 Kano, Nigeria

Kano is the biggest Muslim city in West Africa and the capital of the most populous state in Nigeria. Kano emerged from migrant communities around 999 CE. By the pens of European explorers, the population of the city in the 19<sup>th</sup> century was estimated at 30,000 - 60,000 (Barau 2006). The 1932 population of Kano was put at 83,000. By 1952, it leapt to 131,361 and in 1991 it rose to 1.6



million (Maiwada, 2000). The city's population projections by the UN Habitat (2008) is put at 2,658 million by the year 2000; by 2010 the population would be 3,393 million and by 2020 it rises to 4,487 million and by the year 2025 it grows to 5,056 million inhabitants. Kano known for its ecological resilience is fast moving beyond its ecological caveats. For example, the levels of ammonia, nitrogen, chlorides, total solids, hardness, temperature, pH, chemical oxygen demand (COD) in Rivers Jakara, Getsi, Salanta, Tatsawarki are beyond the international limits for human use (Bichi, 2000). Likewise, Maiwada (2000) finds that open spaces in low and high-density areas of the Kano city are progressively disappearing. He suggests that, disappearance of the open spaces goes with their ecological functions of water purification, disposal of atmospheric pollution, and flood control. Barau (2007) adds to the list the increasing densification of slums, biodiversity depletion and microclimatic patterns which are all disadvantageous to the city's ecosystem.

The brief on the three cities above indicate their urban surfaces as landscapes infested with pollution, poverty, slums, climate change, migration and population explosion. These are some of the major problems of urban land use sustainability.

#### **4. Research Methods:**

In an attempt to creating the model of sustainable urban land use, this research was designed under three pronged approaches. These approaches are given hereunder:-

1. Reconnaissance survey/field observations
2. Random sampling interview.
3. Literature based deductions

##### **4.1 Reconnaissance Survey/ Field Observations**

Reconnaissance survey was carried out at the holy city of Makkah and its outskirts during the 2008/1429 Hajj. The purpose of the reconnaissance survey was to undertake rapid field observations on the patterns of the city's land use patterns. The reconnaissance survey was facilitated by the use of map presented in figure 2. Similarly, field observation aided in monitoring patterns of land use at Makkah.

##### **4.2 Purposive Interview**

Former pilgrims that went for Hajj and for Umrah for at least 3 times and above between 1970s and 2000s were purposively selected based on their high level of literacy/education for interview. The research participants were 20 Nigerian Muslims, 15 of them men and five of them women. The participants



answered questions on the following issues:-

- Technological and spatial changes on the urban landscape of Makkah.
- Relevance of Sharia and how it upholds Makkah's habitat.
- Lessons and reflections for other Muslim cities from Makkah's purported sustainability framework.

Simple percentage was used for the analysis of the participants' responses.

### 4.3 Literature Deductions

Many verses and chapters of the Qur'an were revealed at Makkah. It is also the major site where Hajj rites are performed. The holiest Islamic places and symbols are located within and around the precincts of its Mosque (*Masjidil Haram*). This gives Makkah (formerly Bakka) its highest spiritual value. The Qur'an says:

*Verily, the first House (of worship) appointed for mankind was that at Bakka: full of blessing and of guidance for all kinds of beings 3:96... And Hajj (Pilgrimage to Makkah) is a duty that mankind owes to Allah, those who can afford the journeys. 3:97*

#### 4.3.1 Spatial Positioning

Spatially, Islam designates Makkah as the core and all other places as its periphery. Qur'an calls it, *Ummul-Qura* (mother of all towns). It is also the appointed direction (*Qiblah*) which Muslims look towards when they pray from every angle on the earth. The Qur'an says:

*...So turn your face in the direction of the sacred Mosque (at Makkah) and wheresoever you are, turn your faces (in prayer) in that direction... 2:144.*

The spatial positioning of Makkah as a core town (*ummul-qura*) of the Muslim world is hierarchical; this is most obvious if the spatial sense of Hajj is considered. From Abu-Khalil's *Atlas on the Prophet* (2003), the cardinal spaces of Hajj are grouped into four:

- Mawaqit* (*miqat*, singular) these are places where pilgrims must wear their *ihram* (white garb) for hajj or umrah. The five *mawaqit* used by people from various cardinal directions and bearings are stationed at varied distances from Makkah which range from 90 to 400 km. The five *mawaqit* are: Qarnal Manazil, Zat-Irq, Yalamlam, Juhfah, and Zul-Hulaifa.
- Haram* Radius, this covers an area of 550 square kilometres, this zone encircles Masjidal Haram (the holy mosque). The closest range of this zone is 7.5 km at At-Tan'im, the medium is 13 km at Nakhlah, and the three farthest borders of *Haram* (inviolable zone) are all 22 km respectively at



Arafat, Jinarah, and Hudaibiyya. See figure 4.

c) *Masjidil Haram* is the global central mosque which encircles the Ka'abah and within this mosque is found other sacred symbols.

d) The Ka'abah is the Muslims central point; it is Muslims holiest spot on earth. Muslims from all places on the four corners of the world ought to face *Qiblah*, a direction to the Ka'abah from any place on the earth.

### 4.3.2 Ecological Positioning

Prohibition of hunting and devegetation enhances conservation of the biodiversity especially in a hyper-arid zone like Makkah. Al-mawardi in his *Ahkamul Sultaniyya* outlined the punitive measures put in place by Sharia against violators of the sanctity of the Haram. For instance, if any person cuts a tree he is to expiate it with a cow and goat is expiation for a small tree. In that regard Qur'an says:

*But forbidden for you is the pursuit of land-game; as long as you are in the sacred precincts or in pilgrim garb. 5:96*

### 4.3.3 Socio-Demographic Positioning

Hajj constitutes the unique source of gathering of human race, which is as a result of a unique mobility of population towards one place. Even at the final destination, Makkah, population mobility continues. Pilgrims move from one place to another such places assigned for the mobility of pilgrims include Makkah to Mina to Arafat, to Muzdalifa, to Mina back to Makkah. Allah has proclaimed Hajj to humanity to move to Makkah from every direction. As such a divine direction to augment security and safety of people and environment are also given. The Quran says:

*And proclaim the Pilgrimage among men: They will come to you on foot and on every kind of camel, lean on account of journeys through deep and distant mountain highways 2.27*

*For Hajj the months are well known. If anyone undertakes that duty therein, let there be no obscenity, nor wickedness, nor wrangling in the Hajj. 2.197*

...and any whoever inclines to evil actions therein or to do wrong, We shall cause him to taste from a painful torment. 22; 25

## 5. Results and Discussions:

### 5.1 Makkah as Model of Urban Land Use

Land use model of Makkah is predicated on identification and integration of various land uses and their values as enshrined in the derived literature under section 4.3. The most important determinant factor associated with types of land use is associated with spiritual functions and value of land within and



around Makkah. The land value increases in spiritual significance from *mawaqit* places which are the periphery towards the core i.e. Ka'abah (see figure 3). The farthest *miqat* away from Makkah is Zul-Hulaifa (410 km), and closest *miqat* to Makkah is Qarnal-manazil (80km). The next value ring is the *Haram* whose closest boundary to the holy mosque is 7.5 km and farthest are 22 km each. The *Haram* covers an area of 550 square kilometres. The second most valuable land in Makkah is the Holy Mosque which covers an area of 366,000 square meters with capacity of more than one million worshippers. The ancient Ka'abah is at the centre, it is the most valuable site in the Islamic world. The square house has a height of 14 m, and average side length of 11 m. Ka'abah is also attached to a raised curve called Hijri Ismail which is believed to be part of its original building.

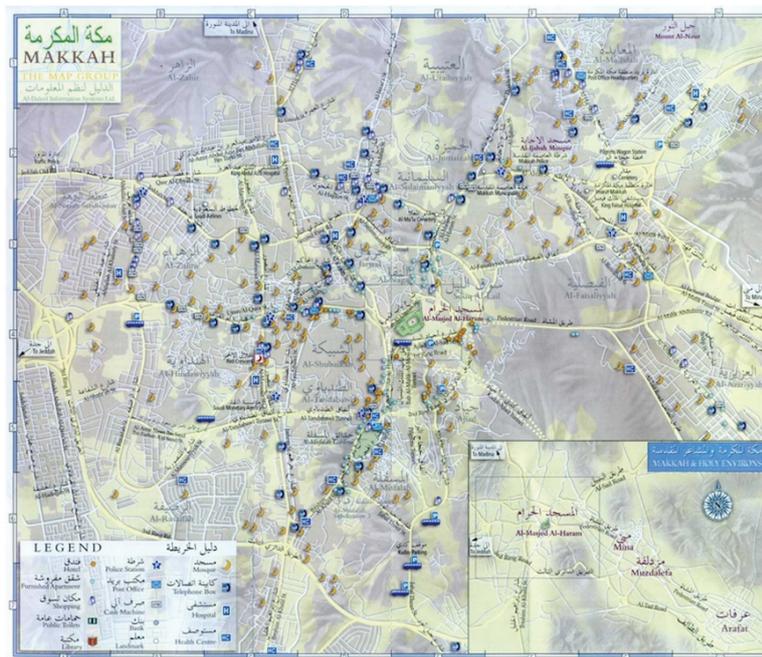


Figure 2: Map of Makkah Haram

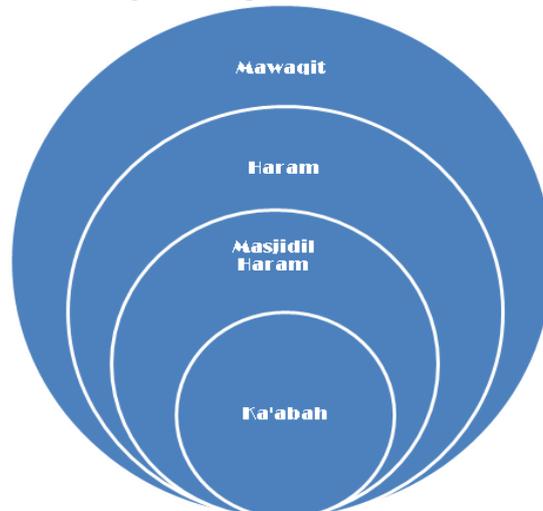


Figure 3: model of urban land value ranking in Makkah

Table 1 below shows the land use index in Makkah; the table shows the types of land use found from *mawaqit* points (which are outside Makkah) down to the *Ka'abah*. The land uses listed are both temporal and spiritual and constitute a mosaic portrayed in figure 4 which also assimilates the map in figure 2.

Table 1: Land Use Typology in Makkah

Sites	Associated Symbols/Sites	Main Types of Land Use
Mawaqit	Mawaqit mosques	Agro-pastoralism, mosques, residences, security posts etc
Makkah Haram and its periphery	Haram markers, Hira cave, the birth place of Prophet Muhammad (s), Arafat, Mina, Muzdalifa	Sacred and spiritual activities (especially during Hajj and Umrah), Economic (hotels, shops, restaurants, banks, transport and communications, agropastoralism); Social (hospitals, schools, libraries, police stations, fire service, public toilets, cemeteries); Administrative (offices, public institutions like post offices); Spiritual (mosques); derived land uses (desert camping/ racing and other recreational)
Masjidil Haram	Maqam Ibrahim, Safa and Marwa, Zamzam cellar	Sacred and spiritual activities(especially during Hajj and Umrah)
Ka'abah	Hajral Aswad, Ruknul Yamani, Multazam, Hijri Ismail	Sacred and spiritual activities (especially during Hajj and Umrah)

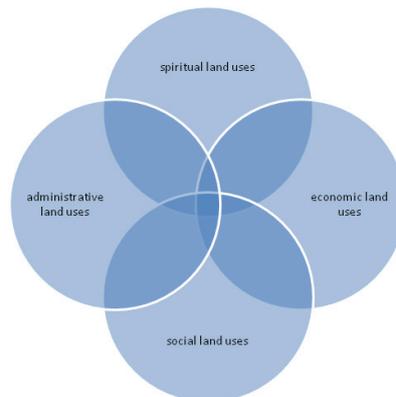


Figure 4: Makkah land use mosaic model

### 5.2 Basis of Sustainability from Sharia Urban Land Use Model

More than 90% of the respondents implied that Makkah witnessed significant changes on its landscape in the last 30 years. They pointed at the increase in the skyscrapers, road expansion projects and the general increase in technological innovations at the haram. All the respondents concur that Sharia is the major force that maintains ecological stability in the city in spite of the millions of pilgrims and residents. With regard to reflectivity of Makkah’s position, 43% of the respondents suggested that governments can impose policies to protect the ecosystems and prevent vices in Muslim cities by imposing sanctions. On the other hand, 52% of the respondents were silent, while 5% of the respondents said



it is impossible to emulate Makkah’s position since its position is divinely placed.

Field observations indicate land use patterns at Makkah reveal it as convergence of spirituality, economy, technology and sustainability. For instance, hotels like the Dar-al-Tauhid (Intercontinental) and others closest to it are the most expensive sites in Makkah. But, it is the spiritual value that augments the economic value of that space. Similarly, the official residences of Saudi royalty are nearby yet the site is accessible to all the visiting pilgrims and residents of Makkah. The holy mosque attracts about one million people during the prayer sessions, the mosques is managed using the trendiest technologies (digitised cameras, sanitation machines etc). But records of breach of security and poor sanitation are rarely seen within the mosque and *haram* areas. In addition, the ecological sanctions on poaching and tree felling conserve the slim biodiversity of all the sites under discussion. One can observe birds (especially pigeons) eating and flying freely within and around the mosque. Socially, Makkah signifies a space of racial tolerance and balanced gender participation in space use. The highest value spiritual lands are accessible to women just like men within 24/7 period (24 hours, 7 days except those in menstruation). Women also participate in many aspects of mosque management like security and sanitation. Despite the fact that the holy mosque covers relatively small area, security, safety and environmental sanitation measures are effective and efficient 24/7. The fact that changing technologies and land uses at the face of increasing population of pilgrims and residents at Makkah proves that, the Sharia guided land control helps in entrenching the culture and principles of sustainability.



Figure 5: Sharia urban land use model

The model in figure 5 above graphically shows the components of urban land use sustainability that uniquely characterises the holy city of Makkah. The model sharply contrast with most of the concepts and theories used in land use planning and management in the western epistemologies reviewed earlier.

The limitations of the research include that it was not carried out on a longitudinal scale to allow for a thorough examination of the past land use conditions of Makkah through a control point. Similarly, the research does not look at other obvious technological impacts on the sacred environment. For instance, rock quarrying is very common within Makkah's Haram. Even Safa and Marwa which are natural heritage sites with high spiritual values are not exempted they are now levelled and tiled. Jabal Umar is also giving way for anthropogenic structures.

## 6. Conclusions

The city of Makkah is accorded the status of *Ummul-qura* (the mother of all towns) by the Sharia. This status includes preferences, features and values that are unique to Makkah and directly affect every aspect of how humans interact and behave on the land within and around Makkah. By virtue of this Sharia-given position, a model of land use modelled after Makkah's position is developed in this paper for the reflection of researchers and policy makers in built environment and sustainability.

The model is holistic in nature; it recognises human need for space of survival from within which technologies for advancement are introduced, and to achieve balance, the human ego which manifest in improper use of natural resources is sanctioned by Sharia provisions.

Majority of Muslim cities in many parts of the world are engulfed in crises of land use abuse and raging social restiveness disturbing from within the small built-environments through to the wilderness. The model is quite relevant and suitable in addressing such challenges especially since its spatial orientation recognises long distances like from the *Mawaqit* points up to the Ka'abah.

The strength of the model lies in the spiritual value of land, although all lands are subservient to Makkah, Sharia is universal and therefore its central message of doing good and shunning evil should be embraced and applied in all cities and places where Muslims inhabit.

Sustainability from the viewpoint of Sharia is broader concept that encompasses continuity and harmony in applying technologies, innovations, and spiritual attachments to land uses, as well as opportunities for security and the general wellbeing of the people and the environment. This is exemplified by the



past and present conditions of Makkah where there are changing technologies, population dynamics yet ecological stability is substantially maintained.

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## نموذج استدامة استخدامات الاراضي المبني على الشريعة

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### الملخص :

المدنية هي المحطة الاخيرة ومركز الحضارة لحياة الناس الدنيوية الا ان المدن تشكل اسوأ مثال لاستغلال البشرية والبيئة . ومدن العالم الثالث على الاخص تكاد تنفجر بالتضخم والمشاكل . يهدف هذا البحث ليجاد بدائل للنموذج الغربي لاستخدامات الاراضي في التخطيط الحضري والذي يعطي الاولوية للقيم الاقتصادية للاراضي الحضرية على البيئة البشرية والمساواة والاخلاق والامان والجوانب المقدسة للمدن . تستند الدراسة على مقابلات شخصية مع شريحة عشوائية من الحجاج السابقين ، وعلى الملاحظات الميدانية التي اجريت على مكة المكرمة - المحور الرئيسي للبحث - بالاضافة الى النصوص الشرعية في استخدامات الاراضي في اكثر الاماكن قدسية في العالم الاسلامي . يستنتج من البحث ان انواع استخدامات الاراضي في مكة هي نتيجة مجموعة من النشاطات ( الشعائر ) والمواقف الدينية ، الا ان قيمة الاراضي في مكة تعتمد كثيرا على اهميتها كمشاعر دينية . وتشكل مجموعة نتائج البحث نموذج عديد الجوانب للاستدامة الحضرية متوافق مع الشريعة . ويركز النموذج على التسلسل الهرمي للاراضي الحضرية والسياسات والتشريعات التي توفر الامان للناس والنظام البيئي ، ومشاركة الناس في القيم الاجتماعية والدينية للفراغات . ويخلص البحث الى ان المدن التي تتبنى نموذج مكة لاستخدامات الاراضي ستكون مستدامة وخالية من تفاقم التحديات البيئية والاجتماعية الفراغية .

