
Urban Green Spatial Analysis in Ilorin, Nigeria

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ABSTRACT

This study analysed urban green spaces (UGS) in Ilorin Metropolis, Nigeria. The analysis in this context refers to the distribution, shapes and sizes of the spaces. Multistage sampling technique was employed. Three Local Government Areas (LGAs): Ilorin West, Ilorin East and Ilorin South were purposively selected. The study utilised predominantly primary data. Google earth was used to locate, map and measure spatial extents in neighbourhoods and a total of nine (9) UGS were obtained in the area. Descriptive statistical analysis comprising frequency counts was principally used for data analysis. Results revealed that almost nine-tenths (88.9%) of the UGS was located in Ilorin West LGA; the remaining 11.1% was located in Ilorin South LGA while there was none in Ilorin East LGA. The shapes and the corresponding sizes of the UGS are thus given: most (44.5%) of the UGS were rectangular in shape; these include Flower Garden (12.48 Ha), Shiloh Ground (9.03 Ha), Youth Camp (11.90 Ha), and Eid Prayer Ground (17.10 Ha); Irregular (22.20%) include Zoological Garden (28.30 Ha) and Golf Club (38.24 Ha); Ariya Garden (5.61 Ha) was L-shaped (11.10%); Water View (2.03 Ha) exhibited trapezoidal shape (11.10%) while Amusement Park (4.70 Ha) displayed rhombus shape (11.10%). Therefore, there are intra-city variations in the distribution, shapes and sizes of UGS in the study area. It is concluded that the distribution, shape and sizes of UGS in Ilorin Metropolis have been brought to limelight. It is hoped that this will assist in policy formulation by the government for environmental sustainability.

Key Words: Urban Green, Spatial analysis, Ilorin, Nigeria

INTRODUCTION

Architecture is the art and science of designing (ordering or organising) a building, open space (area), community and other artificial constructions and environment, usually with some regard to aesthetic effect (Dictionary.com 2018; Okanlawon, 2018). However, architecture of urban green space as used in this study refers to the design characteristics (shape and size) of urban green spaces. Design has been defined as the effort to generate solutions to problems prior to attempting to implement them (Simon, 1957; Broadbent, 1973, 1990; Mahmoodi, 2001); as the creation of a plan or convention for the construction of an object, system or measurable human interaction (Rundell, 2005). Design characteristics therefore is the quality of feature that something is made or created so that it works in a certain way or has a certain appearance (Okanlawon, Odunjo and Adeboyejo, 2022).

Scholars have propounded concepts that support the integration of green spaces into physical landscape of urban areas to enhance the living condition in these areas. Some of the earliest utopian concepts that stressed on the preservation of urban natural environment (green spaces) include Charles Fourier's fantasy villages called "Phalansteries", "Ecotopia" by Ernest Callebach and the most famous Ebenezer Howard's "Garden City", which are all important landmarks in the green space movements (Foelofs, 1999). The term "Green Space" is a more recent term. Its origin can be traced from the urban nature conservation movement and European thinking about green space planning which started in the United Kingdom (Dunnett, Swanwick, and Woolley, 2002; Swanwick, Dunnett and Woolley, 2003).

Urban green space (UGS) refers to land that is partly or completely covered with grass, trees, shrubs or other vegetation. It is the network of green spaces, and water systems that delivers multiple environmental, social and economic values and services to urban areas and users. This network includes parks, gardens, waterways, street trees and transport

corridors, pathway and greenways as well as squares. Urban green space includes plazas, roof gardens and sport fields. It secures residents' health, liveability and the sustainability of urban environments. Irrespective of the minor differences that exist in the various definitions on green spaces, it can be deduced that green spaces in urban areas cover all areas that to some extent have some form of vegetation either natural or artificial (Mensah, 2014). In sum, urban spaces can be said to be a subset of open spaces. It therefore strengthens the resilience of towns and cities to respond to the major current and future challenges of growth, health and climate change as well as biodiversity loss (Lee, Jordan and Hoasley, 2015).

The spatial analysis in this study refers to the distribution, shapes and sizes of the spaces while the design features of urban green spaces are the shapes and sizes. In architecture, it is the activity of combining the rational, systematic and objective factors on one hand, and intuitive, imaginative and subjective factors on the other hand, which produces a pleasant setting in the built environment (Uji, 2002).

Urban green space has been given considerable research attention in the literature (Yu & Li, 2003; Ifetimehin *et al.*, 2015; Ifetimehin) and Balogun, 2015; Lee *et al.*, 2015; Ndubusi and Chikwunoyehim, 2017; Lin *et al.*, 2014; Boulton *et al.*, 2015; Kabisch *et al.*, 2016; Rojas *et al.*, 2016). Such studies include urban green space availability covering many regions of the world (Lin *et al.*, 2014; Boulton *et al.*, 2015; Kabisch *et al.*, 2016; Rojas *et al.*, 2016); development in various forms, leading to substantial loss of green space; thereby contributing to urban heat island, differential rural – urban temperature as well as recurrent flooding (Ifetimehin *et al.*, 2015); a short life cycle of green space (Yu & Li, 2003); green space development being ad-hoc rather than comprehensively planned, turning greenbelts to dumping grounds (Raheem and Adeboyejo, 2016); thermal comfort and environmental

changes (Ifetimehin) and Balogun, 2015); health benefits of green spaces (Lee *et al*, 2015; Ndubusi and Chikwunoyehim, 2017); accessibility to urban green space as a key, aspect considered by users in measuring satisfaction as well as the physical and emotional wellbeing (Pereira, 2021). There is however scanty empirical studies on the urban green spatial shapes and sizes as Gozalo *et al.* (2019) worked on the use of urban green spaces on the basis of size alone. There is the need to combine both shapes and sizes in the study and that is the motivation for the current study.

This study therefore analysed the spatial distribution of urban green spaces on the basis of shapes and sizes in Ilorin, Nigeria, with a view to bringing to lime light the spatial distribution, shapes and sizes of the urban green spaces in the study area. In order to effectively carryout the research, the study sought to answer this question: Which design features characterised urban green spaces in Ilorin Metropolis? Are there variations in the shapes and sizes of the urban green spaces in Ilorin Metropolis?

THE STUDY AREA

The research was conducted in Ilorin, the capital of Kwara State, one of the thirty-six States in Nigeria; it is located in the North Central region of Nigeria (Figure 1.1). It is located on latitudes 8° 30¹ North and 8° 50' North of the equator and longitudes 4° 20' East and 4° 35' East of the Greenwich Meridian (Figure 1.2) and has a land area of about 1,188/km sq (Ironye and Abejirin, 2012).

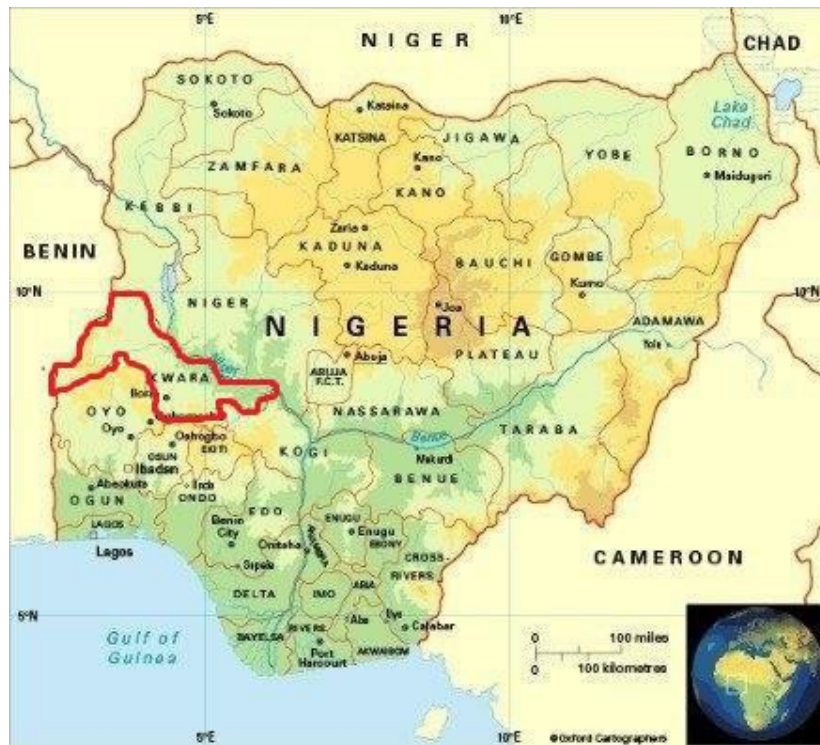


Figure 1: Kwara Nigeria in the National Context
Source: Surveyor General Office, Kwara State and Google Earth (2020)

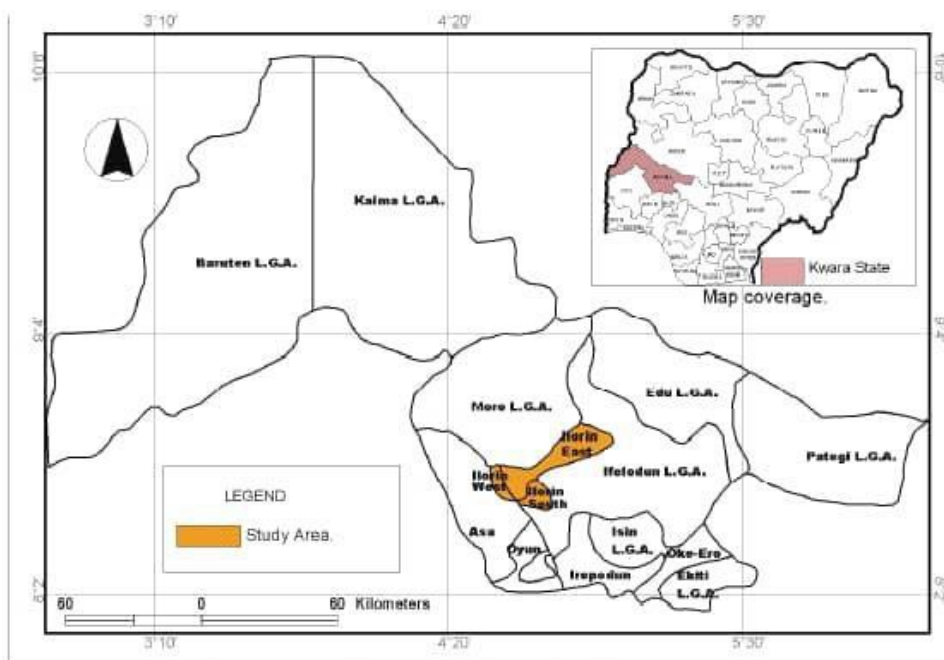


Figure 2: Ilorin Metropolis in the Context of Kwara State
Source: Surveyor General Office, Kwara State and Google Earth (2020)

Ilorin is situated at a strategic point between the densely populated south western and the sparsely populated middle belt of Nigeria, as well as in the traditional zone between the deciduous woodland of the south and dry savanna climate region of north of Nigeria (Jimoh, 2003). Ilorin is the largest city in Kwara State which is strategically located as the gateway between Nigeria. This has led to the amalgamation of citizens from these regions who are predominantly of Islam (North) and Christianity (West) faiths respectively. This therefore, contributes to making Ilorin, a confluence of cultures, populated of Yoruba, Hausa, Fulani, Nupe, Igbo, Baruba and other ethnic groups as well as foreign nationals with significant Christianity and Islamic faiths. It was founded by a Yoruba man in 1450. It later became a provincial military headquarter of the ancient Oyo empire and later still, a northern Nigeria protectorate when Shehu Alimi (descendant of [Shehu Usman Dan-Fodio](#) dynasty) took control of the city through the spread of Islamic religion. Ilorin Metropolis consists of three Local Government Areas: Ilorin West, Ilorin East, and Ilorin South altogether with an estimated land area of 105 Km².

DATA COLLECTION AND ANALYSIS

The study utilised predominantly primary data. Google earth was used to locate, map and to measure spatial extents of Urban Green Spaces in neighbourhoods. A total of nine (9) registered urban green spaces were identified in the area. Descriptive statistical analysis comprising frequency counts was principally used for data analysis.

RESULTS AND DISCUSSION

Findings from the study are discussed under the various headings. Unless otherwise stated, the tables and figures in this section emanated from the survey of 2021.

Characteristics of Urban Green Spaces in Ilorin Metropolis

Urban green spaces (UGS) in Ilorin are relatively old, the youngest being 24 years. Architectural consciousness and culture in Ilorin five decades ago is expected to dominate the feature of these UGS were built for leisure and pleasure but for the Shiloh Prayer Ground and Eid Prayer Ground which are religious in purpose. The distribution of urban green spaces in Ilorin metropolis as presented in Table 1 shows that Zoological Garden is the oldest green space, having been established since 1975 (forty-nine years), while Shiloh Prayer Ground which was established in the year 2000 is the newest. In hierarchical order, Zoological Garden was followed by both Amusement Park and Flower Garden that were established in 1976 and Golf Club in 1978. However, Youth Camp was created in 1982 and both Ariya Garden and Water View Garden were established in 1985, while Eid Prayer Ground came up in 1998. The inference drawn therefore is that public consciousness of the benefits of urban green spaces has been as far back as 1975, although some green spaces like courtyards, praying grounds, Galilee fields and sports fields among others had already been in existence before 1975. Also, this implies that there was awareness on their usefulness which led to the creation of more for the utilisation of people.

Precisely, almost nine-tenth (88.9%) of the urban green spaces was observed to be located in Ilorin West Local Government Area (Table 1), while the remaining 11.1% was located in Ilorin South Local Government Area (LGA) while there is none in Ilorin East. This implies that residents of Ilorin East have to travel far before they can have access to any of the urban green spaces in the city. However, the fact that Ilorin East LGA has no urban green space located in it may be due to the fact that it is the core of Ilorin where there is no large

land enough to accommodate such a project as the whole land is used up at the centre of the city.

Interestingly, the ownership status of the urban green spaces varies between public, private and religious proprietorship (Table 1). More than three-tenth (33.4%) of the urban green spaces were owned by the public sector, while each of Public-Private Partnership, Private sector and Religious organisation accounted for 22.2%.

Architectural Dimensions of Urban Green Spaces in the Study Area

Shape and size of a space speaks to very many design issues. Among many other issues, it addresses purpose and accessibility. For instance, footballing may be done on open rectangular big moderately bid sized space. Other polygon may promote privacy through visual screening among others. Urban green space architecture (design characteristics), using parameters such as shape and sizes, in the study area was evaluated and the discussion on them is as follows:

i. Shapes of Urban Green Spaces in Ilorin Metropolis

Most (44.5%) of the urban green spaces were rectangular in shape; these include Flower garden, Shiloh ground, Eid-prayer ground and Youth Camp. The green spaces that had Irregular shape (22.2%) were Zoological Garden and Golf Club. Ariya Garden was L-shaped (11.1%), Water View exhibited Trapezoidal shape (11.1%), while Amusement Park displayed Rhombus shape (11.1%) as presented in Table 1. The implication of this is that there is variation in the shape of urban green spaces in the study area.

ii. Sizes of Urban Green Spaces in Ilorin Metropolis

In terms of coverage area of land, Golf Club had the largest land size of 38.24 hectares (Table 1) because of the type of games being played on it which requires large expanse of land, while Water View had the smallest land coverage (2.03 hectares) due to the nature of social activities taking place in it. This therefore implies that the coverage area of land of each urban green space depends on the activities being carried out in them.

This also reflects in the shape of the urban green spaces as there are variations in shape across the metropolis and it may influence preference of users.

Table 1: Age, Ownership and Distribution of Urban Green Spaces in Ilorin Metropolis

| S/N | Names | Yr. of Estab.. | Location and Local Govt. Area | Ownership | Typology | Coverage Area (Size) | Geometric Shape |
|-----|------------------------------|----------------|---|----------------------------|---|----------------------|-----------------|
| 1 | Zoological/ Botanical Garden | 1975 | UNILORIN, <i>Ilorin South</i> | Public | Zoological/ Botanical Garden, <i>Recreation</i> | 28.3 Ha | Irregular |
| 2 | Amusement Park (metro park) | 1976 | Unity Road, <i>Ilorin West</i> | Public | Recreation/ Zoological Garden | 4.7 Ha | Rhombus |
| 3 | Flower garden | 1976 | Agba Road, G.R.A, <i>Ilorin West</i> | Public | Recreation/ Zoological Garden | 12.4825 Ha | Rectangular |
| 4 | Golf Club | 1978 | G.R.A, <i>Ilorin West</i> | Public-Private-Partnership | Golf Course | 38.24 Ha | Irregular |
| 5 | Youth Camp | 1982 | Eiyenkorin, <i>Ilorin West</i> | Private | Religious | 11.9 Ha | Rectangular |
| 6 | Ariya Garden | 1985 | Ahmadu Bello Avenue G.R.A, <i>Ilorin West</i> | Public-Private-Partnership | Recreation | 5.605 Ha | L-shape |
| 7 | Water View Garden | 1985 | G.R.A, <i>Ilorin West</i> | Private | Recreation | 2.03 Ha | Trapezoidal |
| 8 | Eid Prayer Ground | 1998 | New Yidi Road, Irewole area, <i>Ilorin West</i> | Religious | Religious | 17.1 Ha | Rectangular |
| 9 | Shiloh Ground | 2000 | Ajase-Ipo Road, <i>Ilorin West</i> | Religious | Religious | 9.03 Ha | Rectangular |

Source: Authors' field survey (2021)

Figure 3: Urban Green Spaces Locations in Ilorin Metropolis
Source: Authors' Field Work, 2021

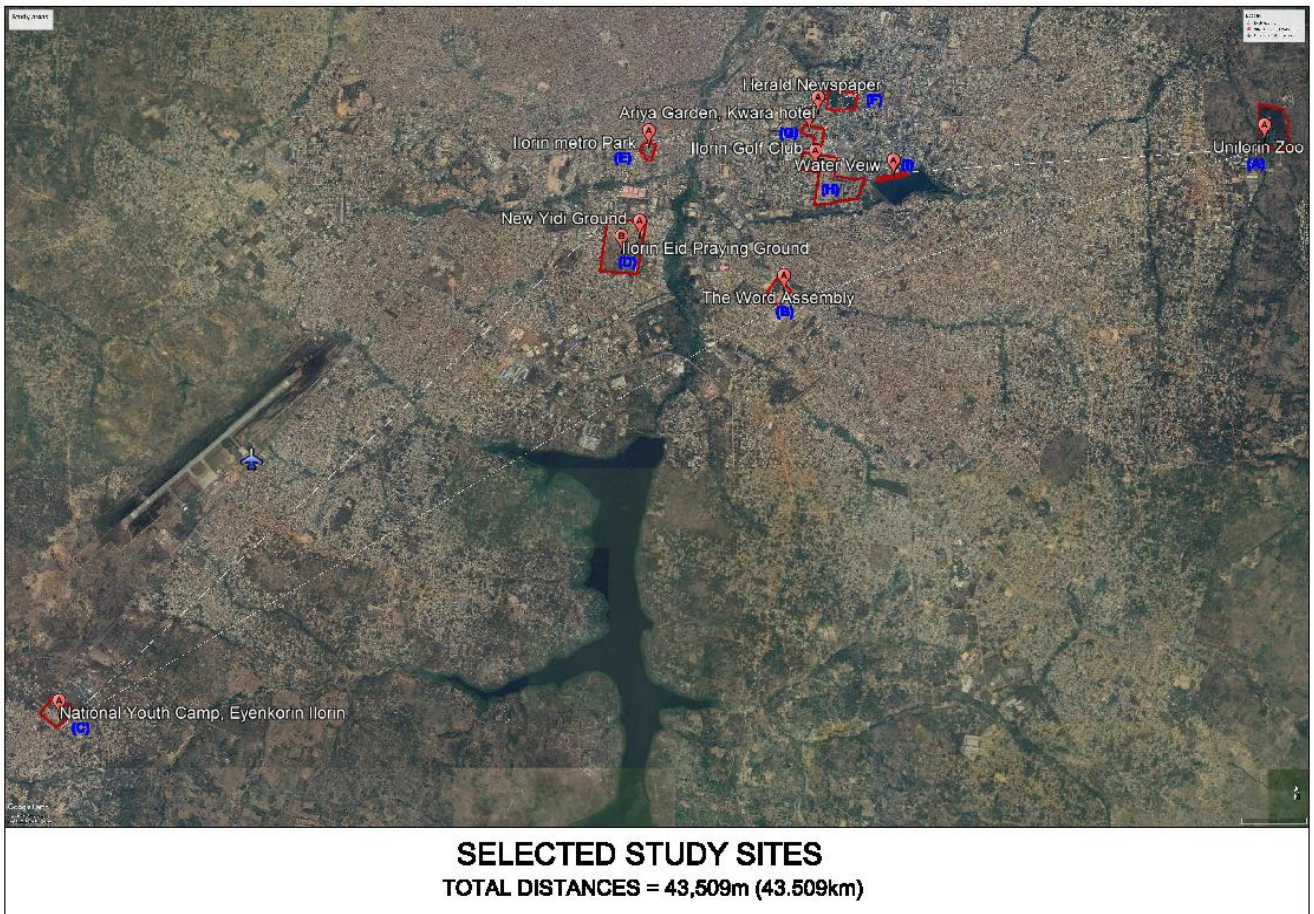
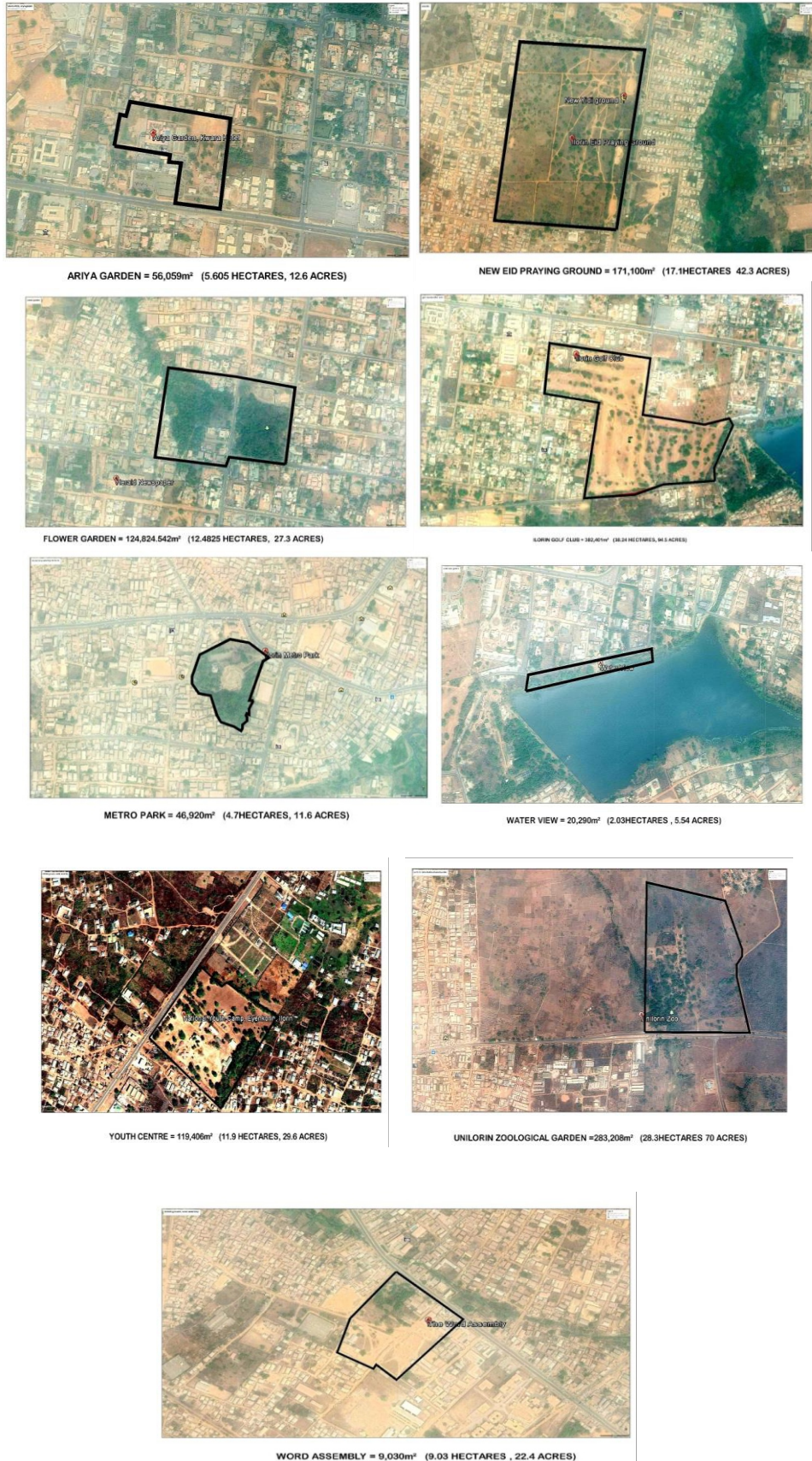


Figure 4: Google Imagery of Sample Sites of Urban Green Spaces in Ilorin Metropolis
Source: Authors' Field Survey (2021).



CONCLUSION

This study has brought to limelight, the intra-urban variations of urban green space design features which include shapes and sizes in Ilorin metropolis, Nigeria and found to be different. Most of the UGS are concentrated in Ilorin West LGA; one in Ilorin South and none in Ilorin East. It has therefore made some recommendations which are by no means exhaustive; never the less, they can go a long way to assist policy formulation on location of UGS in urban spaces. If properly considered, it can improve the usability and liveability of cities; thereby leading to a more sustainable and healthy urban environment.

RECOMMENDATION

The study recommends that UGS should be evenly and centrally located within an urban setting for easy accessibility by users.

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