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THE REFLECTION OF SUSTAINABLE URBAN
DEVELOPMENT IN KHARTOUM ON THE OPEN-PUBLIC SPACES

Supervisor

Prof. NADIA CARUSO

Candidate

Elaf Ibrahim Adam

ABSTRACT

Public spaces are critical for increasing social and cultural interaction as well as overall quality of life. It is also one of the most significant methods to unwind and appreciate nature and landscapes, as well as to create a setting for experiences, dialogues, and the exchange of ideas that strengthen the bonds of people of various races and religions.

The study and analysis of public places in Khartoum aims to examine the challenges to urban growth and how they affect the formation of public places. And how they impact on the design of public areas. This research intends to investigate various types of public spaces in Khartoum by using field observations and qualitative data collecting. The community's continual installation of activities on these public spaces is what makes them reasonably desirable. Because society is what makes public spaces successful, research attempts to discover the types of activities that occur in public spaces, whether they occur constantly, and whether they play a part in making public spaces viable or not.

By highlighting the historical contexts of the city's urban planning, the research focuses on identifying obstacles to urbanization in Khartoum. Also examines a variety of public spaces in Khartoum using field observations, qualitative data collection, and an analysis of the environmental, social, and cultural aspects that influenced their formation and growth.

The research rely on the "PPS" evaluation techniques to verify the effectiveness and suitability of these public spaces, such as (Access and Linkages) (Comfort and Image) (Uses and Activities) (Sociability) to determine whether these spaces permit and receive (power of 10, activities defined by "PPS") ten which are activities that would make the public spaces useful and secure their continuance , all these methods have been examine throughout analyzing various case studies in Khartoum city.

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INTRODUCTION

In cities and communities, public spaces are essential for improving social and cultural interaction and quality of life. They offer a setting for experiences, conversation, and idea sharing that strengthens interdependence among all people of many races and religions. Additionally, it provides a venue for exercising democracy and the right to free speech. It is also regarded as one of the most significant ways to relax and appreciate nature and landscape. Urban development generally contributes to the creation and improvement of public areas and the emergence of strategies that promote environmental sustainability.

Sudan, like other developing African countries, suffers from insufficient progress in sustainable urban development, which negatively affects public spaces in some way. Khartoum is the capital of Sudan because it is the economic, cultural, and social center of the country. Considering the failure of the previous government and the absence of a stable current government, Khartoum is experiencing rapid urbanization that has not kept pace with the provision of urban community services and facilities with the urban population growth.

The research seeks to study and analyze public spaces in Khartoum address the obstacles to urban development and how they affect the establishment of public spaces. Sudan was cut off from the rest of the urban developments in the world, and it was also cut off from scientific and creative information outside its borders. Other variables include religious conversions, foreign occupation, climatic changes, scarcity of money and natural resources, and political shifts.

The research aims to investigate the condition of public spaces in Khartoum to determine the effectiveness of the community's participation in their creation, as well as the extent to which the community's rights are ensured in these spaces, and to recognize the obstacles to urban development and how they influence the establishment of public places. The study also offers two critical questions that could help in clarifying how to create and improve public spaces in Khartoum.

1. How did the rapid urbanization of the capital under the previous government, which lasted for 30 years, lead to the phenomenon of slum housing in the capital (Khartoum), and what is the relationship of permanent migration from rural to urban areas to public spaces?
2. In the absence of compliance and application of sustainable urban development factors by citizens and local authorities, the residents' need for spaces for entertainment and commercial activities, how did society influence public spaces form?

The research is divided into three chapters that address the following:

Chapter 1

The first chapter is concerned with highlight the research problem, which is the obstacles of urbanization in the city of Khartoum, by mentioning the historical backgrounds of the beginning of the city's urban planning, which helped to clarify how the structure of the city was formed, and this helped to recognize the first planning of public spaces. The most pressing urbanization and urban development issues confronting Khartoum were also discussed, which had a direct impact on public places, which still exist to this day and are being tackled.

Chapter 2

The second chapter defines public spaces, their various types, and the benefits they provide in general. It also defines the research methodology, which aims to elucidate the core research hypothesis, which is the investigation of public spaces in Khartoum while addressing environmental, social, and cultural factors that influenced their development and formation. Attempt to evaluate the efficiency and quality of public spaces by examining some urban ideas that might assist in the classification of Khartoum's local public spaces under a more realistic and comprehensive template.

Chapter 3

The third chapter examines three cases to apply chapter 2 methodological approaches to determine whether the public spaces analysis had good quality and efficiency, and whether they provide all parties with the right to use them equally by understanding the strengths and weaknesses of each of these cases, as well as the possibilities for opportunity through which they can be developed in the future.

Conclusions

In the final chapter the thesis deals with the final results of the analysis confronting the research questions.

01 FRAMEWORK OF KHARTOUM URBANISM

1.1 SUDAN

Sudan is a country in northeastern Africa. It consists of 18 states and its capital is Khartoum. It is notable for its cultural and ethnic variety, as it is home to hundreds of tribes and ethnic groups, and it speaks Arabic and English, the two official languages. Sudan has a long history that includes several ancient civilizations and kingdoms such as the Kingdom of Kush, the Kingdom of Meroë, and the Nubian Kingdom. In 2003, the UNESCO World Heritage List listed the Nubian pyramids and other ancient structures in the vicinity as the "Archaeological Sites of Meroë" group. Since the early century AD, the country has been subjected to strong Islamic influences, and Islamic civilization and Arab culture have grown because of its diverse economy, which is based on agriculture, livestock and the oil and mineral industries.



Figure 1 The Nubian pyramids ,North Sudan ,
<https://pyramidomania.com/the-nubian-pyramids-sudans-long-lost-ancient-pyramids/>

1.1.1 GEOGRAPHICAL LOCATION

Sudan is located in Northeast Africa, bordered by Egypt to the north, Libya to the northwest, Chad to the west, the Central African Republic to the southwest, South Sudan to the south, Ethiopia to the southeast, and Eritrea to the east. Its geography is diverse, featuring the Nile River, expansive deserts, fertile plains, savannahs, and mountainous regions such as the Red Sea Hills and the Jebel Marra.



Figure 2 Sudan Map, UNITED NATIONS, 2012, <https://www.un.org/geospatial/content/sudan>

1.1.2 KHARTOUM

It is Sudan's capital and the country's largest city. Turkish-Egyptian colonialism founded it in 1812, it is situated at the confluence of the Blue and White Niles rivers, the intersection known as (Al-Muqrin), this junction separated it into three cities: Khartoum, Omdurman, and Khartoum North. Khartoum is Sudan's political, economic, educational, and health center. The city is distinguished by a blend of African Sudanese and Arab cultures and traditions, which is reflected in the city's cultural and linguistic variety.



Figure 3 The view shows the three cities of Khartoum, and in the middle is Tuti Island, which is located at the confluence of the White and Blue Niles , Khartoum ,Sudan , 2023 ,Abd almoniem Sayed , <https://twitter.com/abd00oo77/status/1654107787058909184/photo/4>

Khartoum Landmarks

The Republican Palace: The official residence of the presidency of Sudan, located in the city of Khartoum near the Blue Nile, founded in 1832 by the Turkish-Egyptian colonizer, it was called the Republican Palace upon Sudan's independence in 1956, a new presidential palace was built, but the old palace still receives some political events.



Figure 4 The Republican Palace ,Khartoum ,2022, <https://www.aljazeera.net/>

St. Matthew's Cathedral: It is a Catholic church situated on the Blue Nile's riverbank in Khartoum. It was built in 1847 and destroyed in 1885 by the Mahdist revolution and repaired in 1908.



Figure 7 St. Mathews Cathedral, Khartoum ,2020, <https://tayaramuse.com/what-to-do-khartoum-sudan/>

The University of Khartoum: located in Khartoum near Blue Nile's riverbank, featuring 22 colleges. It was constructed in 1902 under the name (Gordon Memorial College) during the British colonial period to be Sudan's first educational school affiliated to the University of Cambridge in United Kingdom. Its name was changed to the University of Khartoum in 1956.



Figure 5 The Main library of University of Khartoum , Khartoum ,2022 , <https://fridaysforfuturedigital.medium.com/university-of-khartoum-the-ancient-citadel-of-science-and-the-arena-of-historical-struggle-64a80ac7f721>

The Great Mosque of Khartoum was built under Turkish-Egyptian rule in 1901. It is situated in the center of Khartoum, north the Republican Palace.



Figure 6 The Great Mosque , Khartoum ,2020, <https://tayaramuse.com/what-to-do-khartoum-sudan/>

1.1.3 POPULATION

The population of Sudan is 45,657,202, according to the 2021 population census.

Sudan has a huge number of internally displaced people as a result of military wars, famine, and desertification. This is seen in the following figures.

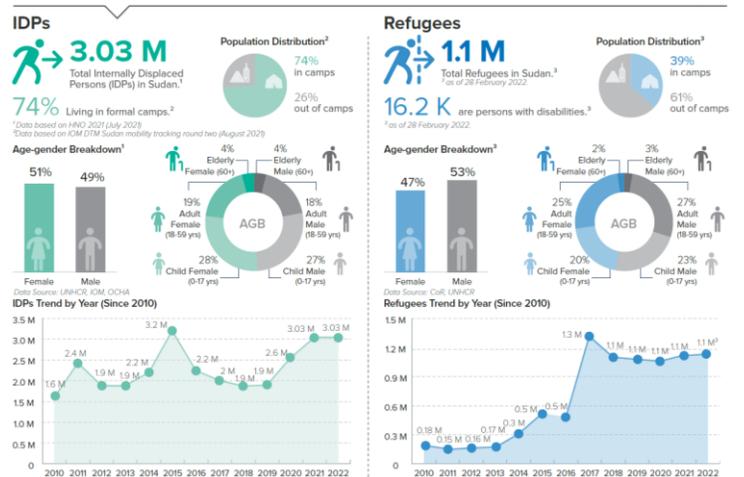


Figure 8 Overview of IDPs and Refugees in Sudan ,2022, <https://data2.unhcr.org/en/country/sdn>

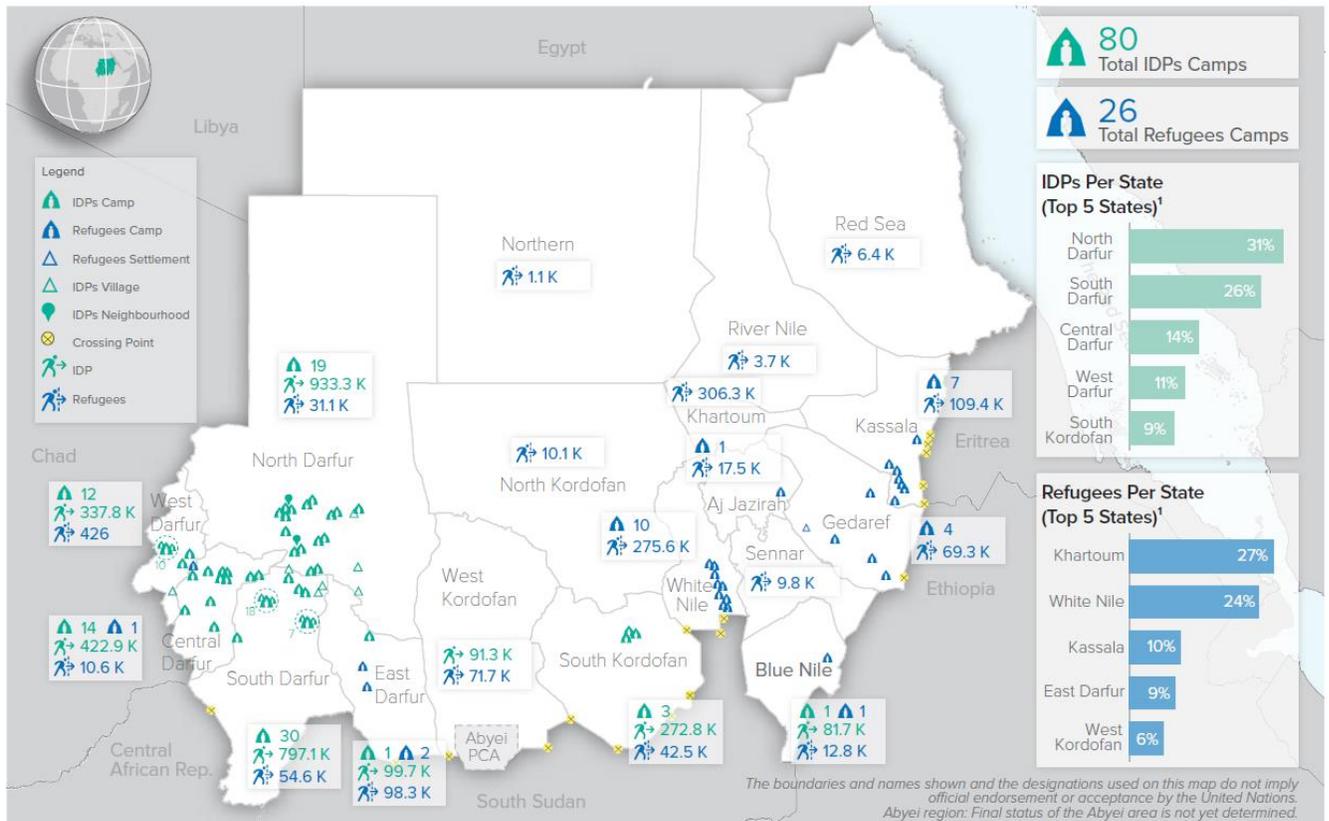


Figure 9 Overview of IDPs and Refugees in Sudan,2022, <https://data2.unhcr.org/en/country/sdn>

Due to the continued conflict, Sudan is witnessing for the first time reverse internal migration from Khartoum, which formerly hosted the greatest share of the displaced, the figure illustrates this migration.

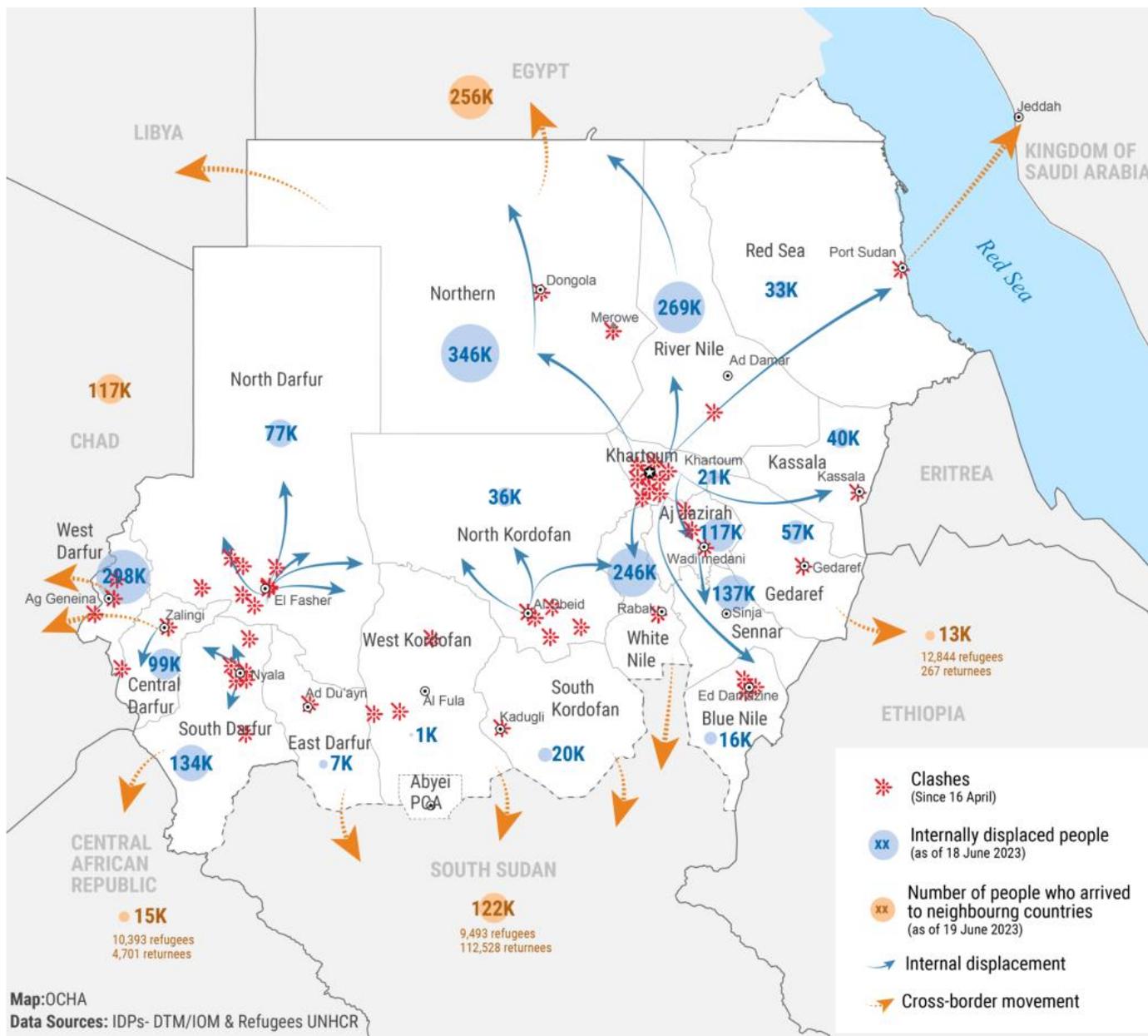


Figure 10 The figure shows the number of internal displaced people due to the ongoing conflict ,2023, <https://reliefweb.int/country/sdn>

1.1.4 ENVIRONMENTAL SITUATION

The country faces several environmental challenges, including:

Desertification: Sudan is seeing the consequences of climate change, such as higher temperatures, less precipitation, and more desertification. The desert occupies a considerable portion of Sudan, and some parts are suffering from soil deterioration and desertification.

Climate change in Sudan constitutes a risk and makes the area at risk for desertification because of the rise in temperature, increase in humidity and evaporation, and decrease in precipitation. Sudan's ongoing deforestation and changing climate endanger the environment and put the area at risk for desertification because of the high temperatures, elevated humidity, evaporation, and limited rainfall. The Nile Basin is currently dry in more than 80% of its parts (Egemi, 2017). 8,835,000 hectares (11.6%) of Sudan's overall forest cover were degraded during 1990 and 2005 (Ibrahim Thiaw, 2007). As a result of soil erosion and land drying, a sizable portion of Sudan is becoming desertified. The worsening of desertification is thought to be the most important environmental problem in Sudan because of the lack of water and the fact that the threat to the country's lands extends beyond just deforestation. This is because the country's population is constantly being displaced owing to war and famine.



Figure 11 Desertification is having an impact on vital agricultural area, threatening many Sudanese agricultural workers, <https://edition.cnn.com/2016/12/07/africa/sudan-climate-change/index.html>

1.1.5 SECURITY AND CRISIS

Since April 2023 – as an internationally brokered plan for a transition to civilian rule was discussed – power struggles grew between army commander (and de facto national leader) Abdel Fattah al-Burhan, and his deputy, Mohamed Hamdan Daglo, head of the heavily armed paramilitary Rapid Support Forces & Rapid Strike Force ("RSF"), formed from the Janjaweed militia.

On 15 April 2023, their conflict erupted into intensely violent open battles in the streets of Khartoum between the army and the RSF – with troops, tanks, and planes. By the third day, 400 people had been reported killed and at least 3,500 injured, according to the United Nations. Among the dead were three workers from the World Food Program, triggering a suspension of the organization's work in Sudan, despite ongoing hunger afflicting much of the country. U.N. secretary-general António Guterres demanded immediate "justice" for the killings and called for an end to the conflict.



Figure 12 Khartoum the capital , was rocked by explosions and gunfire ,April 20,2023, <https://www.theatlantic.com/photo/2023/05/photos-sudan-war-refugees/673934/>



Figure 13 South Khartoum Damaged structures April 25, 2023, <https://www.aljazeera.com/news/2023/5/15/sudan-fighting-one-month-on-and-no-solution-in-sight>



Figure 14 A building hit by an airstrike ,April 27 ,2023 , <https://www.theatlantic.com/photo/2023/05/photos-sudan-war-refugees/673934/>

1.2 HISTORICAL BACKGROUND

1.2.1 BRITISH-EGYPTIAN CONDOMINIUM ADMINISTRATION (1899–1956)

The history of Khartoum dates to Muqrin, the village that became Khartoum at the confluence of the White and Blue Niles. There are three distinctive regions of the city because of the confluence of the Niles (Khartoum, Khartoum North, and Omdurman). During Turkish-Egyptian occupation, Khartoum was chosen as Sudan's capital in 1821. Their construction of the city's infrastructure continued throughout the following decades. In the mid-nineteenth century, Khartoum represented a similar Ottoman city encompassed by defensive walls with gates that allow convoys to pass (Seif Sidig Hassan, Urban planning of Khartoum. History and modernity Part I – History, 2017).

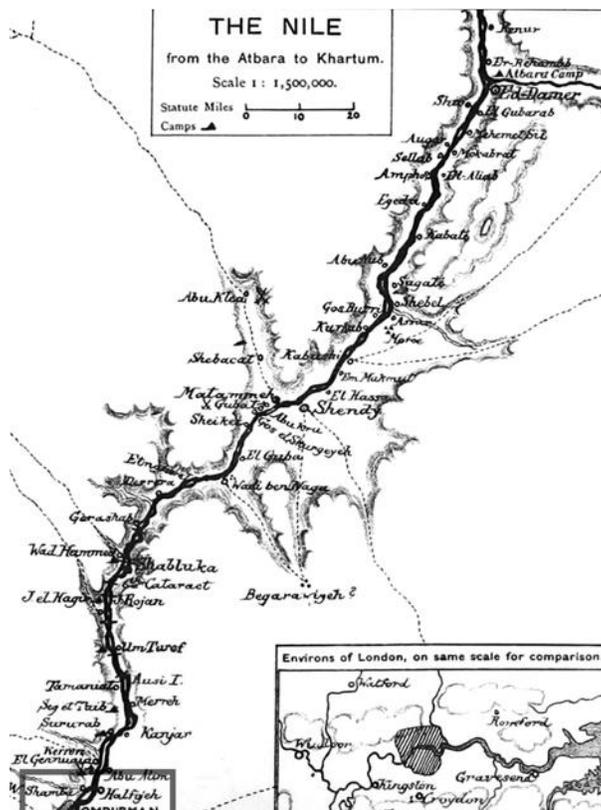


Figure 15 Plan of settlement along the Nile at the end of the 19th century. Location of Khartoum marked on the map. Map Ernest N. Bennett, *The downfall of the Dervishes*, Methuen & Co. New York, New Amsterdam Book Company, 1899, p. 104

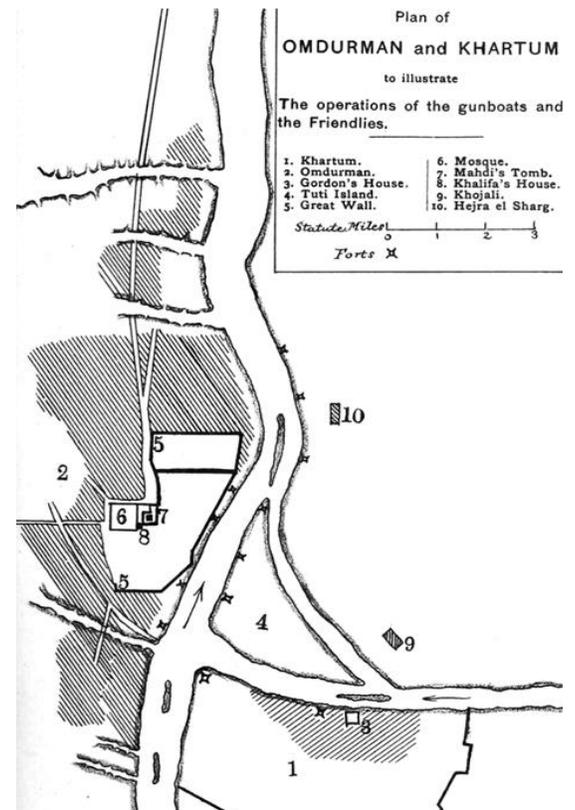


Figure 16 Plan of Khartoum and Umm-Durman at the end of the 19th century. Map Ernest N. Bennett, *The downfall of the Dervishes*, Methuen & Co. New York, New Amsterdam Book Company, 1899, p. 214

In 1885, the forces of the Al-Mahdi (the leader of the national rebellion movement) seized Khartoum and war broke out between the Mahdists and the British forces with the help of the Egyptian army, including the former Governor-General of Sudan Charles George Gordon, who returned to Khartoum with his forces to evacuate the foreigners residing there. He was killed in a battle and his gallantry was celebrated with the establishment of Gordon College. This institution later became known as Khartoum University. After the Al-Mahdi's supporters captured Khartoum, it was no longer the main city in Sudan, and parts of its precious buildings served as material for the construction of a new capital which was then moved to Omdurman (Berry, 2015).

The period of Mahdist lasted until 1898, when the Anglo-Egyptian army led by Lord Horatio Herbert Kitchener beaten the Mahdist forces, at which time the Anglo-Egyptian period of joint rule began in Khartoum. After a relatively short period of Al-Mahdi rule, the city was abandoned and destroyed; however, it was reestablished as the capital after he was overthrown.

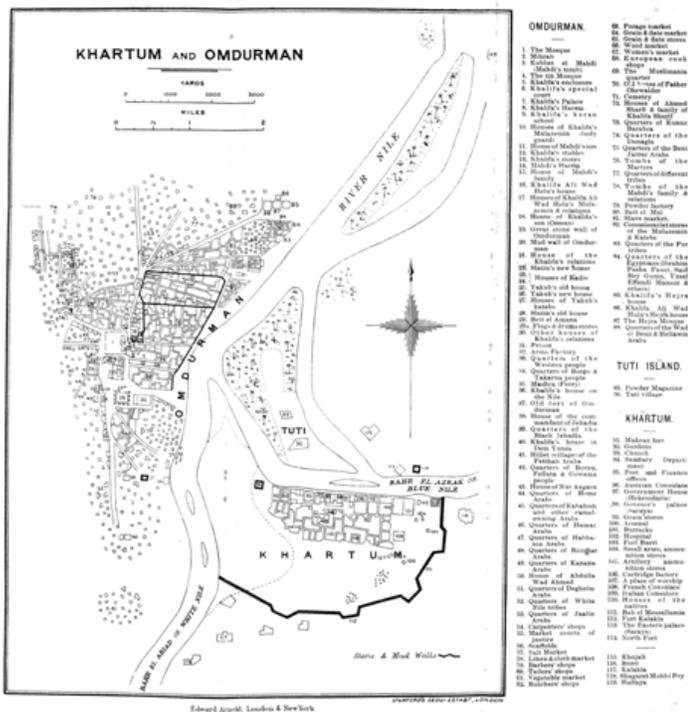


Figure 17 Plan of Khartoum and Umm-Durman at the end of the 19th century. Map Rudolf C. Slatin, Fire and Sword in the Sudan. A Personal Narrative of Fighting and Serving the Dervishes 1879–1895, London – New York, 1896, p. 630

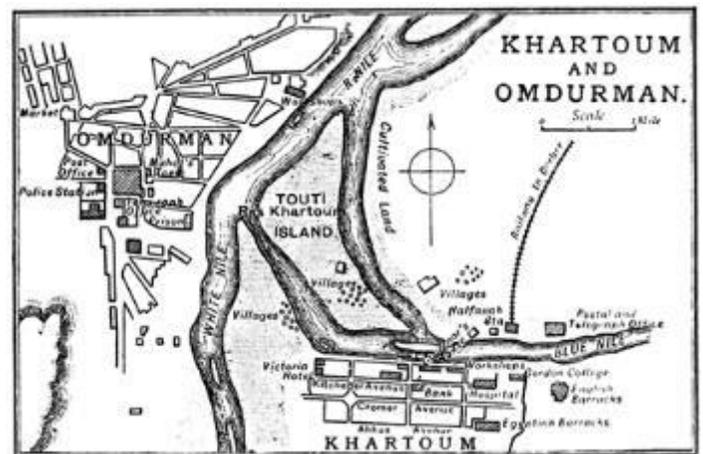


Figure 18 Map of Khartoum from the beginning of the 20th century, drawn by T. Cook Ernest Alfred Wallis Budge, Cook's handbook for Egypt and the Egyptian Sudan, London 1906

1.2.1.1 KHARTOUM SPATIAL PLANNING 1910

In 1898, General Kitchener defeated Al-Mahdi during the Battle of Omdurman, and Anglo-Egyptian sovereignty over Sudan was declared. A month after the victory, Kitchener ordered the construction of Khartoum. Omdurman did not correspond to the qualities of Kitchener's illuminating ideas in building the capital. The conqueror wanted to establish a new capital and education headquarters (Home, Roche, Hutchings, & Siman, 1990).

The map was prepared according to a well-known tradition, Khartoum layout was created on the pattern of the Union Jack (the British flag). Over time in 1912, Union Jacks' plans turned out to be impractical and were progressively closed and covered with buildings.

When Sir William Hannah McLean (British civil servant in colonial office and first urban planner responsible for the layout of Khartoum) arrived in 1906, Khartoum was divided into three cities: Khartoum, located at the meeting of the White and Blue Niles, had a population of 25,000, Omdurman, had a population of 60,000, and Khartoum North (Bahri), the rail head with a population of 20,000. McLean's tasks in Khartoum, (not in the indigenous areas of Khartoum North or Omdurman), were to provide some amenities for the whites: roads and drainage of surface water, tram lines, sewage, and water supply. Since there were no drawings by Kitchener, McLean oversaw the initial thorough investigation of the urban area in Khartoum. The city's road dimensions have been genuinely distinguished: the main road was 120-150 feet wide; the secondary streets were 80 feet wide, and the preserving lanes were 12 feet wide. Construction costs were reduced by putting a train only in the middle of the strip, leaving wide footpaths, and planting trees. However, roads outside of Khartoum were inappropriate (Home, Roche, Hutchings, & Siman, 1990).

Khartoum's planning reflects socio-ethnic colonial differences. The British caste system was eminently scalable and its agencies in Sudan were adept at upholding standards, determining precedence, and maintaining prejudices. The land was divided into three classes on social and ethnic grounds, instead of land use differences, and ranked parallel to the river, the first class is for British administrators overlooking the Nile in Mclean's words "owing to the proximity of the water supply, gardens, which are so necessary for the comfort of Europeans, can be much more easily and economically made" (Home, Roche, Hutchings, & Siman, 1990). The second class is for Egyptian officials, businessmen and those with lower social status, Sudanese (indigenous), were included in the third land class and were removed from the river. Relatively few Sudanese chose to live in Khartoum, preferring Khartoum North or Omdurman. The construction of mud was permitted only on the third class, whereas in the first and second-class grounds the exterior walls of all buildings had to be stone, burned bricks or concrete (Home, Roche, Hutchings, & Siman, 1990).

In 1910 the railway line was extended to Khartoum, the new plan was approved on April 4, 1912. By 1913 Khartoum had a more European Mediterranean character than African. Mclean wrote "the great width of the streets and the very open development has so spread out the town that the cost of a drainage scheme was found to be prohibitive" (Home, Roche, Hutchings, & Siman, 1990). This conspicuous consumption and social inequality persisted even in the post-colonial period, and the new governing class in Sudan continued

to use the classes system and added a fourth class. Residential plot sizes were 800 square meters in first class areas, 600 square meters in the second-class area ,300-400 square meters in the third-class area and 200 square meters in the fourth-class area (Home, Roche, Hutchings, & Siman, 1990).

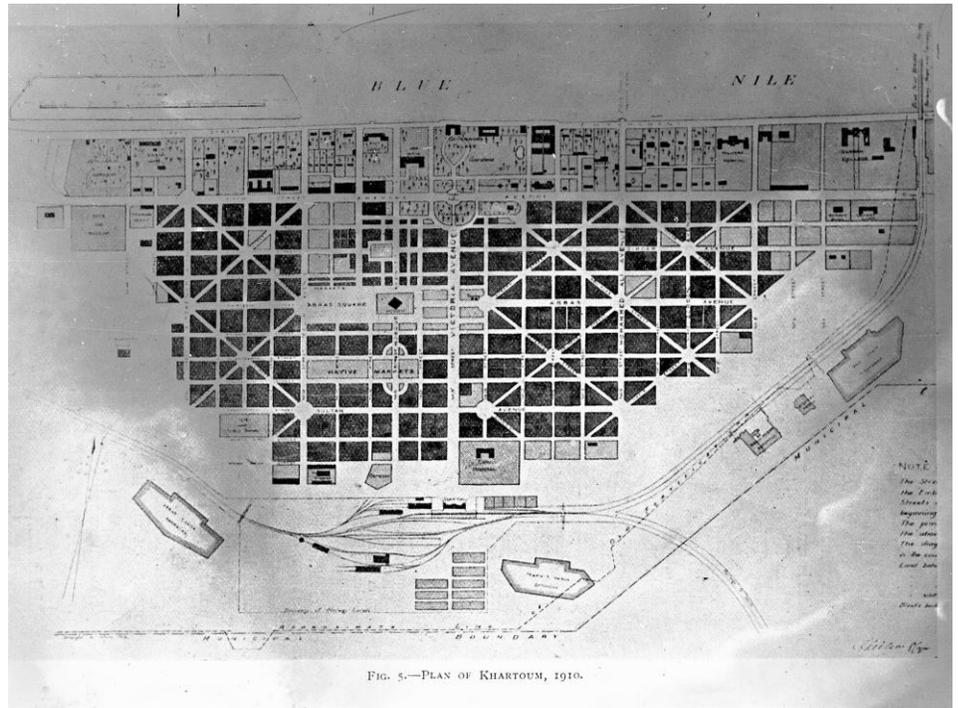


FIG. 5.—PLAN OF KHARTOUM, 1910.

Figure 19: : Reproduction of Kitchener's design Drawn by MacLeans presented at the London Conference, 1910. M. D'Errico (2019) Khartoum. L'invenzione di una capitale (1898-1910). Bulletin of the Italian Geographical Society series 1

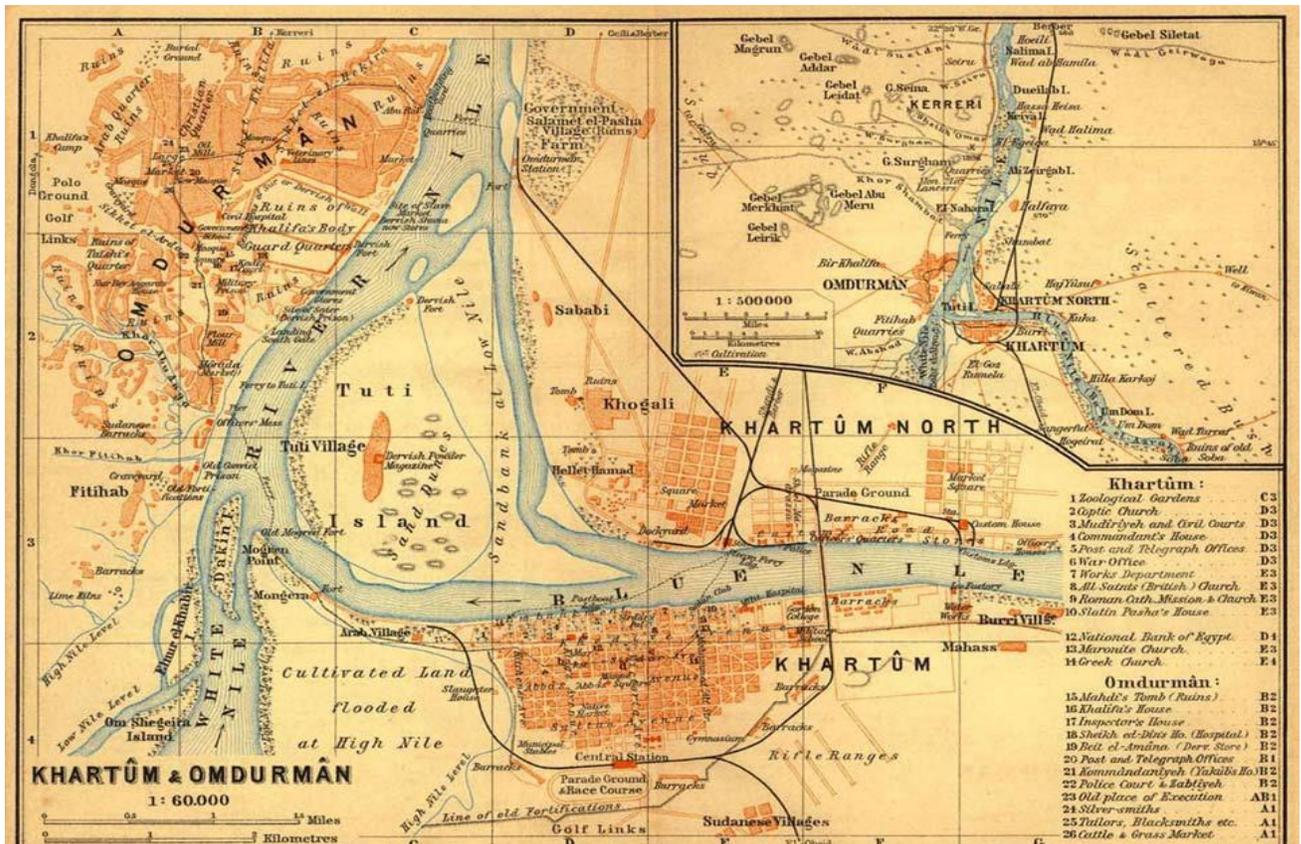


Figure 20: Map of the urban complex in Khartoum with Umm-Durman, Khartoum and Khartoum North from 1914 (Baedeker, 1929)

1.2.1.2 OMDURMAN

Since Omdurman's development started at the beginning of the nineteenth century it was slowed down by the Anglo-Egyptian invasion, it had a strong Arab and Islamic identity that relocated to the city before the war, the land was split into enclosures, each of which accommodated a sizable military family. Small lanes were eventually created along the complexes because of the increasing splitting of the compounds by family members, which led to the development of the communication system. The Omdurman Road system arose from the haphazard spread of residential complexes in the absence of a well-planned street network. Even after two decades, there were still many neighborhoods in Omdurman that followed this route.



Figure 21 View of buildings in Umm-Durman around the mid-20th century, (Hassan, 2017)

Following the death of the Mahdi, the city was transformed into a military camp surrounded by a wall. Later, a mosque was built and used as a market. River ferries connect Khartoum with the city. The city's modes of transportation were either donkeys or the Bukhari tram. The prison, the Sudanese Guard House, the Great Mosque, the Caliph Mosque, a court, and a military hospital were among the most prominent markets for ivory and grain in Omdurman (Baedeker, 1929).



Figure 22 View of the mosque in Umm-Durman in the 1st half of the 20th century, (Hassan, 2017)

The city's movement was facilitated by several wide main streets and secondary local roads. The dome of the Mahdi, located next to the courtyard of the mosque, was destroyed after the capture of Omdurman. The Caliph Abdullah's house stood opposite the dome.



Figure 23: View of the tomb of Al Mahdi in Umm-Durman in the 1st half of the 20th century, (Seif Sidig Hassan, Urban planning of Khartoum. History and modernity Part I – History, 2017)

Despite efforts to organize, residential neighborhoods developed in a traditional, random manner. It has a chaotic urban layout (in terms of housing and traffic), with small open spaces and architecturally monolithic buildings. Omdurman does not have many green spaces, and those that do exist are dispersed. It comes down to the city's location on a barren and rocky terrain. This is yet another feature that sets it apart from the green Khartoum. The irregular layout of the city core (from the west, north, and east sides) is mostly surrounded by a defensive wall plan. Organic buildings are marked outside the walls, which may have served as suburbs or areas inhabited by specific families from tribal communities.

Khartoum was re-established as Sudan's capital in 1898. As a result of the Mahdists' defeat, development in Omdurman came to a halt, as the colonizer focused on the city of Khartoum. Omdurman was left without

noticeable urbanization after independence. Omdurman still lacks basic infrastructure (Seif Sidig Hassan, Urban planning of Khartoum. History and modernity Part I – History, 2017).

1.2.1.3 KHARTOUM

It is situated on the Blue Nile's left bank, directly above its confluence with the White Nile. Muhammad Ali Pasha built the city between 1830 and 1823 as the southern repository of Egypt's trade. In 1882, the Mahdi revolted, and the capital was relocated to Omdurman. In 1898, the Mahdi was defeated, and the capital was returned to Khartoum and rebuilt, with Lord Kitchener designing the land plan as a set of Union Jack. Following Maclean's plans, Khartoum had the Grand Hotel, a Coptic church, as well as other homes and gardens owned by British officers. Also constructed by Kitchener, was Gordon Memorial College. It has a high primary school and a vocational school where Sudanese students were instructed by English and Egyptian teachers in the art of surveying and engineering. A steamboat operates from the Muqrin point to keep Khartoum and Omdurman connected (Gamal M. Hamid, 2013).

Using a combination of orthogonal multi-axis planning, the plan organized with intersecting streets allowed some areas to develop into gardens in accordance with the English town plan concept. The orthogonal design of the building blocks was intended primarily for indigenous people's dwellings. The roads were wider than the plots of land located on the city limits where the railway operated between British and Egyptian barracks. Some of the public utility facilities that were planned for the Blue Nile's banks still stand today.

The main area, Abbas Square, where the great mosque once stood as well as other structures used for commercial purposes, is another space the city is proud of.

At the beginning of the 20th century, the city's public utility buildings were magnificent and resembled typical English colonial architecture. Among the most intriguing urbanization developments in Khartoum since that time, should be the construction of the Governor's Palace, Gordon College (transformed to the University of Khartoum in 1952), Gordon Hotel, Post Office, and All Saints Anglican Church (Baedeker, 1929).



Figure 24 View of the post office building in Khartoum at the beginning of the 20th century (Seif Sidig Hassan, Urban planning of Khartoum. History and modernity Part I – History, 2017)



Figure 25 Sudan. Presidential Palace in 1936. Reference: G. Eric and Edith Matson Photograph Collection, Library of Congress, Reproduction. https://commons.wikimedia.org/wiki/File:Sudan_Khartoum_Palace_1936.jpg



Figure 26 : Gordon Avenue in Khartoum at the beginning of the 20th century (Hassan, 2017)

KHARTOUM NORTH

Khartoum North is located on the Blue Nile's right bank. Unlike Omdurman and Khartoum, the city was not the site of major historical events that would have influenced its urban planning; instead, a small village was established on the site of the later town, whereas Omdurman and Khartoum had already developed regular urban structures. Khartoum North is identified as a definite, orthogonal, and regular structure. It should be noted that even those structures are much smaller in scale than Omdurman and Khartoum. Military structures on the river, like those on the other side of the river in Khartoum, were also marked in the Khartoum Bahri fabric. Unlike Omdurman and Khartoum, that city has been prepared to be an industrial center, a handling port, and a transportation hub since the early twentieth century (Seif Sidig Hassan, Urban planning of Khartoum. History and modernity Part I – History, 2017).

1.2.2 POST-COLONIAL PLANNING SYSTEM (1956–1986)

Following the national independence in 1956, the centralization of the economy and education was maintained in Khartoum, resulting in a rapid increase in the flow of people to urban Khartoum. This had the effect of overburdening the city with business, administration, and transportation lines, while horizontal construction increased outside the city limits. The spatial shape of Khartoum's urban area has been influenced since the mid-1960s. Significantly, the adjacent sub-urban housing has been incorporated into Greater Khartoum, and as a result, the outer areas of each of the three cities have proliferated towards these semi-urban housing (Osman, 2020).

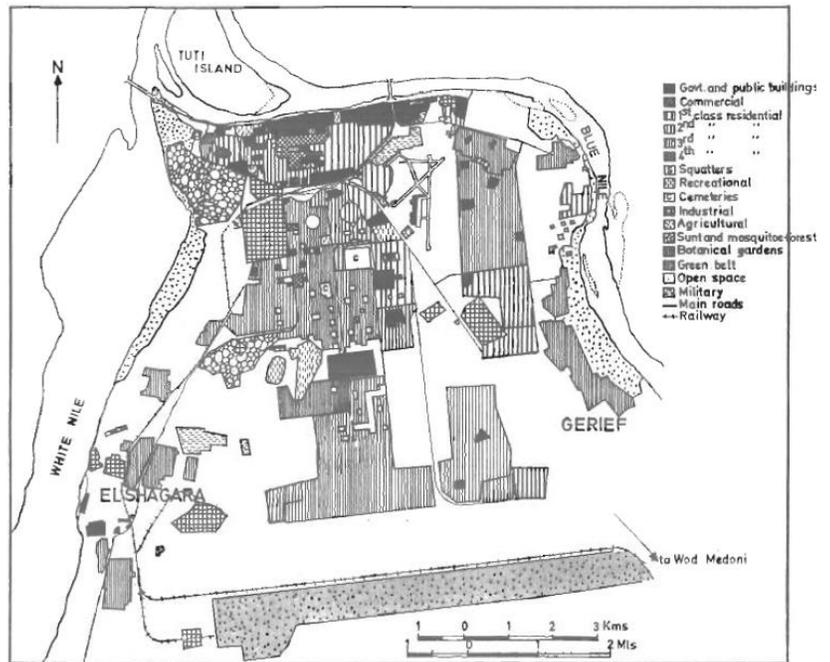
According to (Mohammed, 1986) “As there has been no consideration in the evolution of the Khartoum urban area town-plan to the overall trend of urban development, the internal spatial form, and the land-use pattern in the Three Towns (Figs. 1.4a, b and c) have been characterized by the following main features shown in:

1. The dominance of Khartoum Town's city center effectively controls the administrative, commercial, cultural, and even recreational services of the Three Towns. This urban core has developed without the required interdependence with the extensive residential expansions at the outskirts of the urban area.
2. The existence of various grades of residential areas at varying distances from the center of the urban area. These residential areas have not been created in organized communities. Instead of designed neighborhood with determined functional requirements, the predominant feature has been the classification of residential communities according to class of land which reflects class in society and money-income.
3. The disadvantageous location of the lower-class residential areas to workplaces, transportation networks and other urban functional areas.
4. The haphazard distribution of community buildings and lack of the required open spaces.

5. The occupancy of space at strategic locations by bodies not engaged in the provision of any of the urban basic services. The sites of the Airport, the Zoo, the Railway yard, the Dockyard, the Stores department, and the large military areas have increased the inefficiencies of the urban land-use character, of the urban functional systems, and of the spatial relations in the urban area”.

FIG. 1.4a

KHARTOUM: URBAN LAND USE



(An Atlas of Khartoum Conurbation 1976 P. 50) ; Fieldwork.

Figure 27 Urban land use of Khartoum, An Atlas of Khartoum conurbation 1976 p.50 (Mohammed, 1986)

FIG. 1.4 b

KHARTOUM NORTH: URBAN LAND USE

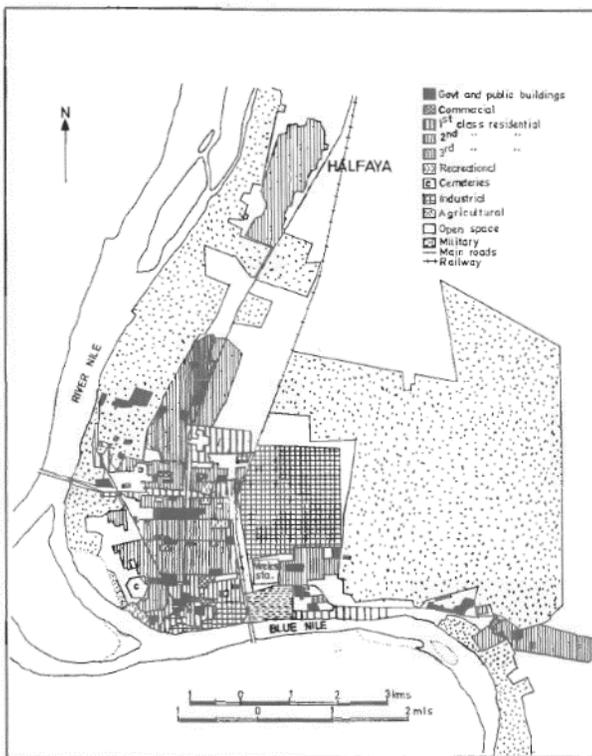


Figure 28 Urban land use of Khartoum North, An Atlas of Khartoum conurbation 1976 p.51 (Mohammed, 1986)

FIG. 1.4c

OMDURMAN: URBAN LAND USE

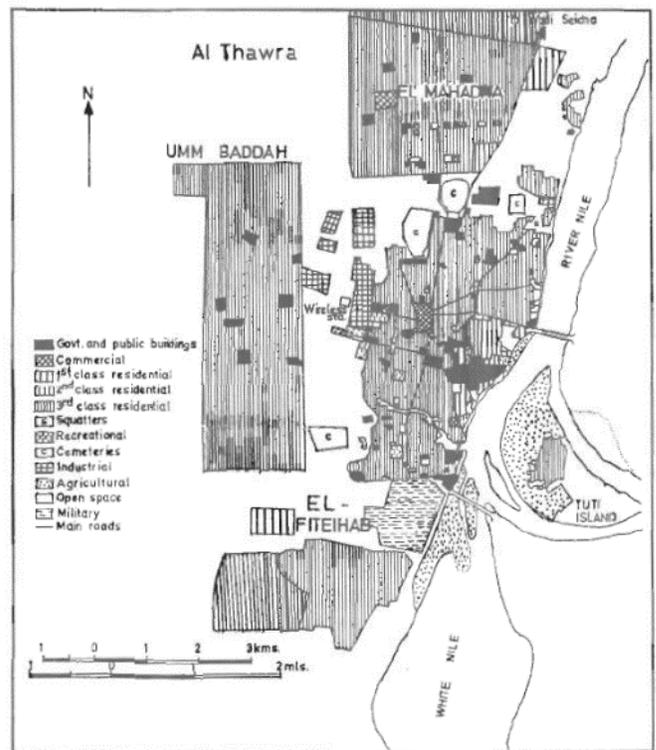


Figure 29 Urban land use of Omdurman, An Atlas of Khartoum conurbation 1976 p.52 (Mohammed, 1986)

When the Governor-General established the Central City Planning Council in 1927, systematic planning began, ignoring social order and power structure constraints. The Khartoum City Planning Committee was founded in 1929 to develop the three cities under the governor's leadership. Its plans must be in line with the needs of public health as well as the preservation of public building locations, gardens, archaeological monuments, and official residences. To address the expectations of the public who is concerned with health and administrative regulations, this institution was not prepared for long-term goals. Instead, it was prepared for short-term aims. Because this planning is essentially a political process to serve the imposed social and economic system, its implementation resulted in the urban area being distinguished by social and spatial inequalities that reflected the social and economic classes of people. A small group of politically or economically powerful people adopted the design and implementation of planning objectives, which made the system of urban governance arbitrary and prevented it from considering the needs and wants of the entire population. The council could not carry out its responsibilities until a professional planning staff was found. Previously, the governor's advisers—the medical officer, the municipal engineer, and representatives from the statutory and cadastral departments and the civil service—oversaw preparing plans for new layouts, re-planning old areas, and distributing public buildings. Adapted to local circumstances for council-issued directives to local governments. The council's professional staff is responsible for preparing detailed plans for new layouts or residential, industrial, and market areas, as well as examining and selecting sites and consulting with local authorities on details of plot requirements, local building possibilities, required amenities, and potential future additions (Mohammed, 1986).

The first Sudanese prime minister declared an expressive slogan that defined his government's priority: "liberation, not construction." Under these conditions, the public sector construction industry was one of the areas that suffered the most during the first four years of independence. The private sector, on the other hand, continued to construct small projects such as family homes, two-story commercial buildings, and small light industry projects, many of which had little architectural significance. As the need for local replacement grew, more efforts were made to train Sudanese to replace foreign officials. Al-Mirghani Hamza (1895-1973) and Hassan Al-Atabani were the forefathers of the fledgling engineering profession (1916-1997).

During the early years of independence, the national government recognized the need for a master plan for the capital to replace Kitchener's plan for the city. By 1958, the famous Greek city planner "Doxiadis" had been asked to propose a comprehensive city plan for Greater Khartoum. Salah Mazari, a qualified Sudanese town planner, has prepared a detailed plan for the new residential expansion of Khartoum, which consists of approximately 500 plots of land, under the direction of the Doxiades Scheme (OMER S. OSMAN, 2011).

1.2.2.1 KHARTOUM SPATIAL PLANNING 1958

The Doxiades Scheme, its goal was to activate a design mechanism capable of self-replication over time in response to a well-defined trend. While economic growth would have taken its course, Doxiades' settlement system would have expanded in lockstep. Not only that, but urban growth organized according to Western modes of production and consumption has become a prerequisite for attracting new labor and capital, thereby opening new and abundant development opportunities. It was important to envision a system that, in order to stand behind the crisis scenario brought on by a large enterprise system failure, reviewed the entire structure of society through extremely hierarchical forms and functions. This hierarchy would have been based on the intermediate scale of the element, which Doxiadis described as "fourth-class society," and would have formed the foundation of the urban organization. Before the city space rules, the city must be organized, and citizen conduct must be guided toward development, as a hint of the latent crisis. The newcomers had absorbed the demands of modernization and industrialization, and they had justified mass production using Western models. Once they had settled in the city, they had to offer a workforce and a foundation on which to draw in the initial investment funds for development. By doing so, it was feasible to circumvent the logic of encirclement and exclusion imposed by haphazard urbanization and the expansion of urban cores, opening the city to both economic and physical access. Therefore, it was important to envision a system that would fundamentally alter the way society is organized using highly hierarchical forms and functions. This would enable to resolve the crisis that the design system's severe malfunction had caused. This hierarchy, which served as the foundation for the urban organization, was decided upon using a single, mediocre scale; Doxiadis referred to this area as "fourth-class society." The poor lived in a Class IV neighborhood with six to ten thousand residents and were grouped around a few facilities, such as a high school, a retail mall, and one or more religious structures, all of which were accessible on foot (Dominicis, 2020).

The three cities that make up the greater Khartoum urban area in Sudan—Khartoum, Khartoum North, and Omdurman—lie on three sides of the shores of the Blue and White Nile. An analysis of this area has shown that the two smaller cities should become static cities, leaving Khartoum itself to experience the majority of the growth toward the south. The need to cross the big rivers would arise from a similar increase on all the shores, and only bridge construction would be allowed to take up the entire annual budget (DOXIADIS, 1968).

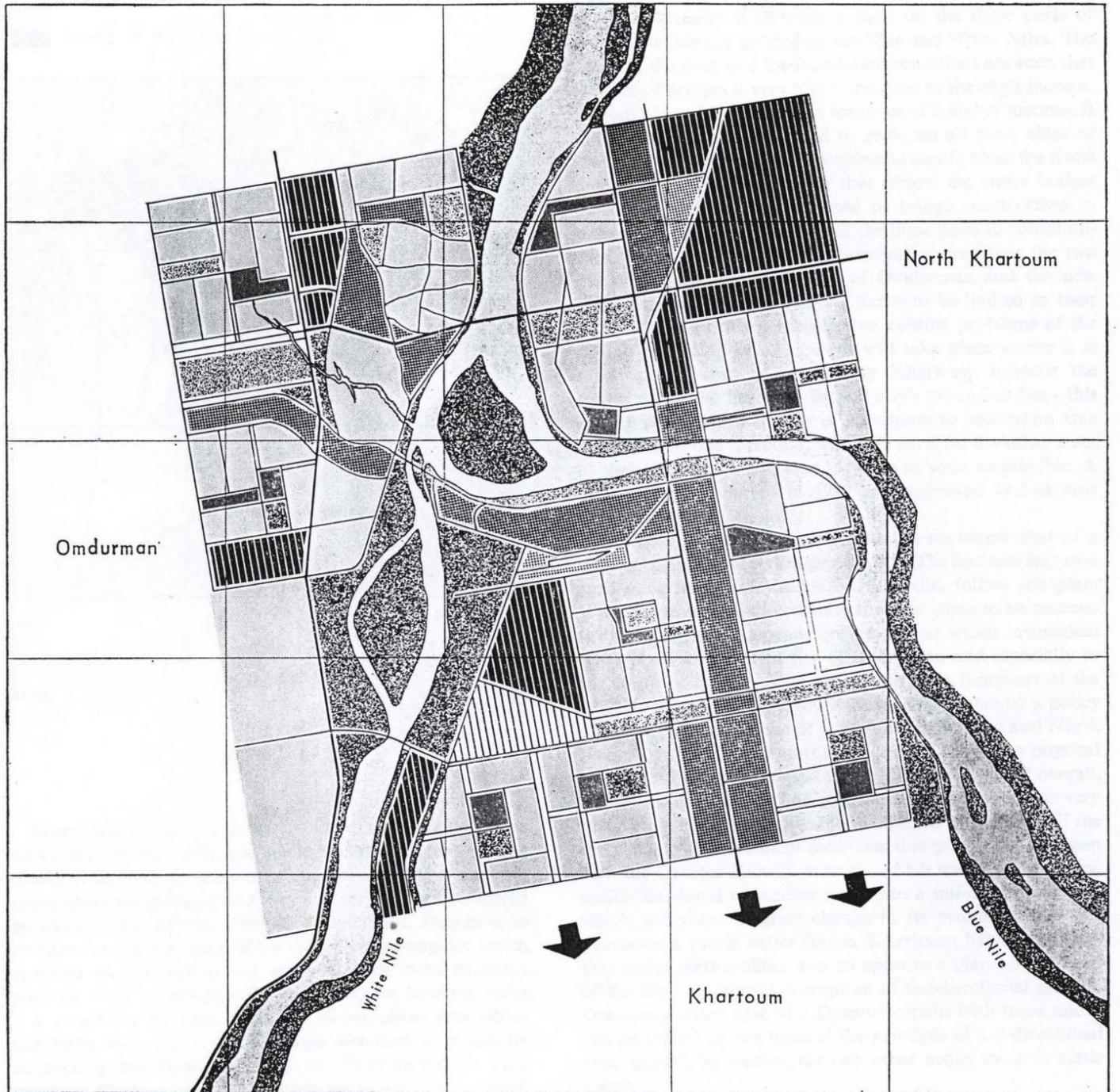
Doxiadis plan was not implemented due to a lack of full cooperation to implement it, as well as the inability to identify answers to the increasing population creep and the failure to propose any recommendations to limit it. Despite this, the plan aided in determining the reasons that contributed to the decline in living standards and the growing of the disparity between rich and poor societies (Seif Sidig Hassan, Urban planning of Khartoum. History and modernity Part II. Modernity, 2017).

future of a Dynametropolis

plan for two static centres and one dynamic centre

approved master plan of greater Khartoum, Sudan (1959)

- | | | | |
|---|------------------------------------|---|------------------------------------|
|  | residential areas |  | industrial areas |
|  | local centres |  | green areas with special buildings |
|  | commerce - business administration |  | open spaces |
|  | sewage disposal area |  | railway station |



grid 5x5 km

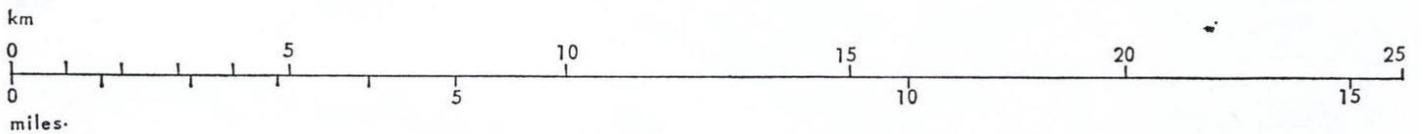


Figure 30 The urban area of the cities of Khartoum, Khartoum North, and Omdurman grows dynamically to the south between the two Niles. **ECUMENOPOLIS: Tomorrow's City**, *BRITANNICA Book of the year 1968*, Encyclopaedia Britannica, Inc <https://www.doxiadis.org/ViewArticle.aspx?ArticleId=14929>

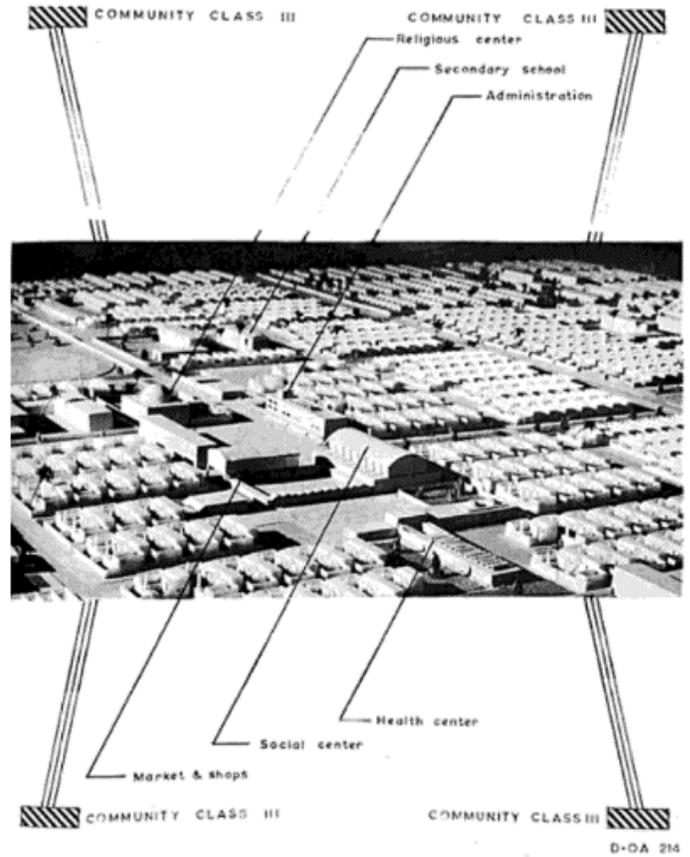
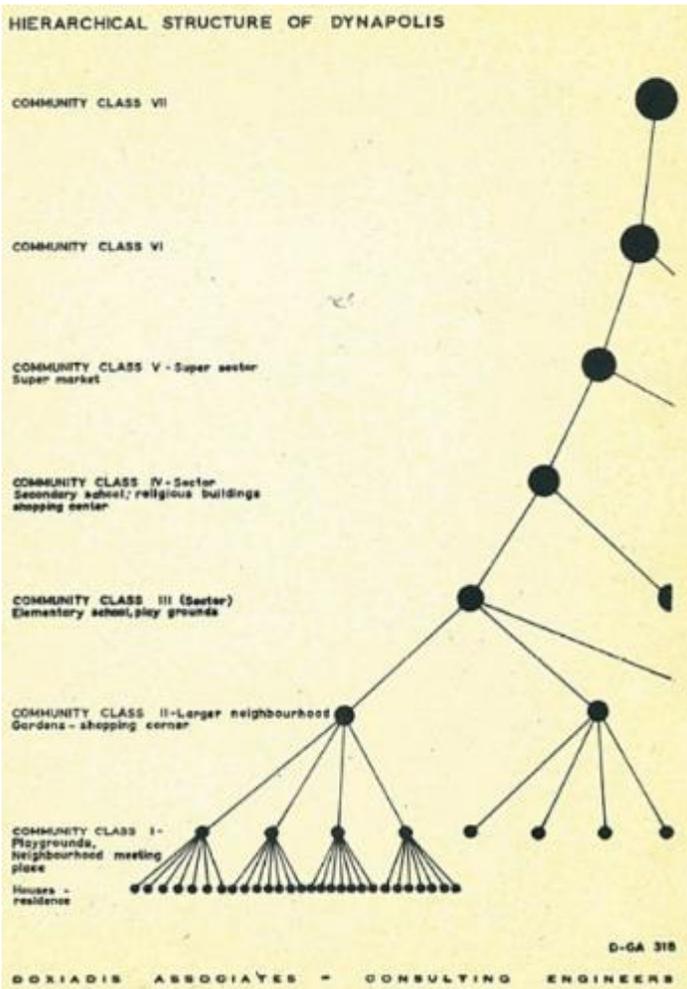


Figure 32 Doxiadis Associates, The structure of a class IV community, in DOX-OA 13, November 30, 1959, p.145, Doxiadis Archives 35881, © Constantinos & Emma Doxiadis Foundation, Athens

Figure 31 Konstantinos Apostolos Doxiadis, the hierarchy of settled communities, 1960, in R-GA 185, 15 February 1960, p. 51, Doxiadis Archives 2529, © Constantinos & Emma Doxiadis Foundation, Athens



Figure 33 Doxiadis Associates, Floor plan of a Class IV community in Khartoum; final stage, in DOX-OA 13, November 30, 1959, p.167, Doxiadis Archives 35881, © Constantinos & Emma Doxiadis Foundation, Athens.

1.2.2.2 KHARTOUM SPATIAL PLANNING 1974

At the time, it was possible to regulate the urban planning issues, therefore an Italian consulting firm called MEFIT offered a master plan for Khartoum that included both the regional and urban levels MEFIT's plan was not officially approved by the authorities because of the city's multidirectional growth, the planning divisions' incoherence, and the challenges posed by improper coordination and Sudan's escalating economic crisis (Seif Sidig Hassan, Urban planning of Khartoum. History and modernity Part II. Modernity, 2017), but it was used in the development of agricultural lands around the city. The plan included a physical, social, and cultural survey of the buildings in the areas of the various housing categories. There was no thought given to the provision of housing or services (Hafazalla, The urban development planning of Greater Khartoum: coping with urban dynamics, 2008).

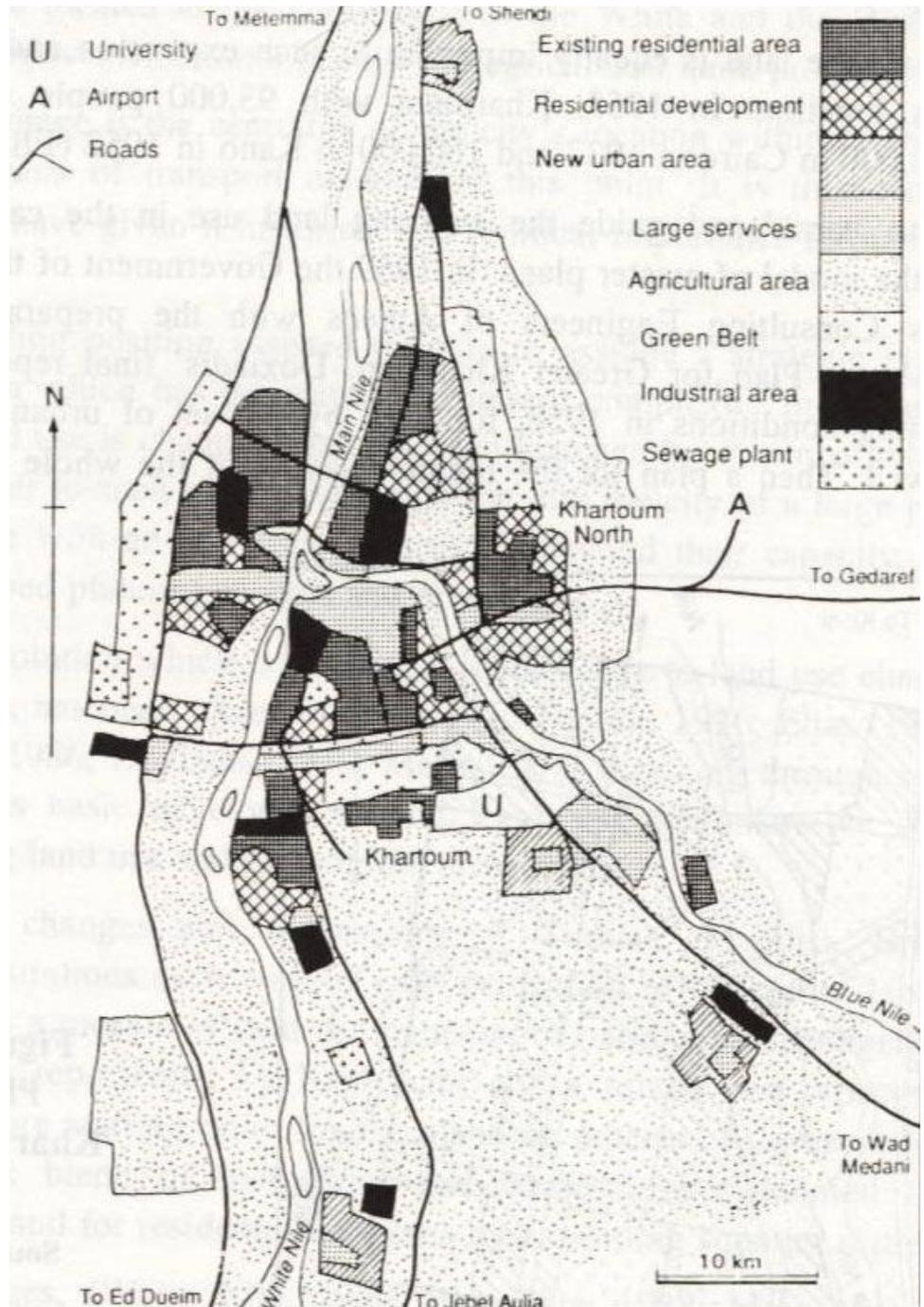


Figure 34: Regional Plan and Master Plan of the Three Towns - Beautification Programme of Khartoum the Physical Survey. Rome, MEFIT Consultants. 1974 (Hafazalla, *The urban development planning of Greater Khartoum: coping with urban dynamics*, 2008)

1.2.3 COALITIONS / AL-BASHIR (1989–2019)

1.2.3.1 INTRODUCTION

The military takeover on June 30, 1989, led to the emergence of the current, longest-lasting dictatorship (National Salvation Revolution). Ten years later, in 1999, the power struggle caused the ruling Islamic elites to split in half. Despite this, demonstrated extreme political fanaticism and a totalitarian mentality that still affects how governments are run today. In terms of the administrative system of government, Sudan was divided into 9 states and 219 local councils as soon as a new constitutional order, which was issued in 1991, two years after the coup, announced the start of the "federal system of administration." This persisted until 1994, when a new structure created 26 states, 108 provinces, and 531 towns across the nation (Abdelrahman, 2019).

A few years after the military regime took control of the state, a crisis of growing chaos emerged on the outskirts of the city due to increase of population as result of wars and famines, leading to the deterioration of the condition of roads, railway networks, the sewage system, and the disappearance of urban green spaces. Sudan declared itself an Islamic state, and that period was preceded by a total change in customs, the disappearance of multiculturalism, the closure of pubs, cinemas, and coffee shops, as well as a gradual loss of interest in preserving the urban fabric. Political problems in the 1980s weakened the effectiveness of controlling informal construction work, resulting in the gradual closure of the manufacturing and agricultural sectors, which had previously been an important source of revenue for the state. However, no new control mechanisms were proposed, instead focusing on a series of resettlement activities such as demolishing informal settlements, blocking smuggling routes, and other public spaces. Random population growth and chaotic urban fabrics did not halt the acceleration, which undoubtedly contributed to the brief period of economic prosperity associated with the emergence of Chinese investors and the emphasis on oil deposits. During the years of neglect that followed, the town lost its character, and haphazardly built buildings dominated both the old center and the informal periphery (Seif Sidig Hassan, Urban planning of Khartoum. History and modernity Part II. Modernity, 2017).

The Khartoum Municipality issued new building by laws and regulations that specified the proportion of land area to be built on, the materials to be used, and, most importantly, that the plans had to be prepared by a qualified architect or architect with civil engineering experience (OMER S. OSMAN, 2011).

(Karmel, 1995) described the dominant architectural character of Khartoum extension in the following passage: "...the search for a new residential architecture at this phase has never had as its objective a traditional revival or local continuity. The current impact of the international style and its tropical adaptation by European architects in Africa, Asia and Latin America has been so pervasive that for all intents and purposes it has set both the vocabulary and the structure of residential architecture of Khartoum for this phase. The most obvious manifestations of the international style in the residential architecture of Khartoum can be summarized in five points:

1. Disappearance of the veranda and the porch as distinctive and characteristic semi-enclosure in the house space composition
2. The emergence of the enclosed central living hall as the main family living area. In most designs it was flanked by other spaces (bedrooms, guest reception salon, bathrooms, and kitchen).
3. The central hall, of an open type is, in fact of Mediterranean origin initially used in Khartoum by Greek and Italian residents.
4. The tendency towards a more compact building form with abrupt juxtaposition of the outside space and the inside space i.e., unroofed space and roofed space.
5. The inclusion of the kitchen and the bathroom as integral elements in the building block to achieve a compact form and an integrated composition. The excessive use of concrete, glass, and hence, air cooling and air conditioning"

1.3 URBANIZATION PROBLEMS IN KHARTOUM

1.3.1 THE POLITICS OF URBAN PLANNING IN KHARTOUM

The **Unregistered Lands Acquisition Act 1970**, passed by the government in 1970, stated that any land not registered in the name of the beneficiary at the time must be legally considered government-owned land and must be registered in the name of the government. As a result, 99% of Sudan's land is considered government land. The population distribution and density in Khartoum are greatly affected by the housing policy that adopts the S&S (site and services) approach. New peripheral growth and newly formed settlements are not necessarily urban poor settlements but include relocated internally displaced persons, villages incorporated within urban boundaries, and new formal settlements of the middle class.

Owner-occupation dominates the housing market in Khartoum due to the dominance of the style of offering location and services, leaving a minor share in the rental sector. Despite its small share of the rental sector, it has serious structural issues. The 1970 Land Acquisition Act had significant implications for mechanized agriculture because it confiscated agricultural land in various areas of the Sudanese countryside that had been used and cultivated but not registered. As a result, the Sudanese government claimed ownership of the land. IDPs, residents of city slums, and lower-income groups typically become more impoverished because of taking over displacement in urban areas. The scale of appropriation varies as well because it typically encompasses individual and community land plots and is typically large-scale in rural areas and small- and medium-scale in urban areas. In terms of actors, the rural Sudanese stage saw the state play the lead role, especially following the 1970 law (Abdelrahman, 2019).

Residential land policies and issues of land acquisition are inextricably linked to fiscal policies concerning wealth distribution, planning strategies, and affordability equations. The law allows the government to perform a variety of roles in land policy, including accelerating the economy, accumulating capital, favoring specific groups, acting against vested groups that profit irrationally from the land appropriation process, and distributing or maintaining income and wealth disparities through land policy. In cases where the land is privately owned, the offer of land will be determined by the private sector's desire to dispose of it. A secure piece of land or a house can serve as the foundation for a small commercial and industrial enterprise, allowing the family to become economically productive. Provides protection against job loss or economic downturn. As individuals become productive members of society, land ownership serves as collateral for credit for investment purposes. Households that purchase a plot of land will be able to establish themselves in the urban economy and will see their assets gradually capitalized. Access to land entails access to wealth (Hafazalla, Rationalizing urban land allocation policy in Khartoum for sustainable and effective urban planning, 2016) .

The current local government system overburdens the general urban administrative system and raises urban management costs. Coordination within the state between ministries, localities, and, in some cases, service providers. However, this makes access to land and urban facilities difficult, particularly for the urban poor. Land planning and landfilling were regarded as one of the government's primary sources of income, rather than as an organizational tool aimed at achieving urban sustainability. The government usually

auctions off land and makes transfer investments to cover the costs of urban services and social amenities. This behavior has a negative impact on land market forces and land value mechanisms. In the medium and long term, the trend of financing local services with proceeds from land sales is disastrous. Its effects may spread throughout the city, increasing the city's boundless horizontality and rampant cost of services (Osman, 2020).

The housing provision system provides low-income groups in the outskirts with access and affordable land, but the land value system tends to take advantage of these lands, resulting in an increase in the value of land in the outskirts, which will inevitably lead to the exclusion of the urban poor. The land price system is observed to have an increasing internal dynamic. It also rises in response to the poor performance of the urban economy, owing to the preference of private investors and businessmen to invest their savings and liquid money in the form of land, which can be easily monetized once the market improves (Hamid, 2000).

The proliferation of subdivision projects and general land grabs, as well as the amplification of conflict and misappropriation dynamics, seriously undermines the population's trust in the state and its ability to protect private property. The security and legality of Khartoum's title deeds are in jeopardy, and public authorities in Khartoum have been able to retain control over urban lands, compensating those dissatisfied with the use of vast desert land reserves available to them on the outskirts of the city. The lack of qualified experts at the regional and local levels, as well as the transfer of expertise between levels, is widespread in Sudan's states. As a result, plans and strategies are ineffective. The region lacks professional human resources to carry out the diverse and wide - ranging functions outlined in local government legislation. The physical planning structure must ensure that plans made at a lower level do not clash with policies or strategies developed at a higher level to maintain the effectiveness of planning mechanisms. This necessitates the development of urban strategies and policies at the state level, as well as the necessity for national approval of urban levels and state-level approval of local plans. In actuality, the Federal Council for Physical Development promotes the first criteria, but not the second (Post, 1996).

The following pictures show the urban and urban disparities in the first, second and third-class neighborhoods. Where it is obvious that the second and third-class neighborhoods have unpaved internal roads with no greenery or street lighting. Some of the locals in the first- and second-class communities took steps to improve their environment by planting trees. Others of the third class were unwilling to participate in afforestation efforts since it is a costly infrastructure that should be under authority responsibilities. Public spaces were sold for private gain in some neighborhoods. The government has sometimes required new owners to keep the land's function. The first-class neighborhoods are completely different and include some urban components such as green spaces and paved inner streets, but this is due to the high income and social status of the first-class residents, who can afford the costs of those reforms.

First Class Neighborhoods



Figure 35 Khartoum ,2022, By Author



Figure 36 Khartoum ,2022, By Author

Second Class Neighborhoods



Figure 38 Khartoum ,2022,By Author



Figure 37 Khartoum,2022,By Author

Third class Neighborhoods



Figure 40 Khartoum ,2022,By Author



Figure 39 Khartoum,2022,By Author

1.3.2 LAND CLASSIFICATION SYSTEM

To permit the acquisition of land required for future urban growth, the British colonizer created administrative controls and legislation to regulate city building and development, the City Government Land Act, passed by the colonial administration in 1912, allowed governors to separate government lands near towns for indigenous housing. Thus, the classification and distribution of urban land were determined more by the colonists' political-administrative power than by the land's direct social or economic value.

The location of the army barracks and administrative blocks was more important to the governor of Khartoum and his advisors than the location of residential areas and community services. Omdurman has been distinguished since before colonialism by an irregular plan resulting from a gradual accumulation process. Due to social cohesion and the slowness of the communication system, the design of crowded medium complexes and narrow streets was a common feature.

The colonizer's goal was to create access to main and secondary roads in the neighborhoods. State Class, Class I, Class II, and Class III urban land have been classified. In Khartoum and Khartoum North, all riverbank land was government land, whereas, in Omdurman, government land was scattered among residential quarters, offices, and public buildings. Building systems have been manufactured in this region to create spacious, comfortable, and detached complexes. With its large single-story homes, wide tree-lined avenues, low housing density, and generous utility provision, this European sector has been compared to an upper- and middle-class western suburb.

In Khartoum, second-class land with administrative and commercial areas as well as first-class housing is surrounded by a railway ring. According to the building regulations, this residential area, which was designed to house non-British (Asians, Greeks, and Egyptians) and the best citizens, was of the second class. The compounds were medium in size, the construction materials were a mix of concrete and local materials, and basic amenities were provided. Second-class lands covered the area between government lands in Khartoum North. This type of land covered a smaller area in Omdurman and was limited to the riverbank and main roads. In terms of morphological and social characteristics, the contrast between governmental, first, and second-class lands on the one hand and third-class lands on the other was stark. In the latter, very poor housing conditions prevailed, as did a very low standard of basic amenities (Mohammed, 1986).

THE EFFECTS OF LAND CLASSIFICATION SYSTEM

Three interconnected variables influenced the space use and functional structure of the Khartoum urban area:

1. Establish a classification system in society based on the stratigraphy system. This reflected the political and economic order in the imposed social system, which was linked to the planning strategy used.
2. Main roads connect the urban core and the slums organized into third-class housing, primarily to facilitate labor extraction.
3. The continued concentration and centralization of major governmental, commercial, and industrial social services in the heart of and adjacent to residential areas has resulted in the complete retreat of the local working class to the metropolitan area's outskirts. As a result of the working classes' social and geographic isolation, the entire urban region has a sharp gradation in the hierarchy of functional-socio-morphological arrangement of space. Khartoum is the only city out of the three that completely differentiates land usage for various urban services as well as housing standards (Mohammed, 1986).

Thus, the entire metropolitan area has been defined by a steep gradation in the hierarchy of functional-socio organization of space because of the social and physical distance created by the arbitrary classification system. Khartoum is the only one of the three cities to completely differentiate land usage for various urban roles, as well as housing standards and nationalities. Administrative buildings have been built along the water's edge in the center of Khartoum, which has evolved into the center of the metropolitan area, while shops, banks, and offices of businesspeople and other professionals have been built along the southern edge (Assal M. A., 2004).

The vast extension of tertiary residential neighborhoods in Khartoum South, Omdurman, and the northern part of Khartoum North, however, marked the most notable change in the socio-spatial organization of the urban area. Although the plots in these planned slums were much smaller than those in the first and second classes, there were significantly more buildings on each plot and people per room.

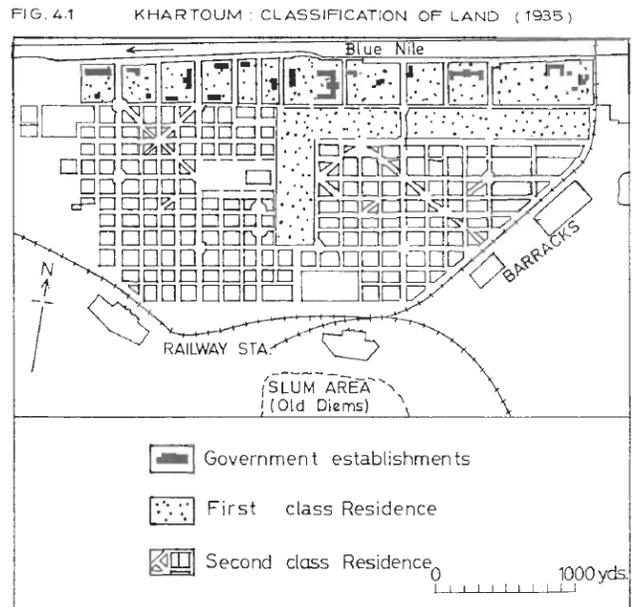


Figure 41 Khartoum Land Classification 1935 (Mohammed, 1986)

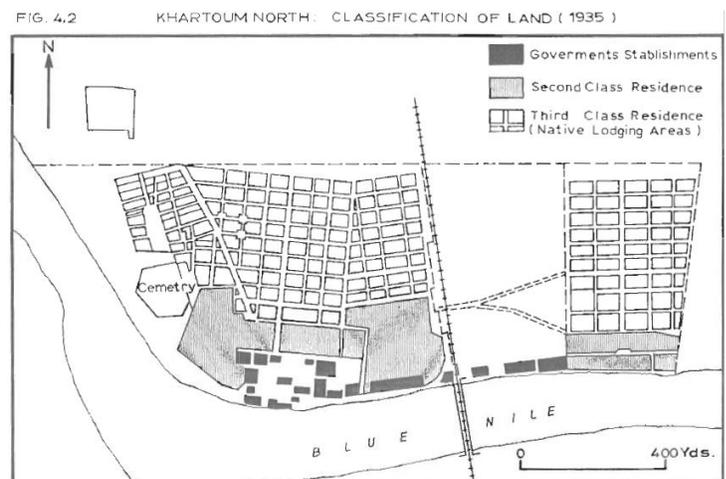


Figure 42 Khartoum North Land Classification 1935 (Mohammed, 1986)

The base of the iron grid system was the one-story adobe dwelling. Unpaved and irregular roadways were present. Additionally, the scattered extra planning policy did not distribute communal structures and social services in a way that satisfied the standards for a decent existence. Hospitals, schools, markets, other establishments, and social and cultural structures are situated in or close to the city center on major thoroughfares. The system of classifying land into three categories is being questioned and accused of restructuring land ties in favor of high-income communities, as well as developing internal mechanisms that lead to an increase in the value of residential land in the city (Bannaga, 1996).

FIG. 4.3 OMDURMAN CLASSIFICATION OF LAND (1955)



Figure 43 Omdurman Land Classification 1935 (Mohammed, 1986)

1.3.3 THE PHENOMENA OF RURAL-URBAN MIGRATION

IDPs (Internally Displaced Persons) are defined by the United Nations as individuals or groups who have been forced to leave their homes or flee their places of residence due to coercive circumstances such as conflicts, wars, (natural disasters, or other human-caused disasters (Assal M. A., 2004). Displacement occurs because of natural disasters - desertification, food shortages, hunger - civil wars, ethnic conflicts and general insecurity resulting from these factors). Political insecurity, misguided development policies, and a faltering economy are just a few of the underlying factors that have been at work for a long time in all cities of Sudan, creating an environment conducive to violence, massive population movements, and long-term deterioration of state institutions. The number of displaced people in Sudan is estimated to be between 1 million and 2 million (El-Sayed El-Bushra, 1995). The government sees IDPs as a security issue first and foremost. This is demonstrated by the locations of IDP camps, and the restrictions imposed on those wishing to visit these camps, including researchers and staff from foreign NGOs. This security-focused policy has narrowed the range of alternative policies that could be pursued. The government has abandoned its responsibilities to the displaced, entrusting their care to non-governmental organizations.

The majority of the displaced in Khartoum were displaced due to the civil war, and some groups were displaced due to drought and famine.

The Internal Displacement Monitoring Center (2010) states that Sudan's longest civil war began in 1983 and ended in January 2005 with the signing of the Comprehensive Peace Agreement (CPA) between the Government of Sudan and the Sudan People's Liberation Movement/Army. The southern war is estimated to have killed 2 million Sudanese and displaced 4.5 million (4 million displaced persons and half a million refugees). More than two million refugees and internally displaced people had returned to South Sudan by the end of 2009. The CPA provides a six-year transition period, and democratic elections by 2009. Through the end of the year, the Darfur war had internally displaced approximately 2.7 million people. Sudanese authorities have designated four areas as "camps for internally displaced persons" (Omdurman Al-Salam, Wad Al-Bashir, Mayo and Jabal Awlia).

Table 1 Khartoum areas with high concentration of IDPs (Sara Pantuliano, 2011)

Formal IDP camps	Irregular settlements
1) Mandela, Mayo Farm	1) Haj Yousif
2) Qor El-Salam Jebel Awlia	2) Soba area
3) Wad El-Bashir, Omdurman	3) El-Fatih City, Khartoum N.
4) Dar El-Salam, Omdurman	4) Dar El-Salam, Omdurman
	5) Marzoug
	6) Abu-Zeid
	7) Dar El-Salam, Khartoum
	8) El-Bugaah, Omdurman

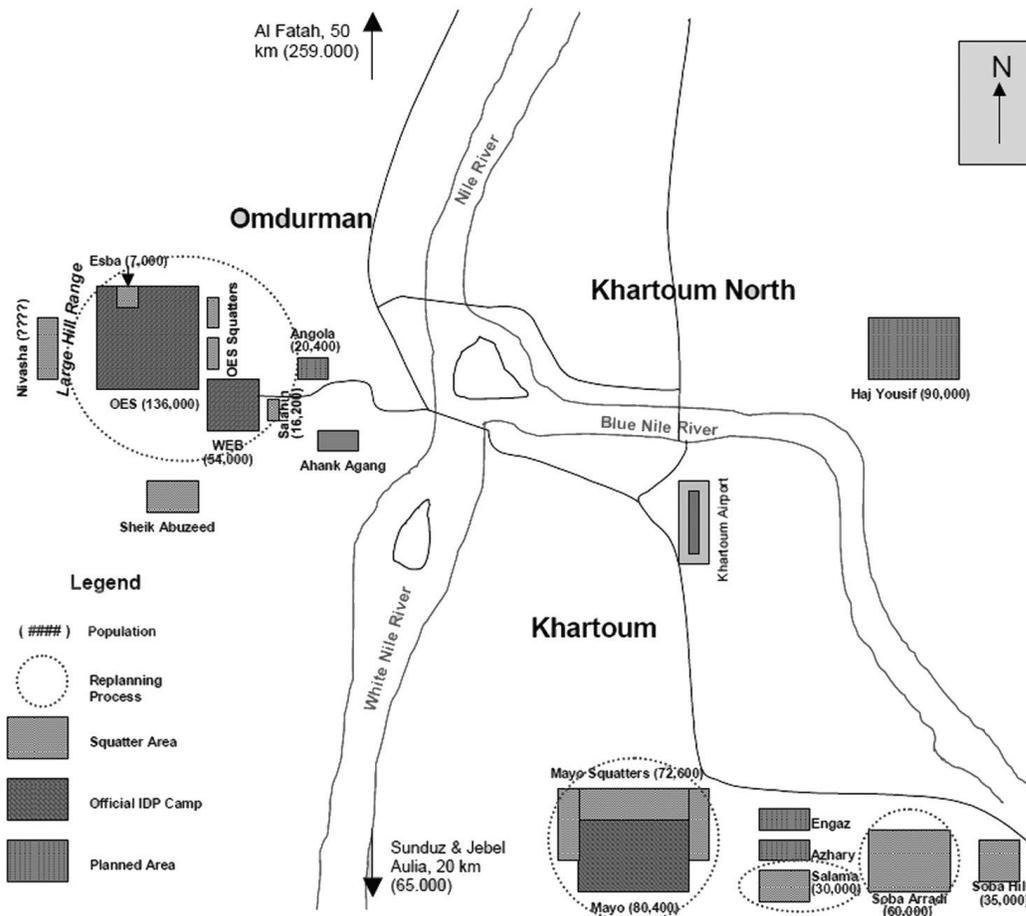


Figure 44 Map of IDP camps in Khartoum State (Sara Pantuliano, 2011)

In recent years, Khartoum's economy has expanded quickly and there has been a boom in service investment. Although Khartoum has experienced economic growth, it has not been evenly distributed, and many of the city's poor and vulnerable populations, including internally displaced people, continue to face severe poverty, poor access to social services, and limited opportunities for sustainable livelihoods. In 2006, the government demolished slums for IDPs. The authorities' demolition and resettlement programs have had serious humanitarian and livelihood consequences for the IDPs. Homes, schools, health clinics, and latrines are frequently destroyed or damaged when IDPs are forcibly relocated. IDPs were given advance notice of planned demolitions in some cases, but not in others, and were awoken as soon as the trucks that came to remove them arrived. After the IDP settlements were demolished, the authorities provided alternative shelter to the IDPs. Authorities provided new land to some IDPs, but they were left to build new shelters on their own. Those who do not receive land plots are often relocated to remote areas in the desert on the outskirts of Khartoum, where they lack access to even the most basic services (Hassan Ahmed Abdel Ati, 2008).

Until 1997, many IDPs in Khartoum's camps and settlements relied on humanitarian aid provided by non-governmental organizations (NGOs). However, in 1997, the government implemented a policy limiting humanitarian aid to IDPs in Khartoum, with the stated goal of encouraging IDPs to become self-sufficient. The new policy was supposed to lead to the integration of IDPs, who would be given their own plots of land. Only the 20-25 percent of internally displaced people deemed at risk received assistance: newly arrived, recently relocated, disabled, elderly, orphans, widows, and pregnant women. NGOs have begun to shift their focus elsewhere, most notably on humanitarian needs in Darfur and the repatriation of displaced South Sudanese. As a result, Khartoum's IDPs were less able to rely on humanitarian aid. CBOs seeking to meet some of the needs of IDPs in Khartoum face obstacles such as a lack of registration and legal recognition by authorities, as well as the fact that donor funding only reaches CBOs through NGOs rather than directly from donors (Internal Displacement Monitoring Centre, 2010).

The process of migration from rural to urban areas deprives rural areas of their most skilled and productive elements, while the main city is overrun with migrant labor with limited job opportunities. The hiring of rural people to fill newly created jobs in cities marked the beginning of significant rural-urban migration. To make it easier to govern the country, the colonialists established administrative centers. Furthermore, for the first time, a modern transportation network with commercial farming was introduced to promote export trade. These economic storms prompted the creation of new cities to serve as points of contact and commercial centers. Since independence, the urban elite's dominance of political life has emphasized the role of cities in the overall process of social and economic development, at the expense of rural areas. Nowadays, the reasons for rural-urban migration vary. Whether it is due to drought, famine, crop failure, underemployment, civil war, or a lack of basic amenities, emigration appears to be the only option available to the rural poor. Unfortunately, in an underdeveloped country like Sudan, the economic base of the cities makes these centers unable to handle the constant influx of large numbers of immigrants (Bushra, 1989).

Drought and civil war affected a significant number of people in various parts of Sudan between 1986 and 1987. People from these places first relocated to the largest cities in their respective regions in search of

security, and then to Khartoum because it is the capital and is under heavy military protection. The main issues for the immigrants themselves were the illegality of the settlements, as well as a lack of schools, health care, and other social services. They were unconcerned about the cost of living, police support, wages, and unemployment in comparison. Instead of adequate basic utilities, infrastructure, and rural development projects, the government proposed establishing settlements districts near large towns and providing them with food. As a result of such policies, an increase in the number of immigrants moved to the national capital and other large cities, hoping that the government would convert many of the informal settlements into legal compounds owned by them (Farouk, 1991).

1.3.3.1 THE PRIMARY REASONS FOR MIGRATING TO KHARTOUM:

1. protection from conflict

Conflict-induced migration has continued for years after the signing of the Comprehensive Peace Agreement in 2005. Darfur's conflict continues, and displaced people continue to live in camps near the region's main towns. People continue to be displaced because of war, political instability, economic imbalance, misguided development policies, and religious practices that have led to protracted conflicts and culminated in one of the world's worst humanitarian crises. The second civil war (1983-2004) allegedly killed two million people, disrupted production systems, and destroyed the material and moral fabric of society in the war zone, so the IDP problem is a result of political failures. What is happening in Darfur right now is similar to the overwhelming chaos and instability that prevailed during the Mahdi rule. One of the main reasons for forced population displacement during the Mahdist period was the policy of compulsory military conscription. People were not only forced to join the Mahdist army, but they were also forced to relocate to Omdurman, the country's capital at the time, to demonstrate their loyalty to the regime. Insecurity caused by civil wars, environmental degradation, and government policies that concentrated services in a few urban areas have all contributed to conflict-induced migration (Assal M. , 2011).

2. Access to infrastructure

Modern growth and great urbanization in the cities of the world led to the industrial revolution, because of the invention of technical means, the use of energy, and the modern society system that attracted large numbers of people who lived in small areas in terms of area and high in terms of density, modern growth, and great urbanization in the cities of the world led to the industrial revolution. Market expansion has resulted in an increase in job opportunities in trade in urban areas, as well as various career paths in the commercial field. The advancement of trade exchange and import methods, as well as the ease of transportation and delivery, increased merchants' desire to work in urban cities, and the presence of a high population density facilitated sales and trade operations (Ali H. M.-H., 2021).

One of the most basic needs of an individual is the availability of services. Good education, good health care, well-being, and access to good housing and other services are among the individual's priorities, and he or she always strives to obtain the best of them. This factor contributes to the attractiveness of urban areas besides Khartoum's easy accessibility, higher wages in the capital, and the appeal of more stable urban jobs to potential migrants. Furthermore, the province has a high proportion of educated people.

Because the goal of education in Sudan is to obtain better employment, such a situation usually leads to migration, because the distribution of such jobs is heavily skewed toward urban and capital areas. Parents also believe that migration is a tool for getting their children off the land and improving their economic and social standing (UN-HABITAT, Khartoum Pro-Poor : From Policy Design To Pilot Implementation Projects, 2010).

3. The accessibility of terrain for the construction of dwellings

Due to their inability to rent in the city and lack of a place to move to secure a legal piece of land, the majority of the displaced people (IDPs) lives in unplanned settlements on the outskirts. The government's decision to authorize these new settlements encouraged people to live on the outskirts. A minority of individuals living in the city settled in tiny groups and unlawfully occupied regions that were either abandoned or planned by the government or private individuals, occasionally purchasing land from immigrants or locals who had previously been occupying the area illegally. The main reasons for living in these locations were an inability to afford to rent a house in the city, a lack of another place to go and the hope of obtaining a legal piece of land, or the closeness of the residential area to places of work because these areas are close to markets, agricultural land, or factories outside the city. Those who have the financial ability have built shelters out of grass, plastic, wool, and wood. People with limited money have relied on tents provided by international organizations (ABDELRAHMAN, 1979).

4. Potential for labor

The immigrants have either permanent or temporary occupations, and those who received an education have the option of working for the government, the army, or the police, as well as engaging in some self-employment. Those who lacked the education or the skills necessary for employment in the government or as skilled employees were forced to find unskilled employment, frequently in low-paying positions as temporary laborers, beggars, peddlers, and street vendors. Since the majority of the displaced are livestock herders or were employed to sell animals in Khartoum and Omdurman, it is not surprising that some of the displaced migrants' job takes place before they arrive in the town. Only a small portion received food or money aid. Immigrants who have been uprooted often get greater assistance from the relatives and friends who came before them. Families work together to provide for their necessities, because many relocated spouses and children work in the city or surrounding marketplaces, while others bring some goods and sell them at home (Sara Pantuliano, 2011).

1.3.4 SQUATTER SETTLEMENTS IN KHARTOUM

The phenomenon of random housing, which imposed itself to suit the needs of the urban poor with low and limited wages, is one of the negative phenomena damaging Khartoum's urban form because of urban poverty. It also seemed to be a solution to the housing dilemma brought on by the years-long delay in development plans and the high cost of rents relative to the meager income return. The constant migration of people to Khartoum for the purpose of receiving an education and finding employment opportunities, the deterioration of security in areas where war is raging, or because of drought and desertification are some of the factors that contributed to the continuous increase in random housing. All these factors had a negative impact on the urban form of Khartoum and caused difficulties and problems in social, economic, security, and health aspects. According to statistics from the United Nations, half of the urban population still resides in housing that does not meet modern-day standards, and half of that number does so in areas and neighborhoods outside of cities that attest to the misery and deprivation that the majority of people experience (2004، جبور).

The literature on informal settlements and the perception of this type of settlement by researchers and local authorities were both negative until the 1970s. Squatters were considered to be of lower social and economic status, and these unlawful colonies were recognized as the primary cause of disease and crime in the city. But in recent years, things have changed as some of the relevant organizations have learned about the advantages of informal settlement. Slums and squatter settlements share a lot in common with low-rise buildings and a lack of social amenities, but there are also big distinctions between the two forms of housing in terms of construction quality, age, and location. However, the people who live in slums and squatter communities are typically poor and marginalized. Squatter colonies have been growing in certain large developing-world cities since the turn of the century, but it wasn't until the advent of manufacturing industries during World War II that these types of settlements spread widely (Douglas Johnson, 2014).

Population growth in most developing countries has stimulated rural-urban migration and the unprecedented growth of shanty towns, owing to improved health care and food production systems, as well as the establishment of manufacturing industries. Rural immigrants, unable to afford housing in cities, came to settle on the outskirts of cities, resulting in vast squatter settlements around major cities in developing countries. A similar study of Khartoum North informal settlements revealed that squatters represent a diverse cross-section of Sudanese society, ranging from cattle herders and farmers to military personnel, doctors and laborer, and university professors (El-Sayed El-Bushra, 1995).

These slums were constructed using materials like cardboard, tin, and jute. The first significant colony started with roughly 100 employees in Khartoum North, adjacent to the industrial zone, in 1962, with squatters constructing their huts as close to their places of employment as possible. This inspired more people to move to the new settlement. The Khartoum region had a greater wave of rural migration in the 1960s, which resulted in a significant growth in informal settlements. The enormous scale of the settlements, which were partnering with thousands of unemployed people, was too much for the government to handle. The slums are not even given the most basic services since the authorities view

them as illegal communities. Slum dwellers were occupying both public and private lands, which inadvertently hampered the organic growth of urban areas. This illegal seizure, on the other hand, is against the law. It causes delays in the implementation of urban development plans because those lands are typically reserved for future urban expansion. By providing residential and commercial facilities, as well as public spaces, for instance. Some of them also seized agricultural lands, and some built their homes in uninhabitable places, such as areas that were regularly flooded by Nile waters, posing a serious threat to them during the rains and floods (Bannaga, 1996).

The map shows the distribution of Squatter settlements in Khartoum city.

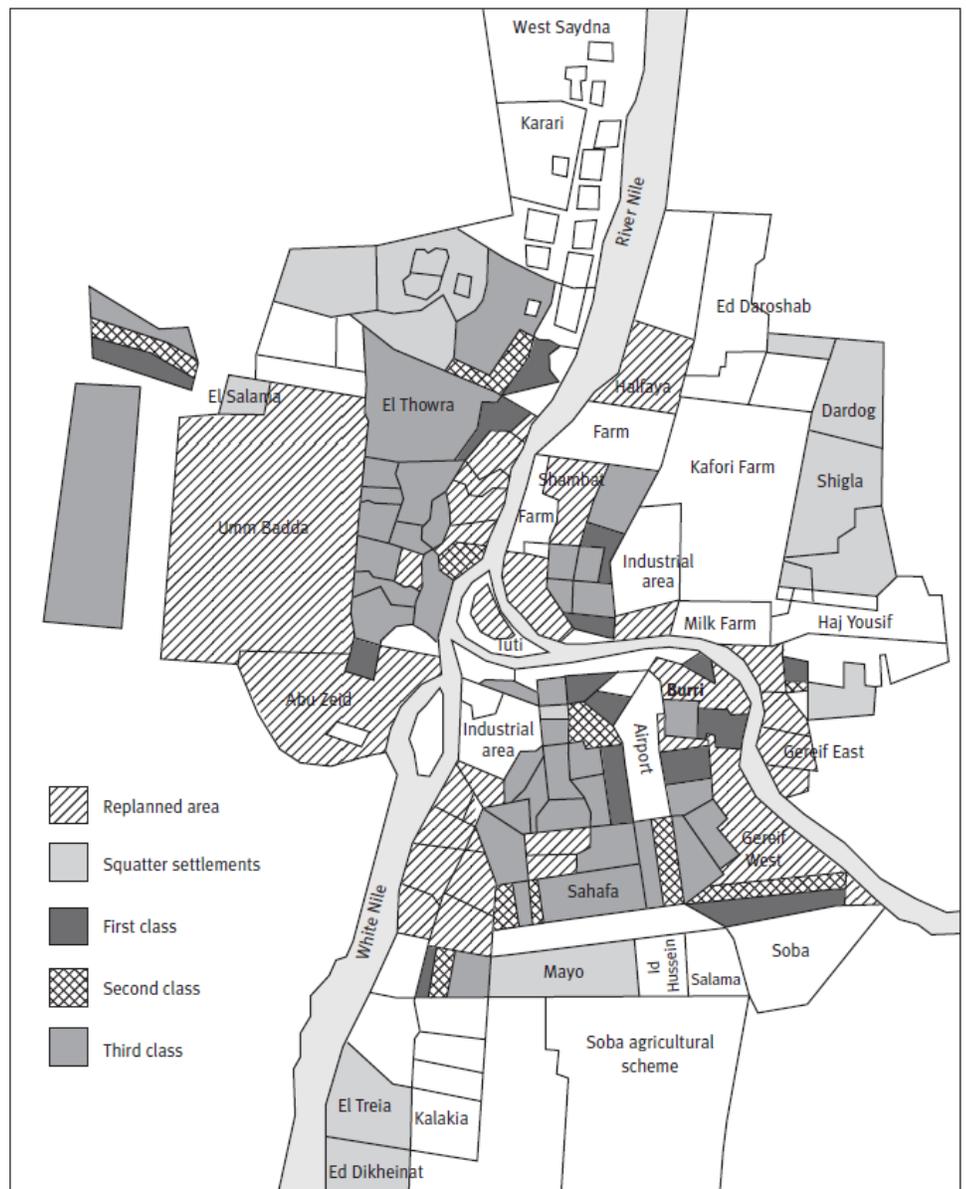


Figure 45 Khartoum Land use (Sara Pantuliano, 2011)

02 Public spaces and METHODOLOGY

2.1 RIGHT TO PUBLIC SPACES

2.1.1 DEFINITION OF PUBLIC SPACE

Since the quality of urban life is important for city growth, cities desire to enhance the welfare of their communities by providing suitable street spaces, green areas, parks, and other public places. Public spaces are multifunctional destinations that encourage social interaction and economic exchange among various groups of people. One of the responsibilities of urban planning is the design and organization of these public spaces because it is one of the primary resources for Urban development (Habitat, 2015).

According to architect Pietro Garau (Garau, 2017) from the Biennial of Public Space "Charter of Public Space" the definition of public spaces is "Public spaces are all places publicly owned or of public use, accessible and enjoyable by all for free and without a profit motive. Each public space has its own spatial, historic, environmental, social, and economic features."

- **Public Space Classifications**

As it is a gateway to several interactions and events that are shared by everyone, public space, and open spaces represent a large part of the city urban fabric and shows the extent of integration and urbanization of its citizens, so it is important to analyze and understand what the types and function of each space. The classification of urban spaces is useful in developing public space policy and implementing an organized plan to provide activities related to urban spaces. Furthermore, it is a crucial tool for policymakers and planners to employ in developing comprehensive development plans and open space initiatives (Alzahrani, 2022).

Initially, the types of public spaces will be addressed from the perspective of the United Nations in the Global Public Space Toolkit (Habitat, 2015), which presented six different types of public space, as follows:

1. **Streets as Public Spaces**

The following below are public spaces that are owned by the public and are always open to the public and without a fee. They can also accommodate festival events such as open-air markets, performances, demonstrations, and activities in the informal sector:

- Streets, avenues, and boulevards
- Squares and plazas
- Pavements
- Passages and galleries
- Bicycle paths

2. **Public Open Spaces**

They are public spaces that are likewise open to the public, free of charge, and owned by the public, but they are only accessible during daylight hours they include:

- Parks
- Gardens
- Playgrounds
- Public beaches
- Riverbanks and waterfronts

3. Public Urban Facilities

High-maintenance public facilities that are also publicly owned, freely accessible, and frequently only open during business hours are included in this category, such as:

- Public libraries
- Civic/community centers
- Municipal markets
- Public sports facilities

4. The 'Space of the Public'.

A public sector audience that contributes to the common good and gives the government power to act on their behalf uses public space. As a result, public space as democracy might get under threat.

5. The city itself.

Everyone has a "Right to the City" (Lefebvre, 1968) since the city is a space and an expression of a physical and symbolic place for everyone.

6. Cyberspace.

Cyberspace is a public space because it facilitates meetings, interaction, and communication, as well as generates new opportunities for virtual encounters and exchanges that might influence "Real space" interactions.

Furthermore, Carmona proposed a new classification of public spaces based on purpose, perception, and ownership to distinguish between different forms of space, which he grouped into four groups (positive, negative, ambiguous, and privacy) (Carmona, 2010). The groups formed 20 different types of urban space. Carmona's categorization contributes to a better understanding of the relationships between different types of public spaces and their use and management to improve the development of quality urban areas.

Table 2 : Classification of Urban Spaces According to Carmona (Alzahrani, 2022),p.5

Space Type		Distinguishing characteristics	Examples
Positive spaces	1. Natural / semi-natural urban space	Natural and semi-natural features within urban areas typically, under state ownership	Rivers, natural features, seafronts, canals
	2. Civic space	The traditional forms of urban space, open and available to all and catering for a wide variety of functions	Streets, squares, promenades
	3. Public open space	Managed open space, typically green and available and open to all, even if temporally controlled	Parks, gardens, commons, urban forest, cemeteries
Negative spaces	1. Movement space	Space dominated by movement's needs, largely for motorized transportation	Main roads, motorways, railways, underpasses
	2. Service space	Space dominated by modern servicing requirements needs	Car parks, service yards
	3. Left over space	Space left over after development, often designed without function	SLOAP' (space left over after planning), Modernist open space
	4. Undefined space	Undeveloped space, either abandoned or awaiting redevelopment	Redevelopment space, abandoned space, transit space
	1. Interchange space	Transport stops and interchanges, whether internal or external	Metros, bus interchanges, railway stations, bus / tram stops
	2. Public 'private' space	Seemingly public external space, in fact privately owned and to greater or lesser degrees controlled	Privately owned 'civic' space, business parks, church grounds

Ambiguous space	3. Conspicuous space	Public spaces designed to make strangers feel conspicuous and, potentially unwelcome	Cul-de-sacs, dummy gated enclaves	
	4. Internalized 'public' space	Formally public and external uses, internalized and, often, privatized	Shopping / leisure malls, introspective mega structures	
	5. Retail space	Privately owned but publicly accessible exchange spaces	Shops, covered markets, petrol stations	
	6. Third place spaces	Semi - public meeting and social places, public and private	Cafes, restaurants, libraries, town halls, religious buildings	
	7. Private 'public' space	Publicly owned, but visually public space	Institutional grounds, housing estates, university campuses	
	8. Visible private space	Physically private, but visually public space	Front gardens, allotments gated squares	
	9. Interface spaces	Physically demarked but publicly accessible interfaces between public and private space	Steet cafes, private pavement space	
	10. User selecting spaces	Spaces for selected groups, determined (and sometimes controlled) by age or activity	Skateparks, playgrounds, sports fields / grounds / courses	
	Private spaces	1. Private open space	Physically private open space	Urban agricultural remnants, private woodlands
		2. External space	Physically private spaces, grounds and gardens	Gated streets /enclaves, private gardens, private sports clubs, parking courts
3. Internal space		Private or business space	Offices, houses, etc.	

Placemaking

This scenario illustrates the theories of the "PPS" Project for Public Spaces. PPS is an American non-profit organization formed in 1975 by urban planner Fred Kent. Its mission is to construct and maintain public

areas. Planning and design in the neighborhood are two of PPS's top concerns. This is done using William H. Whyte's "Street Life Project" techniques, which consist of looking at, listening to, and asking questions of people in a community to discover their desires and needs (PPS, 2022).

Power of 10+

People's contribution to the creation of public spaces helps to remake and develop those areas, as well as strengthen the bond between people and the places they share. As a response, PPS introduced the power of 10, which stated that there should be at least ten activities carried out in the public space to assure its success and continuity in attracting people, and these activities are what give the space its particularity.

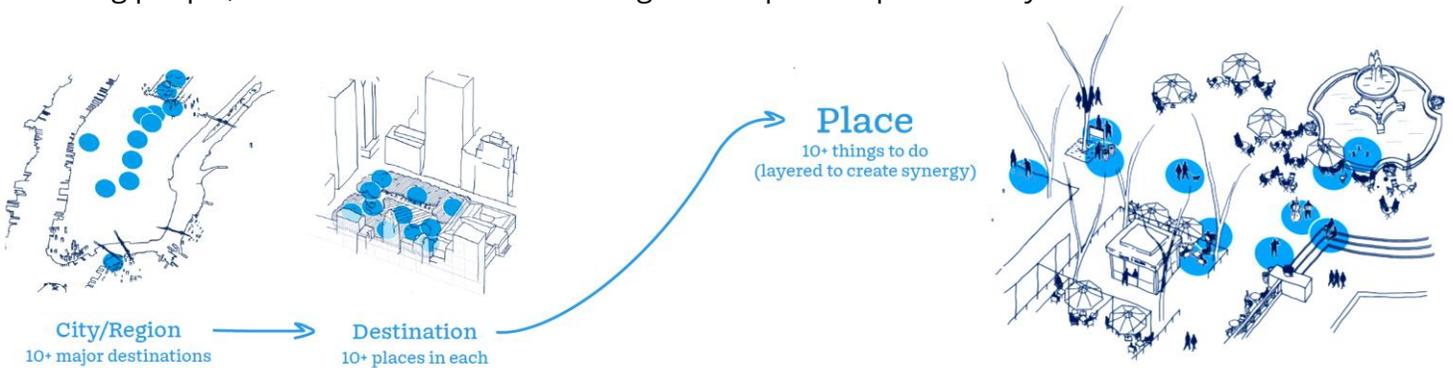
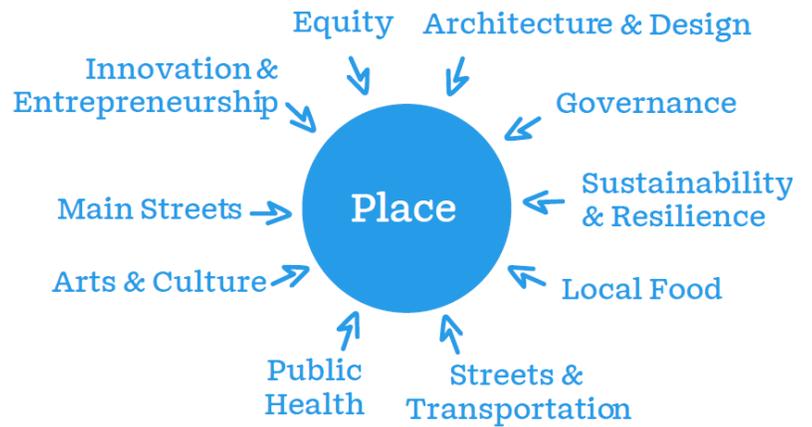


Figure 46 The Power of 10 concept (PPS, 2022)

Most great places, whether a major plaza, downtown, or an average neighborhood park, have four essential features, according to (PPS, 2022):

Access & Linkages

By studying the connection between the location and its surroundings, it is possible to determine whether the location is easily accessible and if the space is surrounded by many facilities that make the location more fascinating and safer.

Comfort and Image

The safety, cleanliness, and availability of seating places are among the characteristics that contribute to the place's comfort and attractiveness.

Uses and Activities

One of the basic requirements for making a location great is the availability of activities. It gives people a reason to visit the area. When there is nothing enjoyable to do, the space will remain abandoned. This is the best way to know whether public space is working or not.

Sociability

It is one of the most difficult indicators to accomplish, since when a place becomes a favorite for people to meet friends and feel comfortable engaging with others, it indicates that the space is remarkable.

What Makes a Great Place?

Project
for Public
Spaces

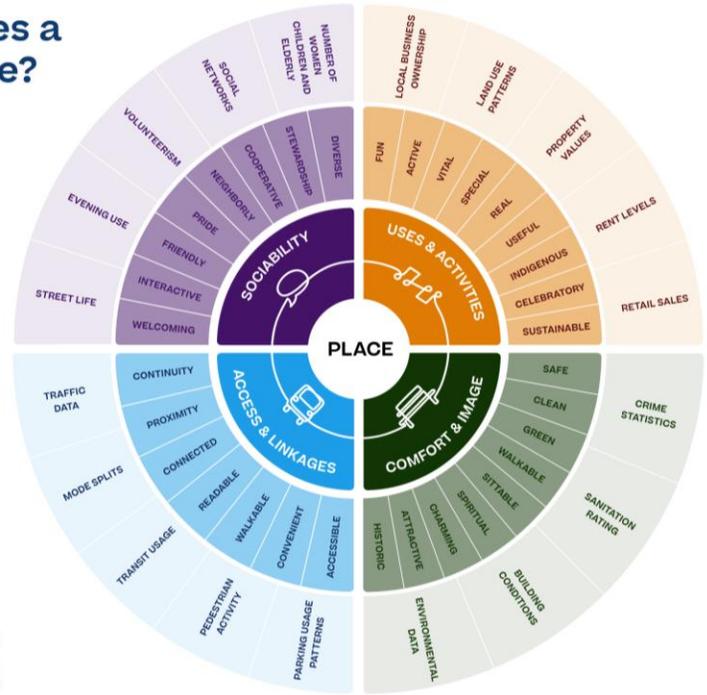


Figure 47 What makes a Great place (PPS, 2022)

Table 3: Table of questions used to evaluate if the place is great, adopted by Author (PPS, 2022)

Indicator	Questions
Access & Linkages	<ul style="list-style-type: none"> • Can you see the space from a distance? Is its interior visible from the outside? • Is there a good connection between this place and adjacent buildings? Or is it surrounded by blank walls, surface parking lots, windowless buildings, or any other elements that discourage people from entering the space? • Do occupants of adjacent buildings use the space? • Can people easily walk there? Or are they intimidated by heavy traffic or bleak streetscapes? • Do sidewalks lead to and from the adjacent areas? • Does the space function well for people with disabilities and other special needs? • Do the paths throughout space take people where they actually want to go? • Can people use a variety of transportation options—bus, train, car, and bicycle—to reach the place?
Comfort & Image	<ul style="list-style-type: none"> • Does the place make a good first impression? • Are there as many women as men? • Are there enough places to sit? Are seats conveniently located? Do people have a choice of places to sit, either in the sun or shade? • Are spaces clean and free of litter? Who is responsible for maintenance? • Does the area feel safe? Are there security personnel present? If so, what do these people do? When are they on duty? • Are people taking pictures? Are there many photo opportunities available? • Do vehicles dominate pedestrian use of the space, or prevent them from easily getting to the space?
Uses & Activities	<ul style="list-style-type: none"> • Are people using the space, or is it empty? • Is it used by people of different ages? • How many different types of activities are occurring at one time—people walking, eating, playing baseball, chess, relaxing, reading? • Which parts of the space are used, and which are not? • Is there a management presence, or can you identify anyone in charge of the space?

Sociability	<ul style="list-style-type: none"> • Is this a place where you would choose to meet your friends? Are others meeting friends here? • Are people in groups? Are they talking with one another? Do they talk to people in other groups? • Do people seem to know each other by face or by name? • Do people bring their friends and relatives to see the place? Do they point to its features with pride? • Are people smiling? Do people make regular eye contact with each other? • Do many people use the place frequently? • Does the mix of ages and ethnic groups generally reflect the community at large? • Do people tend to pick up litter when they see it?
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The United Nations' Toolkit (Habitat, 2015) discusses 11 arguments that visualize the amount of effectiveness and significance of public space if it is improved and applied sustainably in the city.

The arguments are the following:

- a. Public Spaces promote income, investment, and wealth creation.
- b. Public Spaces enhance environmental sustainability.
- c. Public Spaces promote equity and social inclusion.
- d. Public Spaces offer ideal opportunities to generate citizen involvement.
- e. Public Space increases transportation efficiency
- f. Public Space as the banner of urban civility
- g. Public Spaces are our urban commons.
- h. Public Space improves public health.
- i. Public Space enhances urban safety.
- j. Public Spaces are tools for gender and age friendly cities.
- k. Public Spaces make for great cities.

By focusing on the first four arguments, we could imagine the extent of public spaces efficiency in modernizing societies and cities, as well as enhancing people's quality of life.

1. Public Spaces as Generators of Income, Investment and Wealth Creation

By allocating enough resources for construction and management, public space can be made sustainable. The benefits of public space are significant, but they are decreased when informal businesses, such as traditional local markets, are established. The state can regulate this informal economic expansion in organized and legitimate, as it would create possibilities for earning a living, particularly in poorer cities.

2. Public Spaces enhance of Environmental Sustainability

Open spaces, green playgrounds, and parks serve important environmental services, especially when they are widely spread in cities. Green networks created by a well-planned public space system can rebuild ecosystems, maintain ecological connectedness, and promote biodiversity in metropolitan environments. All of this contributes to climate mitigation and adaptation, as well as the city's suitability to face many of the challenges created by the climate.

3. Public Spaces as Promoters of Equity and Social Inclusion

Promoting social equality, and allowing all people to participate in civic life, decreases social segregation and promotes the involvement and participation of all social groups in public life. Social inclusion creates an environment in which people feel at ease in their surroundings and are free to follow their various interests. Residents are increasingly seeking appealing and enjoyable public areas, especially if their residences and immediate environs are in an area lacking fundamental urban infrastructure. The widespread availability of public areas and efficient public services should assist in mitigating these obstacles.

4. Public Spaces as Opportunities for Generating Citizen Involvement

Civil society participation in city planning is a crucial instrument for ensuring the sustainability of urban areas, improving the design of urban projects, and incorporating public concerns into development plans. "Urban stewardship" is a process that involves residents in high-density metropolitan areas performing civic stewardship on public or semi-public properties. People of all ages participate in initiatives as volunteers and work in locations that are not their own. Running parks, restoring open areas, putting trees in the streets, and creating communal gardens are some examples of this.

2.2 METHODOLOGY APPROACH

In the previous chapter, I discussed the most significant obstacles to Khartoum's urban development. The analysis of public space seeks to evaluate and explain how these obstacles prevented the establishment of Khartoum's public space by highlighting some types and features of public space and determining the extent of its sustainability as well as accessibility and enjoyment. And how the local community handles it civilly so that it can eventually find appropriate logical answers that ensure the rights of everyone in the city.

By collecting information from various sources and through site observations and interviewing relevant users, all qualitative information was collected to accomplish for the study of public spaces in Khartoum.

This research content seeks to accomplish the following:

1. **Analysis** the different types of public places in Khartoum State, how they are formed, what environmental, cultural, and social factors helped to shape them, and how society contributed to the creation of public places.

This was done by following the Carmona classification of urban spaces, where it became clear that the public spaces chosen to be analyzed in Khartoum fall into eight types which are shown in the following table:

SPACE TYPE

POSITIVE SPACES	Civic space
	Public open space
NEGATIVE SPACE	Movement space
	Undefined space
AMBIGUOUS SPACE	Public "private" space
	Third place space
	Visible private space
PRIVATE SPACE	Interface space
	External-private space

2. **Examine** and analyze numerous public spaces in the city and neighborhood from an urban standpoint using observations, site surveys, and interviews applying "What Makes a Place Great" methodology by determining whether or not the four Indicators (**Access & Linkage, Comfort &**

Image, Uses & activates and Sociability) are present in the selected public areas, using evaluating



tool based

on the questions established by "PPS" to estimate the level of the place's quality.

Also to check if these spaces complete the "power of ten" activities that were put up by "PPS" to assure the continuity of the places.

3. Choose specific **case studies** to apply 1&2 (analysis and examine) approach on them. The case studies are the following:

1. AFRICA STREET GARDENS

It is a modern private-public place and one of the city's nicest green public spaces in a city where most of its public spaces are bare sandy soil. It was a public space open from 2003 to the public, but accessibility was later determined by the public authority in 2016. It was a public space where the tea women practiced their business, to serve tea and coffee before it was fenced and closed. After its closure the tea ladies lost their public space, so they exploited their right to the public space behind it (the street) and occupied it. Because of this activity, there were fewer visitors to the garden, as the park requires entry

fees that are considered expensive to the majority of the poor population, so people discovered that it is better to concentrate to the public space behind it, as it contains seating places, and open all the day to all people, and the cost of coffee and tea is substantially less than the cost of garden entry. By studying this case, it is possible to conclude that public space is not a field for auction, and that limiting it to a specific community group will progressively lead to its abandonment by the wider community, on the contrary public space is a right for all community groups.

2. AIRPORT NEIGHBORHOOD STREET

This case study is a typical street, it is relevant to describe how society reshapes public spaces based on its social and environmental needs. Streets are certainly a type of public space, but this street is evidence of the existence of one of the most important modern phenomena that have emerged in Khartoum due to internal displacement: the phenomenon of “Tea-ladies”, who are street vendors who sell tea and coffee. The Tea-ladies Phenomenon is local commerce carried out by women who work as street vendors selling tea and coffee in the open public spaces by gathering set of chairs for customers and serve tea in open air. However, it is important to note that this activity reshapes public spaces based on social/commercial relations in a context characterized by a lack of interest in design principles. This activity contributed to the rehabilitation of neglected and unrecognized urban open places, as well as to population unity. This activity ensures society segments their right in the public space. The activity forces itself on the space and shapes it: in this case the public space is the street, where tea ladies imposed their activity on that space and adapted to the flow of cars through the gathering of people. The urban community and city eventually adjusted to this phenomenon. By studying this scenario, it is possible to understand the significance of including the community in the construction of public spaces that meet its demands.

3. ALHADARI SQUARE

It is a square created in the ancient urban area of Khartoum, as it was designed by the city's first colonialists in the 1950s, considering all the climatic and urban changes that occurred in the city. The square was not harmed, nor was its function altered, as was the case with many other public areas in Khartoum, the reason is the region's strong social cohesion, as most of the buildings there are inherited through generations, and most properties of society's elite. It's a little open public space in the middle of a small residential square. Nothing noteworthy differentiates it except that it serves as a model for how to build public areas inside neighborhoods. Like other areas, the space had been developed and renovated by the locals themselves. It is feasible to learn how to construct a magnificent public space for the districts of Khartoum by analyzing this case.

To better understand public spaces in Khartoum, three of the eight previously described types of public spaces were carefully investigated by:

- Analysis space evolution during time, accessibility, and its general features.

- Study the activities that are likely to be held in it and track the activity in the different periods to know when the space is used effectively.
- SWOT analysis
- Answer the questions of PPS methodology what makes a place great by creating an evaluation analysis using the table below. The indicators are qualitative and are based on the observations and study of the author.

Indicator	Place	Good	Fair	Need improve	Poor
Access & Linkage	Accessibility				
	surrounding connection				
	Walkability				
	Infrastructure condition				
Comfort & Image	Convenient				
	landscape				
	Sittable				
	shade				
	clean / maintenance				
	Safety				
Uses & activates	Daytime use				
	Local Business				
	Host activities				
	Management				
Sociability	Social gathering				
	Neighborly				
	Evening use				
	Diversity				

2.3 TERRITORIAL IDENTITY OF KHARTOUM PUBLIC SPACES

To illustrate the types of public spaces in Khartoum, we must consider how the city's public spaces evolved, and the environmental, social, and cultural influences on them.

Khartoum is divided into three cities: Khartoum, Omdurman, and Khartoum North. Khartoum has more green spaces than the other two cities because it was designed to be the administrative capital, with all important government buildings such as the Republican Palace, ministries, and most important landmarks such as the international airport and the Sudan National Museum and University of Khartoum. On the contrary, Omdurman suffers from overcrowding and urban congestion, which has resulted in a shortage of available green areas and an emphasis on land exploitation for housing and other purposes. Because

Khartoum North has the most industrial area of the three cities, its urban planning and urban expansion have been centered on developing industries, warehouses, and further development. Regardless of these differences, all cities have a certain amount of greenery and open space.



Figure 48 Khartoum Urban Terrain 2023 ,By Abd Almohimen Sayed
<https://twitter.com/abd00oo77/status/1659954594598854657/photo/1>



Figure 50 Omdurman Urban Terrain, 2023 ,By Abd Almohimen Sayed
<https://twitter.com/abd00oo77/status/1664945320705359872/photo/2>



Figure 49 Khartoum Bahri Urban Terrain , 2023 ,By Abd Almohimen Sayed
<https://twitter.com/abd00oo77/status/1665712811324891136/photo/3>

2.3.1 REGIONAL ENVIRONMENTAL CONDITION

Climate change in Sudan constitutes a risk and makes the area at risk for desertification because of the rise in temperature, increase in humidity and evaporation, and decrease in precipitation. More than 80% of the areas in the Nile Basin are now dry due to these factors. In addition, the excessive land demand reduced the capacity of the land and caused soil erosion, particularly in the countryside, which increased rural-urban migration to survive (Egemi, 2017).

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	22.7 °C (72.8 °F)	25.5 °C (78 °F)	28.3 °C (82.9 °F)	32.1 °C (89.7 °F)	34.3 °C (93.8 °F)	34.2 °C (93.6 °F)	32.4 °C (90.4 °F)	31.6 °C (88.8 °F)	33.1 °C (91.6 °F)	32.4 °C (90.4 °F)	27.9 °C (82.1 °F)	23.9 °C (75.1 °F)
Min. Temperature °C (°F)	15.4 °C (59.6 °F)	17.8 °C (64 °F)	20 °C (68 °F)	23.5 °C (74.3 °F)	26.5 °C (79.6 °F)	27.1 °C (80.7 °F)	26.6 °C (79.9 °F)	26 °C (78.8 °F)	26.6 °C (79.9 °F)	25.8 °C (78 °F)	20.7 °C (69.3 °F)	16.9 °C (62.5 °F)
Max. Temperature °C (°F)	30 °C (86 °F)	33.2 °C (91.7 °F)	36 °C (96.8 °F)	39.3 °C (102.8 °F)	40.8 °C (105.5 °F)	40.3 °C (104.6 °F)	37.9 °C (100.3 °F)	37 °C (98.6 °F)	38.8 °C (101.9 °F)	38.3 °C (100.9 °F)	34.7 °C (94.4 °F)	31 °C (87.9 °F)
Precipitation / Rainfall mm (in)	0 (0)	0 (0)	0 (0)	0 (0)	3 (0)	3 (0)	22 (0)	27 (1)	11 (0)	4 (0)	0 (0)	0 (0)
Humidity(%)	25%	19%	13%	12%	14%	21%	38%	47%	34%	24%	25%	30%
Rainy days (d)	0	0	0	0	1	1	4	4	2	1	0	0
avg. Sun hours (hours)	10.2	10.5	10.8	11.2	11.6	11.7	11.5	11.1	11.0	10.6	10.3	10.1

Figure 51 weather by month/weather averages Khartoum Data: 1991 – 2021, <https://en.climate-data.org/africa/sudan/al-khartoum/khartoum-549/>

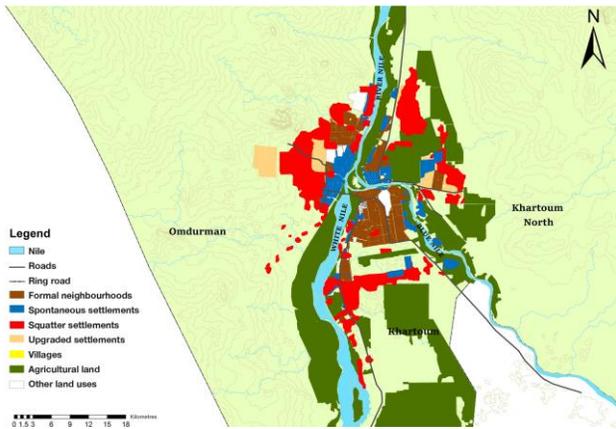


Figure 52 Urban growth and transformation of settlement types in Khartoum 1990 (Enrico Ille, 2020)

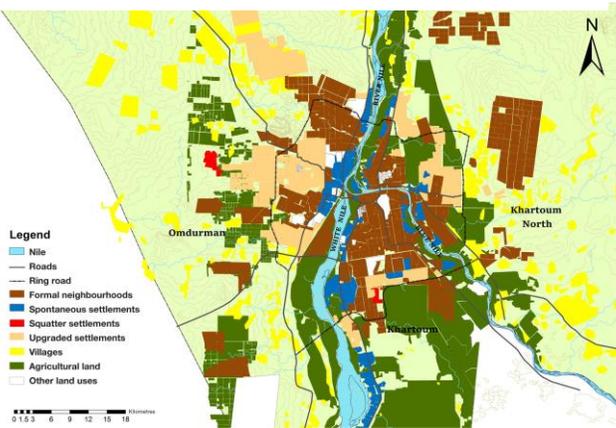


Figure 54 Urban growth and transformation of settlement types in Khartoum 1990 (Enrico Ille, 2020)

In addition to desertification caused by climate change, poor land management has increased the level of desertification within the urban fabric. As mentioned in the previous chapter, urban migration has resulted in fast urban expansion and population rise. This growth raised the demand for housing and infrastructure. As a result, residential buildings, marketplaces, factories, and other facilities have replaced the landscape, leaving the city vulnerable to pollution, desertification, and water scarcity.

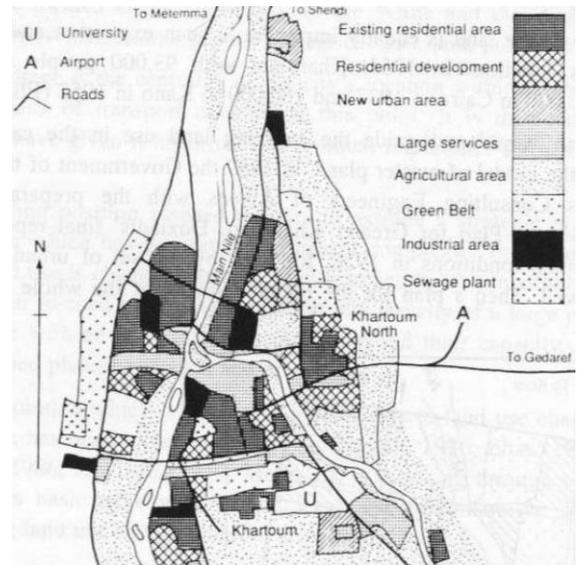


Figure 53: Regional Plan and Master Plan of the Three Towns - Beautification Programme of Khartoum the Physical Survey. Rome, MEFIT Consultants.1974 (Hafazalla, *The urban development planning of Greater Khartoum: coping with urban dynamics*, 2008)

African Sahel and Sahara countries joined together to build a green wall connecting 20 countries to combat desertification and land degradation. The purpose was to restore natural resources and environmental systems (FAO, 2015).

The plan shows the distribution of landscape and green spaces in Khartoum.

Legend

- Terrain
- Green areas
- River
- Schools
- Hospitals
- Cemeteries

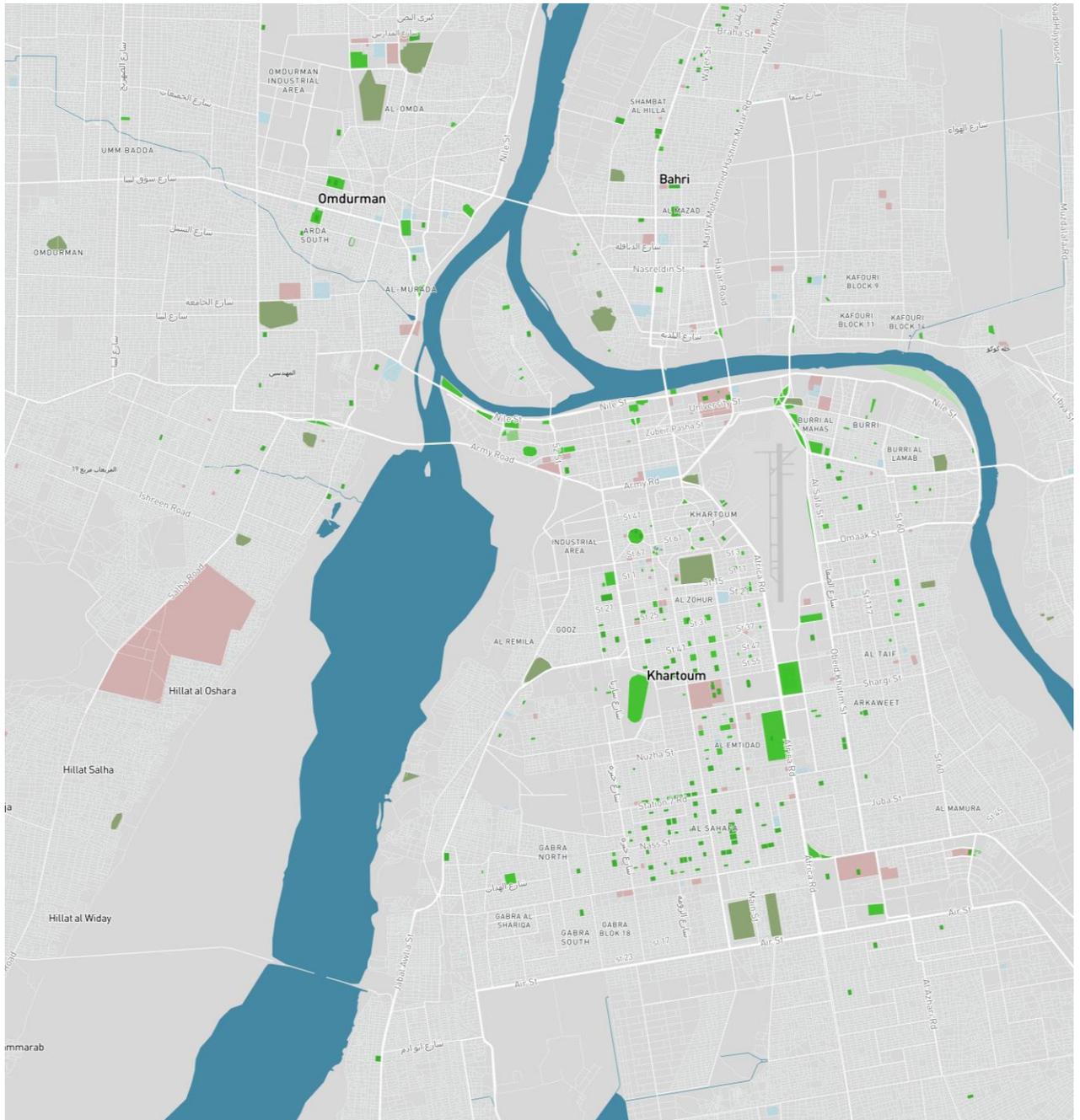


Figure 55: The plan shows the distribution of landscape and green spaces in Khartoum ,2023 , By Author

A look at the signs of aridity of public spaces around Khartoum:

Despite being aware of the region's climate conditions, decision-makers do not seek to develop sustainable solutions, such as reforestation, that might reduce the severity of the problem. The following observational investigation can reveal the extent of the land's aggravation, which affects the ecological situation. After accepting that the municipality did not and would not participate in the area's environmental state, several residents planted trees in their homes or raised funds to plant trees in public places in their neighborhood.

A main street devoid of greenery and basic design principles



Figure 56 Khartoum, 2023 By Author

A public space near a school, the school used as a car park



Figure 57 Al-Ma'mora neighborhood Khartoum, 2023 ,By Author

Neglected public space.



Figure 58 Alamarat, Khartoum, 2023 ,By Author

A public space in a residential neighborhood that was neglected by the authorities has been used as a landfill for construction waste.



Figure 59 Almujaheen neighborhood, 2023, By Author

A public playground within the responsibility of private soccer fields, developers declined to repair it due to the lack of appropriate government funds.



Figure 60 Sudan Olympic Academy, Khartoum, 2023, By Author

There are some signs of greenery in some private public spaces, those located in first-class neighborhoods, or near government institutions.

A public place in a first-class residential area created by the residents without the collaboration of the municipality.



Figure 61 Garden City neighborhood, Khartoum ,2023, By Author

Private soccer fields among public playgrounds, have entry fees.



Figure 62 Sudan Olympic Academy, Khartoum, , 2023, By Author

2.3.2 PUBLIC SPACES CHARACTERISTICS IN KHARTOUM

Public spaces represent one of the fundamentals of the metropolitan city, and they are the only outlet available to all parts of society, serving as a hub for social gatherings and interpersonal connection. It also improves the quality of life, making cities more appealing places to live, and creates a sense of equality in society by allowing everyone to participate in the space. It also plays an important part in environmental sustainability and the enhancement of the city's overall landscape. Sudan suffers from essential problems such as extreme temperatures, poverty, and a lack of Basic needs and services. As a result, enjoying public spaces is regarded as a privilege reserved for those with financial means. There is no culture of enjoying public spaces by society in all states and in Khartoum in general since public spaces are not qualified and attractive to people, most of them have been abandoned, and alternative space has been used to be new public spaces such as cafes and restaurants.

One of the most important reasons for the unavailability or development of public spaces is the rapid increase in population, which led to the accumulation of buildings. The corrupt government, for 30 years, has acquired land and worked repeatedly to change its urban function. The government did not care about effective urban planning or infrastructure, yet it traded public spaces and considered them a valuable catch for profit and to take advantage of it, so it worked to sell public places to individuals and companies, and it did not care to oblige new buyers to maintain the basic function of the land as a public space. Therefore, public places became either residence, private schools, malls, towers, shops, and others.

Despite this, there are public places, but most of them are barren ground have no signs of any Natural features. Residents attempted to repair and develop their public spaces around the neighborhood by collecting donations, but there is no equality for this development because the city and neighborhoods are subject to the law of classifying lands according to socioeconomic standing (First, second, and third class). As a result, the beautiful public areas are found in first-class communities. Despite all of this progress, public space still lacks infrastructure. Following the fall of the government in the 2019 revolution, a local committee known as the Empowerment Removal committee was formed. This body has the task of importing government-controlled or sold public facilities. The committee reclaimed several public places and gardens that had been purposefully locked and closed to be sold later (Bahreldin I. Z., 2022). Because of the difficulty in collecting sufficient finance, as well as the numerous wars and government coups, the reclaimed public places are currently under construction.

The images illustrate the land-use and the distribution of public spaces changed over a 20-year period in Khartoum's Al-Ma'mora district. As can see how the overpopulation that resulted in the disappearance of public spaces and their replacement with residential structures.



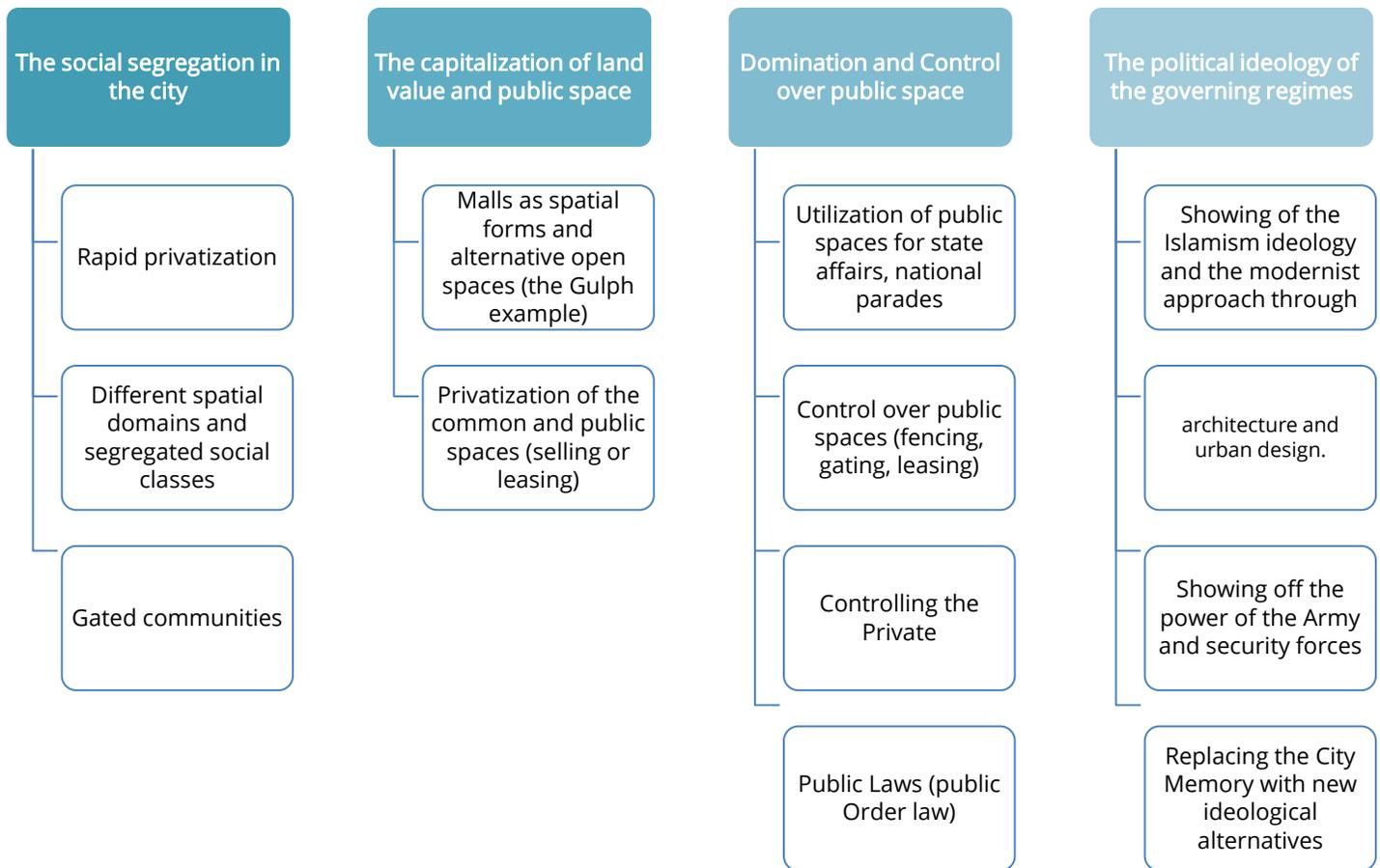
Figure 64 : Al-Ma'mora , Khartoum ,2003



Figure 63 : Al-Ma'mora ,Khartoum ,2023

According to (Bahreldin I. Z., 2021) common features of public space production in Khartoum are:

Table 4: common features of public space production in Khartoum, (Bahreldin I. Z., 2021), p.5



The table below is an analysis of some of the common spaces located around Khartoum based on site observations and questionnaires and relevant recommendations, in an attempt to categorize them using Carmona's classifications of urban spaces. The table have been reproducing by (Alzahrani, 2022)text, shows the types of spaces and the most important criteria that define them:

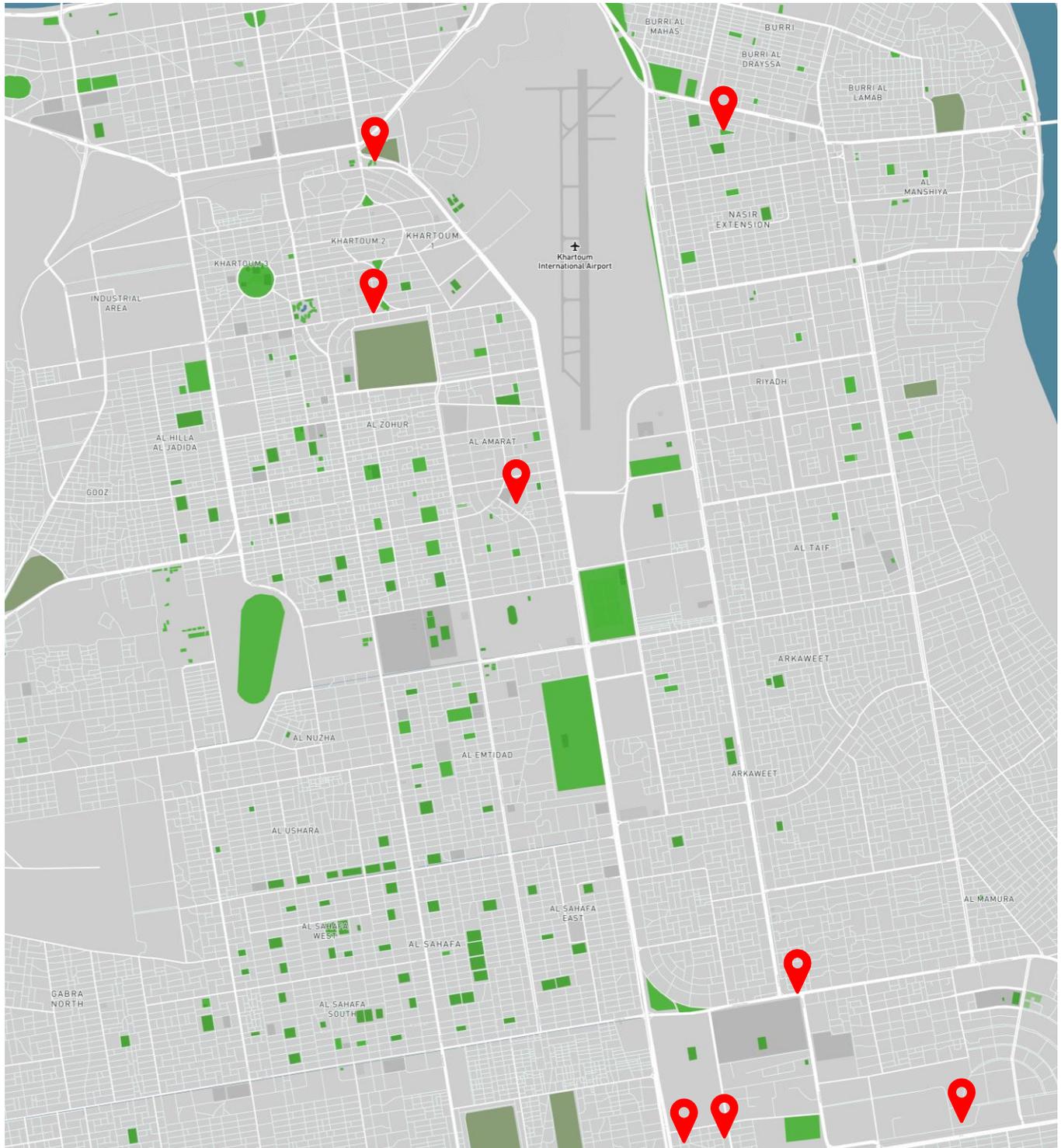


Figure 65 : The plan shows the spaces illustrated in table locations , Khartoum,2023,By Author

Table 5: Types of spaces in Khartoum, adopted from (Alzahrani, 2022), By Author

Space Type	Distinguishing characteristics	Examples
<p>Civic Space</p>	<p>This type of area is designated as a public space by the municipality; it is a public property that is constantly open and can host any public activity. We see the presence of football players. This area is within the neighborhood's perimeter, the neighborhood is second-class, the state did not care about developing the area, so it is arid and there are no benches or places to put waste, so we notice some garbage thrown on the ground, and there are some trees surrounding it that some residents planted by collecting donations from neighborhood residents. Residents attempted to request development from the municipality, but their requests were ignored.</p>	 <p>Figure 66 Amaraat, Khartoum ,2023, By Author</p>
<p>Public open space</p>	<p>A public area designed by the authorities to function as an open public space, but it was developed and planted by the people of the neighborhood because it is in a first-class residential neighborhood, and the residents are somewhat able to develop it by collecting donations. There are no facilities such as benches, waste dumps, or irrigation connections, therefore the residents hired specific persons to water it daily in the traditional manner and for daily care and cleanliness of the street.</p>	 <p>Figure 67 Garden City , Khartoum ,2023, By Author</p>
<p>Movement space</p>	<p>It is a negative space that is used for car movement. Although there was a police station nearby, street vendors illegally exploited it and narrowed the space for car movement to display their products, but they did not appear interested in holding the sellers accountable because the locale's police take fees from them to continue displaying their goods.</p>	 <p>Figure 68 Madani St, Khartoum ,2023, By Author</p>

<p>Undefined space</p>	<p>There are several spaces in the city with ambiguous purposes, some of which have been used positively by residents, while others have been mistreated and pose a threat to the city's urban fabric.</p> <p>This area has an uncertain role; it is situated on a street corner in one of the residential neighborhoods, yet it has the potential to become a residential space in the future. As a result of the government's abandonment, some squatters took advantage of the situation and erected temporary dwellings, while other convert it to a landfill.</p>	 <p>Figure 69 Alazhari , Khartoum ,2023, By Author</p>
<p>Public private space</p>	<p>This is a private public place developed on an open public space, it is fenced and only open during certain hours of the day. This space was neither purchased nor rented from the authorities; but, because it is in a first-class neighborhood, the nearby households obtained permission from the municipality to renovate it. It hosts public activities, although it appears to be accessible to the whole public, it is only available to those who implemented it.</p>	 <p>Figure 70 Almujaheen, Khartoum ,2023, By Author</p>
<p>Third place spaces</p>	<p>Cafes and restaurants, in addition to being semi-public places, are recognized as one of Khartoum's most important attractions that serve as alternative public spaces, as they provide an appealing environment for meeting and engaging in a variety of social activities.</p> <p>They also have greenery and shade to assist in reducing the consequences of a hot, dry climate. Apart from other facilities that it provides, it would regard as the only places in the city where host all the activities that ensure the success and continuity of public space.</p>	 <p>Figure 71 Ozone Cafe, Khartoum ,2023, By Author</p>
<p>Interface space</p>	<p>This tiny temporary outdoor café was built in collaboration with neighborhood locals to serve as a leisure and social space for those who live nearby. It had been built on a private plot of land after gaining prior approval from the owner, previously it was a parking lot for the neighborhood's residents. It only opens in the evenings because there isn't enough shade around. Although it is a non-profit outdoor cafe, there are small expenses for producing tea and coffee.</p>	 <p>Figure 72 Alazhari , Khartoum ,2023, By Author</p>

<p>External-private space</p>	<p>This is a public park that is privately owned. It opens during certain hours and has an entrance fee. It holds any form of social and entertainment activities. It has features like restrooms, a cafeteria, children's amusement parks, trash cans, and seating areas. Local businesses created and produced it with the aid of individual companies. The company is concerned with maintaining its greenery's sustainability and cleanliness.</p>	 <p>Figure 73 Africa Street Gardens, Khartoum ,2023. By Author</p>
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After investigating the places mentioned above and considering the elements that contribute to perfect space, as indicated by PPS, it is possible to achieve the inclusion of public spaces in Khartoum to:

- Public open spaces (which comprise all public, open, unknown, and abandoned locations).
- Private public spaces (all closed public places that charge a fee to visit and enjoy, such as private gardens for public or private use, and private service facilities such as restaurants, malls, cafes, etc.).
- Public spaces in the first-class neighborhoods are public and semi-private because they belong to a specific group of society, which is what must be looked for in how people participate in making their public spaces. Which share many of the same features as public open spaces but vary according to how residents of the region can develop and enhance them in the same way as first-class places.
- The public spaces in second and third-class neighborhoods have the same characteristics as open public spaces, with the exception that they are sometimes developed through community initiatives, but because these initiatives rely on donations from residents and their financial ability, some spaces are developed while others are not.

The following are shown in the table below:

Table 6: How much Public spaces in Khartoum are great, adopted from (PPS, 2022), By Author

Indicator	Open public space	Private Public space	First class public space	Second- & Third-class public space
Access & Linkage	Accessible all the time.	Accessible within certain hours and have entrance fees.	Some Accessible & some only accessible for the neighborhood residence.	Accessible all the time.
	Good connection with surrounding.	Good connection with surrounding.	Good connection with surrounding.	Good connection with surrounding.
	No sidewalk led to space.	Sidewalk led to space.	No sidewalk led to space.	No sidewalk led to space.
	Paths throughout space.	Paths throughout space.	No paths throughout space.	No paths throughout space.
	All type of vehicles can go throughout the space.	No vehicles go throughout the space.	No vehicles can go throughout the space.	All type of vehicles can go throughout the space.
Comfort & Image	Have bad first impression!	Have an acceptable first impression!	Have good first impression!	Have quite good / bad first impression!
	No signs of Natural characteristics / literally desert terrain	Good Natural characteristics	Good Natural characteristics (have been implemented throw donations from residence)	Sometimes there is sings of Natural characteristics /sometimes partly desert terrain (it depend on residence ability to developed it)
	No places to sit	Few places to sit	Few places to sit	No places to sit
	No shade	Few places with shade	Often Shaded	Sometimes shade (depends on residence donations)
	Not clean / No maintenance	Not clean / No maintenance	Clean / Sometimes had maintenance	Not clean / No maintenance
	Not safe place	safe place	Safe place	It's not safe place
Uses & activates	Normally empty during daytime	Occupied during opening times	Occupied when accessible	Normally empty during daytime
	Used by different age groups	Used by different age groups	Used by different age groups	Used by different age groups

	Host a lot of activities / usually football at evenings	Host a lot of activities / usually football at evenings	Host a lot of activities / usually football at evenings	Host a lot of activities / usually football at evenings
	No management	Manageable	Manageable	No management
Sociability	Not suitable place to meet friends	Suitable place to meet friends	Suitable place to meet friends	Not suitable place to meet friends
	People know each other's			
	Frequently used by few people	Frequently used by a lot of people	Frequently used by specific people	Frequently used by few people
	People communicate when hosting activities			
	All segments of society can use it	Financially able can individuals use it	High class of society can use it	All segments of society can use it

2.3.3 PLACEMAKING, PUBLIC SPACES

People's contribution to public spaces helps reshape and develop them, as well as strengthen the bonds between people and the places they share. PPS explained that successful public spaces should contain several activities to attract people to continue their existence. Although spaces in Khartoum contain some of these activities, public spaces are yet not beautiful, attractive, or wonderful places due to their lack of urban design fundamental elements such as proper natural characteristics, paved ground, playground, street furniture, and many others. Inhabitants acclimated to the unqualified design form of public spaces, but it did not prevent them from attempting to re-make public spaces to meet their social, economic, and cultural needs, either favorably or adversely. Residents used their city rights by not obtaining permission to carry out these activities in public. Local governments have not shown any interest in the improper use of urban spaces, instead considering not allowing any political events there.

- **Cultural Reflection on Public space**

Following are the most common activities ongoing in public space fabric:

Iftar Ramadan

During the month of Ramadan (a month when Muslims fast from sunrise to sunset), locals strengthen their bonds with their neighbors. Participants who attend dinner bring their food with them each day for a month to be shared and eaten in the street to enjoy it with the neighbors. The inhabitants prepare the area for the event by cleaning and renovating it.



Figure 75 People gathering to eat (Iftar Ramadan) Khartoum ,2012 , <https://www.arabnews.com/simplicity-ramadan-menu-sudan>

Prayer

Prayer is an Islamic behavior that is usually practiced in mosques, but it abounds in public spaces during the period of Islamic celebrations and some other religious occasions.



Figure 74 Gathering for prayer during Eid al Fiter holiday, Khartoum ,2020, <https://www.middleeasteye.net/news/sudan-separation-religion-state-government-hesitation>

livestock market

There is a tradition of buying livestock to be eaten in various occasions, but there is no dedicated area in the city for selling them, therefore livestock merchants exhibit and sell them in public spaces such as main streets. Although it detrimental to the city's urban environment it is lawful commercial activity.



Figure 79 Sheep temporary market , Khartoum,2008,
<https://mygracedjourney.blogspot.com/2014/06/working-in-khartoum-sudan-souqs-markets.html>

Nuba wrestling

Nuba wrestling is an ancient ritual practiced by the Nuba tribes, who have been internally displaced due to the war from South Kordofan to Khartoum. It is conducted every week at the Haj Youssef Open Club in Khartoum's outskirts. The tradition was warmly accepted by residents of Khartoum, encouraging the Nuba in their integration into society. It is a social gathering that draws people from across the state and features Nubian dance performances to maintain the Nubian



Figure 78 , wrestling game, Haj Yosif district ,Khartoum ,2015,
<https://www.csmonitor.com/World/Africa/2015/0619/In-Sudan-Nubans-challenge-prejudice-in-the-wrestling-ring>

Sufism

It is a religious ideology that encourages people to get closer to God. For 5 or 6 hours, it comprises of dancing performances in circular circles accompanied by worship recitation. It is found in all Sudanese states, and it is most prevalent in the city of Omdurman in Khartoum. It is held on Fridays in the mosques' public squares. A large crowd gathers to enjoy this event (Ola, 2011).



Figure 77 Sheikh Hamed Al Nil mosque , Omdurman ,Khartoum ,2016,
<https://www.theguardian.com/world/gallery/2016/feb/05/the-psychedelic-world-of-sudans-sufis-in-pictures>

Occasion tent

People pitch tents in public spaces to commemorate various occasions such as weddings, mourning, or festivities that cannot be held inside the house due to the high expense of living. The placement of the tent does not require authorization from the local municipality, even if it is sometimes very large and obstructs the



Figure 76 funeral reception, Khartoum ,2022,
<https://www.independentarabia.com/node/>

Social Reflection on Public space

- **Tea-ladies**

The phenomenon of tea ladies is recognized as one of the most notable social phenomena in Sudan's urban form. These women typically come from locations where urban amenities such as housing and financial stability are unavailable, and some of them are either internally displaced from conflict zones or internationally displaced from neighboring countries, with the majority being divorcees, and widows. This profession creates impromptu gatherings for many groups, particularly young people. There is no definite location for their working set, so they can be found in public places, roadside, in front of public or private locations, or in abandoned areas.

- **Random local markets**

Random markets are a common feature of urban life and may be found in most cities all over the world. But over time, it has become more legalized and organized in places and dates.

In Khartoum City, it is widely spread, especially in the street's buffer zone or on the actual roadway. The pedestrian's pass has been aggressively abused and is being used as parking leaving the merchants taking over the street to set up the business, causing traffic jams.

- **Squatter settlements**

Some internally displaced people use public places as temporary homes until the space is developed or sold. This tent was made by a displaced person who works as a guard for the neighboring construction structure until the work is finished because it is a job with a fixed income for the guard, and he opted to bring his family to live with him. This informal job can be found all throughout the city. Nevertheless, the displaced dwell within underdeveloped or abandoned lands so inhabitants do not have the authority to deal with this problem if it is not claimed by the authorities, although it is an uncivilized and environmentally detrimental form of the neighborhood.



Figure 80 Gamma Ave, 2022, Khartoum
<https://twitter.com/irmavandueren/status/1582071468854124550>



Figure 81 Madani St, Khartoum, 2023, By Author



Figure 82 Alazhari Block 29, Khartoum ,2023, By Author

2.3.4 EXAMPLES OF KHARTOUM'S PUBLIC SPACES

01 Atina Square



Figure 83 Mafrush Bazar in Atina square Collage, 2022 , <https://scenaemagazine.wordpress.com/2022/01/05/spontaneous-urban-developments-atene-as-a-socio-cultural-hub/>

It has enough shade for breaks and meetings because it is located in a busy commercial area with offices and buildings surrounded in all directions. This public space is privately owned and hosts many activities, but the most important social activity it hosts is the "Tea Ladies". The nature of the square's ownership limited the government's ability to acquire or reconstruct it.

When the protests took place in 2013, the organizers were unable to set up the market. When the government was unable to dispose of the square by selling it or preventing public access to it, it proceeded to block the "Mafrush".

It is a square (Private open space) near the congested intersection of Al-Qasr and Al-Jumhuriya ave. It was built in the 1950s and is primarily one of five residential plots meant to be towers. All the towers have been completed, but only this plot's building work has been postponed and left with only columns and used later as public space. Its popularity came from "Mafrush," a monthly fair for old books that began in the square in 2012 and ended in 2015. Handicraft exhibitions, musical performances, and political debate topics were also conducted (Ali W. A., 2021).



Figure 84 Atina square, Khartoum , 2020 <https://rattibha.com/thread/1232573339891310597>

02 Green Yard

The Green Yard, also known as Freedom Square, is located south of Khartoum International Airport, on the corner of Africa Street. It is the largest green space in Khartoum, and it serves as a gateway to prepare and develop urban behavior in dealing with public places. It has an area of 184,000 square meters. It was founded in 1992 and opened in 2012 (Othmman, 2019).

It is a government-owned private public place. It is the most popular space among all sectors of society because it is appealing for citizens, and it is Khartoum's first public space with a running track and 20 acres of green space. From eight a.m. to twelve p.m., with an entry fee of 500 Sudanese pounds each person, which is considered suitable for most sectors of society. It welcomes the public and includes many public activities such as Ramadan breakfast, family gatherings, and private festivities for institutions and the government, where the country's previous president, Omar al-Bashir, delivered his final speech of support before his fall in December 2019 Revolution.



Figure 86 The Green Yard main entrance ,2023, By Author

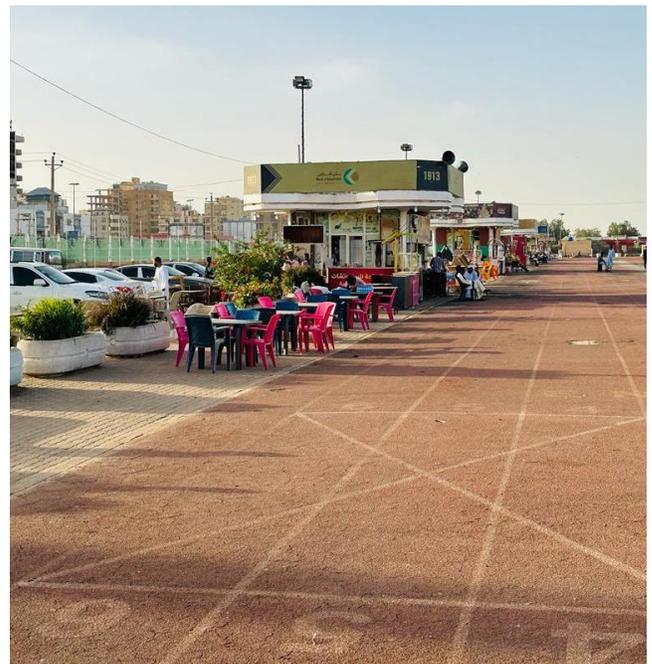


Figure 85 Green Yard View of Running Trak, 2023, By Author



Figure 88 People socializing in Green Yard, 2023, By Author



Figure 89 Green Yard View of Running Trak, 2023, By Author

03 The sit-in as alternative public space

Sudan has seen revolutions since its independence, the first of which occurred in 1956 and called for the overthrow of governmental governments. Since then, the country has seen multiple revolutions, the most recent of which occurred in December 2019. The public space was the most important aspect in the sit-in's success because it served as a tool for expressing opinions and demanding rights, as well as a cadre of popular resistance. The public space in front of the army headquarters, which comprised of two parallel streets, allowed civilians to sit in for 58 days until the regime was overthrown.



Figure 92 Military headquarters in the capital Khartoum, April 10, <https://www.voanews.com/a/sudanese-woman-in-iconic-protest-images-reports-getting-death-threats/4873437.html>



Figure 91 A young lady delivers a political speaking , 2019 , <https://www.aljazeera.com/news/2019/12/18/12-defining-moments-in-sudans-12-month-uprising>

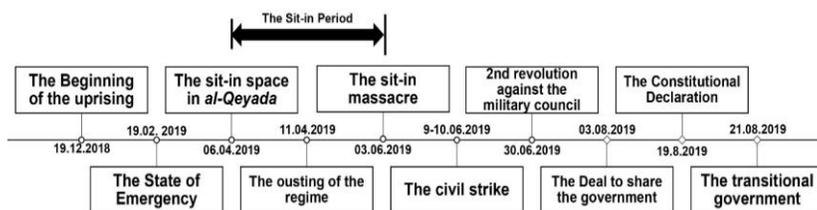


Figure 90 Timeline shows the “Nile Spring” main events 2018-2019, (Bahreldin I. Z., 2022)



Figure 93 The sit-in main activities domain, (Bahreldin I. Z., 2020).

The protesters exercised all their rights to contribute to public space, including delivering political speeches and performing revolutionary songs, graffiti was displayed, street vendors and tea ladies exercised commercial activity, makeshift restaurants were erected, and social gatherings were held and among other things. The sit-in granted all segments of society the opportunity to use and enjoy public spaces (Bahreldin I. Z., 2022).



Figure 94 Sudanese protesters attend a Friday prayer outside the army headquarters in the capital Khartoum, April 19, 2019, <https://www.voanews.com/a/sudan-protest-leaders-to-announce-civilian-council/4883210.html>



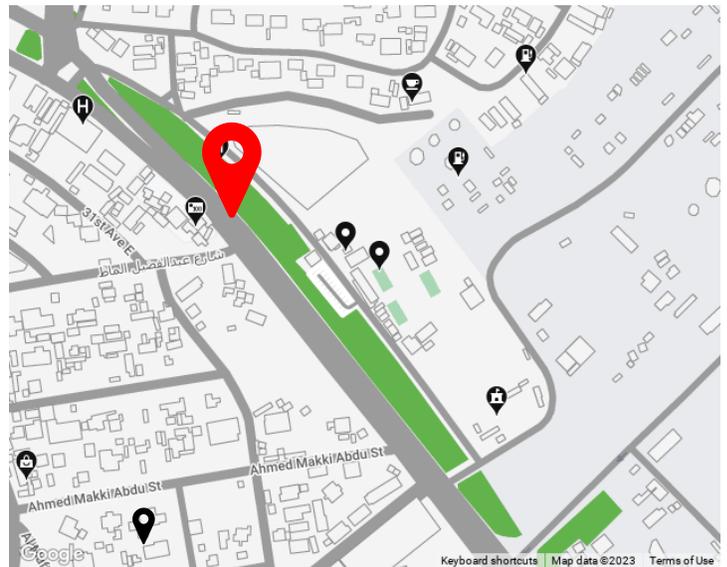
Figure 95 The work of Galal Yousif urging protestors not to leave the sit-in until freedom, peace, and justice are achieved ,2019, (Bahreldin I. Z., 2022)

03 CASESTUDIES

3.1 AFRICA STREET GARDENS

General Feature

External private public spaces, located in Khartoum's center, east of Khartoum International Airport and west of Al Amarat, one of the city's oldest neighborhoods. It is also near the National Tennis Club. It is regarded as one of Khartoum's oldest public spaces. It is the only wooded public space in Khartoum and is notable for attracting a big number of "Tea-ladies" on the back street space.



Location: Africa st Khartoum

Area: 17,224.27 sqm

Evolution during the time

It was planned 20 years ago to be several interconnected gardens; it still serves the same role as gardens, but it has been shifted by the authorities to private companies in 2013 from an open public space for everybody to a private public area that demands entry fees to enjoy it (2000 Sudanese pound for adults and 1000 Sudanese pound for children). This made it available to a specific group of "financially capable" people. It used to host big gatherings of tea ladies until it was converted into a private area. The area to which the "Tea-ladies" relocated is indicated in the following the case, which is the public space (the street) behind these gardens.



Africa street Gardens, Khartoum ,2003



Africa street Gardens, Khartoum, 2023

3.1.1 ACCESSIBILITY

The park is located on an intersection of a busy highway and is easily accessible by vehicle, public transportation, or foot. Bicycles and scooters are not available in the area. On working days, the park is open from 4:00 p.m. in the afternoon until 12:00 p.m. at night, and on holidays, it is open from 12:00 o'clock in the morning until 12:00 o'clock at night. There are both interior and external pedestrian paths leading through the garden.



Figure 96: Africa Street Gardens, Khartoum, 2023, By Author

Common activities

Because it is a private location, the activities are limited; most activities take place in the evenings due to the extreme temperature.

Activity		Period
	Maintenance	Morning
	Gathering and Socializing	Night
	Eating	Afternoon
	Playing	Afternoon And Night
	Sitting, mostly on grass due to lack of benches	Afternoon and Night

3.1.2 GENERAL OVERVIEW



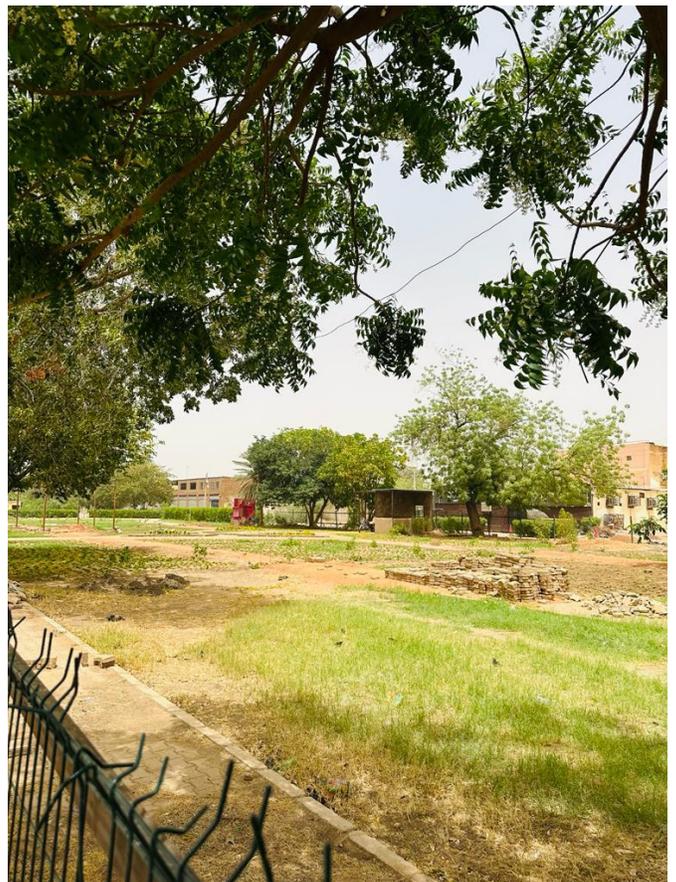
pedestrian paths



Kids Playground



Restaurant view



The southern part of the park is still under construction.



Availability of pins

3.1.3 SWOT ANALYSIS

Strengths

- Good accessibility.
- The space is safe.
- There are a good number of trees that shade the place.
- It contains facilities such as a restaurant and bathrooms.

Weaknesses

- It was transformed into a fee-based private public space.
- There aren't many activities here.
- There aren't enough sitting choices.
- Part of the garden requires maintenance.

Opportunities

- The space is positioned in the city center and on a street corner, which generated a strong link with the surrounding.
- Because it is close to the airport, some passengers utilize it as a rest stop.
- There are additional empty spaces around that might be transformed into gardens.

Threats

- Because the airport is so close, there is a lot of noise.
- Due to the presence of "Tea-Ladies" at the back and the large number of attendees, the garden may eventually be abandoned.
- Because there isn't enough parking, individuals park cars on the street.

3.1.4 THE PSP INDICATORS TOWARDS "GREAT PLACE"

Is it a great place yet?

Considering the analysis and observation, we can conclude this table to determine whether this place is effective.

Indicator	Place	Good	Fair	Need improve	Poor
Access & Linkage	Accessibility	✓			
	surrounding connection	✓			
	Walkability	✓			
	Infrastructure condition		✓		
Comfort & Image	Convenient	✓			
	landscape	✓			
	Sittable			✓	
	shade	✓			
	clean / maintenance	✓			
	Safety	✓			
Uses & activates	Daytime use		✓		
	Local Business				✓
	Host activities		✓		
	Management	✓			
Sociability	Social gathering		✓		
	Neighborly			✓	
	Evening use		✓		
	Diversity			✓	

We conclude from the table that the garden is not excellently effective, but it is compatible with the conditions of Khartoum's public areas. As a result, based on the region's criteria and the region's severe shortage of public spaces and well-kept gardens, we can see that the airport street gardens as standard? public space to be followed and on the right track to becoming a pleasant public place.

3.2 AIRPORT NEIGHBORHOOD STREET

General Feature

The public space is a 12-meter-wide street that has been transformed to host one of the most famous open public spaces activities in Khartoum "Tea-ladies". It's basically a typical road made famous by a massive gathering of Tea-ladies who created it in response to their displacement from the original public space. The road still has its function. Tea ladies operate in the evening, establishing on both sides of the street.



3.2.1 ACCESSIBILITY

The road is easily accessible by car or public transportation via the major roadway "Africa Street" or by foot via the walkway extending from the main road into the sub road; as it is a road, the space is available all day.

Location: Africa st Khartoum

Area: The street 6,395 sqm

Common Activities

Activity	Period
 Gathering and Socializing	Evening / Night
 Drinking tea and coffee	Evening / Night

This location has exactly one activity: gathering to enjoy tea and coffee. The place has a high social value among users since everyone is treated equally, and it is always open till the saleswomen go home.

Due to the harsh weather and lack of shade in the area, tea ladies begin their work in the evening and finish at 1 a.m. The relevant thing about the site is the broad availability of setting places, which is why



The space in Day times



The space at Night

customers can stay as long as they want. Although the majority of those who visit this place are males, tea ladies are compelled to work late hours to earn a living.

3.2.2 GENERAL OVERVIEW



View of the public space in the daytime when Tea-lades set up their working area, normally the leave their equipment's in the street.



View of Tea-ladies starting to serve tea and coffee while cars cross the road.



During the day, chairs are put on the sidewalk away from the street to help vehicles pass.



The sitting space is not pre reserved, however the Tea-ladies set up their equipment and seats randomly for clients.

3.2.3 SWOT ANALYSIS

S Strengths

- Good accessibility.
- Often empty when the Tea-ladies proceed work.
- Great availability of setting places.

W Weaknesses

- The road is narrow and not intended to accommodate both cars and people.
- Don't have enough streetlight.

O Opportunities

- The road is secondary and almost impractical in the evening due to the crowding of people and cars due to the activity of the Tea-ladies. Street use may be restricted by banning vehicular traffic in the evening to allow people to use it as a public seating space.

T Threats

- Not women friendly space.
- car accidents might happen.
- May host criminal activities such as robberies.

3.2.4 THE PSP INDICATORS TOWARDS “GREAT PLACE”

Considering the analysis and observation, we can conclude this table to determine whether this place is effective.

Indicator	Place	Good	Fair	Need improve	Poor
Access & Linkage	Accessibility	✓			
	surrounding connection	✓			
	Walkability	✓			
	Infrastructure condition	✓			
Comfort & Image	Convenient				✓
	landscape		✓		
	Sittable	✓			
	shade				✓
	clean / maintenance				✓
	Safety		✓		
Uses & activates	Daytime use				✓
	Local Business	✓			
	Host activities	✓			
	Management	✓			
Sociability	Social gathering	✓			
	Neighborly	✓			
	Evening use	✓			
	Diversity	✓			

We conclude from the table that remaking the street as a public space without considerations and regulations will not end up in an ideal public space because it is first and foremost a route for cars. Despite the area's needs for such spaces due to lack of public places Users believe that this site is a public area appropriate for their economic circumstances because the price of a single serving of coffee or tea is around 300 Sudanese pounds, which is a very symbolic price when compared to formal cafes, where the price of a cup of coffee is 1500 to 2000 Sudanese pounds. It is not a formal space, so the tea ladies do not stress with the customers about the duration of the use, some Tea-ladies have even fixed

customers. There is no class or social segregation in this space because it comprises users from the rich, medium, and low classes; it is not visually appealing, but it has an important morale component for the users. As a result, space has been characterized as a very effective environment in terms of uses and activities, and sociability. However, the proper method to make this street an effective public place is to restore it or restrict it at particular hours so that it be used as a public space for gatherings.

3.3 ALHADARI SQUARE

General Feature

The area is in the downtown area of Khartoum, in one of the city's oldest and prestigious neighborhoods, "Khartoum 2." The neighborhood is considered first-class. It has several mansions for Sudanese wealthy merchants and political representatives such as ambassadors and ministers. The area is 350 meters from the United Nations Office of the High Representative for Refugees UNHCR, or 5 minutes on foot, so the area is somewhat tightly guarded, even though the square is open and unfenced, but this first-class neighborhood's responsible committee does not allow any public activities without supervision, and prohibit some activities such as street vendors, as it is considered uncivilized behavior.

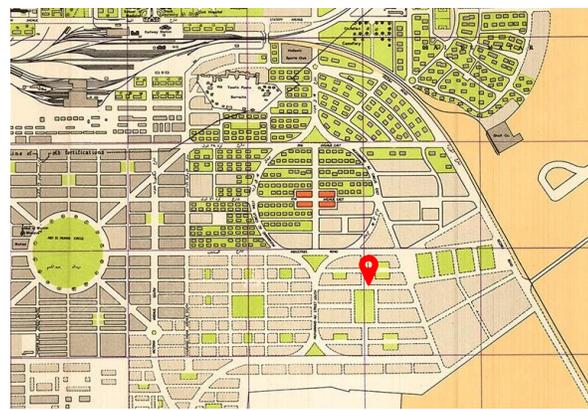
Evolution during the time

During Maclean's era, the square was planned and designed. The 1952 map is the first Surveying to Khartoum created by Sudanese before the independence. The public space and surrounding area were not modified and retain their original planning. The square was divided into two separate areas, and a school was established in the northern half for the residents of the area.



Location: Khartoum2, Khartoum East

Area: 5.176.60 sqm



Alhadari square, Khartoum ,Drawn by Sudan survey Department , 1952,
<https://www.etsy.com/hk-en/listing/650248829/vintage-map-of-khartoum-old-khartoum-map>



Alhadari square, Khartoum2, Khartoum ,2023

3.3.1 ACCESSIBILITY

The square is located at the center of four streets and is accessible by transportation from the main street called "Africa Street," as well as by car or foot through the neighborhood internal streets. There are bicycles and scooters available in the neighborhood. It is an open place with no fences; therefore it is open all day for all kind of people. The only restrictions imposed by the neighborhood residents are that it is not permitted to address vendor street activities such as Tea-ladies.



Common activities

The square is used for a variety of activities such as football, gathering friends, and praying, as well as holding a variety of cultural events, such as weddings. Many people do not use the space in the morning due to the high temperatures, but the greenery minimizes the temperature, allowing people to practice walking occasionally.

Activity		Period
	Maintenance	Morning
	Gathering and Socializing	Night
	Eating	Afternoon
	Playing	Afternoon And Night
	Sitting, mostly on grass due to lack of benches	Afternoon and Night
	Praying	In Ramadan month and Eid holidays



Neighborhood Residents perform Eid holiday Prayer.

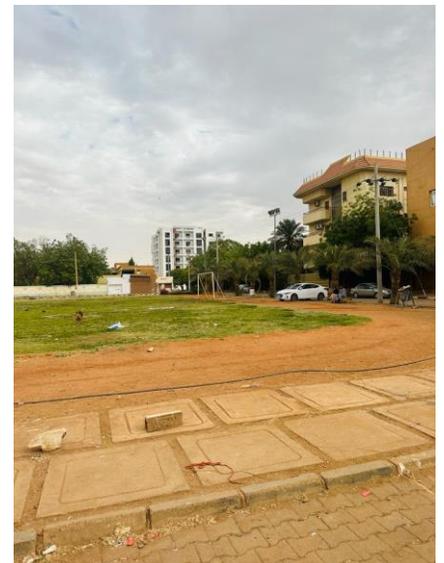


Residents prepare the square for holidays celebrations.

3.3.2 GENERAL OVERVIEW



View of surroundings



View of surroundings



Availability of pedestrian paths



Availability of benches and bins

3.3.3 SWOT ANALYSIS

Strengths

- Good accessibility.
- The space is safe.
- Well vegetated landscape.
- There is fair amount of sitting? area.

Weaknesses

- It does not have enough trees.
- Non-neighborhood residents find it over restricted.
- Full enjoyment of it is limited to a certain class of society.

Opportunities

- The space is positioned in the center of block which generated a strong link with the surrounding.
- It can serve as main public space for the whole neighborhood.

Threats

- Surrounding buildings can be vulnerable to robbery.

3.3.4 THE PSP INDICATORS TOWARDS “GREAT PLACE”

Considering the analysis and observation, we can conclude this table to determine whether this place is effective.

Indicator	Place	Good	Fair	Need improve	Poor
Access & Linkage	Accessibility	✓			
	surrounding connection	✓			
	Walkability	✓			
	Infrastructure condition	✓			
Comfort & Image	Convenient	✓			
	landscape	✓			
	Sittable		✓		
	shade			✓	
	clean / maintenance	✓			
	Safety	✓			
Uses & activates	Daytime use		✓		
	Local Business				✓
	Host activities		✓		
	Management	✓			
Sociability	Social gathering	✓			
	Neighborly	✓			
	Evening use	✓			
	Diversity			✓	

Although it is not yet perfect, this square is a good example of public spaces within communities that should be used as a model when creating public spaces in Khartoum. Although the area is developed by the residents of the community, effective urban design is what has allowed it to exist so far.

3.4 RESULTS AND DISCUSSION

By evaluating each of the four arguments indicated earlier in the methodology, it is possible to determine if the study cases achieve them or not, and it is also possible to determine whether these spaces support the right to the city. The following are the arguments:

- A. Public Spaces as Generators of Income, Investment and Wealth Creation
- B. Public Spaces enhance of Environmental Sustainability
- C. Public Spaces as Promoters of Equity and Social Inclusion
- D. Public Spaces as Opportunities for Generating Citizen Involvement

Table 7 The table shows the United Nations' Toolkit (Habitat, 2015) four arguments that used to measure the amount of effectiveness of the three case studies and how much they are improved and applied in the city,2023, By Author

Arguments	Argument A	Argument B	Argument C	Argument D
Case studies				
CASE 1 "Private Public Space"	The space generates income by formally allowing the employment of labor in one of its facilities, such as a restaurant or garden maintenance job, but it does not permit the practice of spontaneous economic activity such as street vendors and others.	The space contains a suitable number of natural features that can help improve the environment and mitigate the effects of the city's poor climate.	The space promotes participation by all social groups, but because it is a private area with fees to access and enjoy, it is limited to a specific section of society that is financially capable.	Participation of civil society in city planning is crucial, but authorities eliminated the right to participate from the community by changing the use of the space from public for all to private and closed to particular social categories.
CASE 2 "Civic Space"	Space functions as a basic income generator for some of society's impoverished and displaced communities by establishing a few local enterprises such as "Tea-ladies," but because it is an informal business, it diminishes space's sustainability. Authorities can control this economic expansion because it provides a source of income for low-income people.	Although public places help to improve the environment, this place lacks any natural features that contribute to it.	This place eliminated social segregation and promoted social equality and allow everyone to engage, leading users to feel pleasant and return frequently.	Participation of civil society in city planning is crucial, but this space was takeover by communities within the local area, reclaiming it as an indirect way of exercising the right to the city and public space.
CASE 3	Although the space occasionally organizes official bazaars and small exhibitions,	This place contains minimal natural features, but it	This space encourages neighborhood participation only because	The community was involved in the creation of this

“Public open space “	it doesn't function as an income source, and the doesn't support any spontaneous business enterprises such as street vendors.	efficiently contributes to environmental enhancement and climate change mitigation for the residential neighborhood.	it is in a first-class residential neighborhood, which does not allow all social groups to enjoy it, but the residents have a very strong social bond among themselves within the boundaries of the neighborhood.	place, as citizens developed initiatives to renovate and enhance it.
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Because all public spaces case studies depend on community engagement, it was important to verify the activities that take place in them, as well as their type and timing. From the table below it was concluded that the first and last case studies encourage community participation and different activities are been held in it at different times .The second case study is the most comprehensive and promotes participation of all social groups despite it held only one social activity in it , it's because it is an open public space that is not owned by public , while the first case is a closed space and owned by private stockholders , and the last case is an public space that promote social segregation.

Table 8 The table illustrate the different activities that been held the case studies and the activity period , 2023, By Author

Activity	Maintenance 	Gathering and Socializing 	Eating 	Drinking 	Playing 	Sitting 	Praying 
Period							
Case study 1	Morning	Night	Afternoon	Afternoon/ Night	Afternoon/ Night	Afternoon /Night	—
Case study 2	—	Evening / Night	—	Evening / Night	—	—	—
Case study 3	Morning	Night	Afternoon	Afternoon/ Night	Afternoon /Night	Afternoon /Night	Ramadan month/Eid holidays

The first case in the Access and Linkage indicator is not freely accessible; it is only available at certain times for specific populations; the second and third cases are easily accessible by any mode of transportation and may be accessed at any time.

The first and last cases have good infrastructure and are well developed, while the second case has infrastructure but is not properly developed.

Table 9 The table shows indicator "Access and Linkage" in the three case studies to demonstrate the variation of satisfaction ratios with each space, 2023, By Author

Indicator		Access & Linkage			
Place		Accessibility	surrounding connection	Walkability	Infrastructure condition
Case study 1	Good				
	Fair				
	Need improve				
	Poor				
Case study 2	Good				
	Fair				
	Need improve				
	Poor				
Case study 3	Good				
	Fair				
	Need improve				
	Poor				

The first and last cases include the majority of the accessible urban design features, as well as natural aspects, making it a suitable gathering place and attracting a large number of visitors. The second case, despite the lack of landscapes and the absence of trees, does not render the location unpleasant or inappropriate for gatherings because it has significant social value.

Table 10 The table shows indicator "Comfort & Image" in the three case studies to demonstrate the variation of satisfaction ratios with each space,2023, By Author

Indicator		Comfort & Image					
Place		Convenient	Natural Feature	Sittable	Shade	Clean /maintenance	Safety
Case study 1	Good	■	■		■		■
	Fair						
	Need improve			■			
	Poor					■	
Case study 2	Good			■			
	Fair		■				■
	Need improve						
	Poor	■			■	■	
Case study 3	Good	■	■			■	■
	Fair			■			
	Need improve				■		
	Poor						

It was found that the second case, more than the first and third cases, encourages the preservation of social unity among the population who do not care about the quality of the area.

Table 11 The table shows indicator " Uses & activates "and " Sociability " indicator in the three case studies to demonstrate the variation in satisfaction ratios with each space, 2023 , By Author

Indicator		Uses & activates				Sociability			
Place		Daytime use	Local Business	Host activities	Management	Social gathering	Neighborly	Evening use	Diversity
Case study 1	Good								
	Fair								
	Need improve								
	Poor								
Case study 2	Good								
	Fair								
	Need improve								
	Poor								
Case study 3	Good								
	Fair								
	Need improve								
	Poor								

3.4.1 GUIDELINES FOR PUBLIC SPACES IN CITY OF KHARTOUM

URBANISM GUIDELINES

- *Informal Settlements Integration:* Recognize and address the presence of informal settlements within the city . Develop strategies to integrate informal settlements into the formal urban structure, providing access to basic services, infrastructure improvements, and tenure regularization while respecting the existing social and cultural practices.
- *Incremental Development:* Recognize and support incremental development strategies that allow for the gradual improvement of housing and infrastructure over time. Facilitate access to microfinance, technical assistance, and building regulations that enable residents to upgrade their homes and neighborhoods.
- *Governance and Institutional Capacity:* Strengthen urban governance and institutional capacity to effectively plan, manage, and regulate urban development. Develop transparent and accountable systems, enhance local government capacities, and promote partnerships between government, local society, and the private sector.
- *Users Engagement:* including residents, community organizations, businesses, and local authorities, throughout the planning process. Encourage their participation, gather feedback, and involve them in decision-making to ensure the rehabilitation aligns with community aspirations.
- *Multifunctional Design:* Design public spaces to accommodate a range of activities and functions. Create areas for recreation, socializing, cultural events, and relaxation. Consider incorporating elements such as seating, pedestrian paths, playgrounds, sports facilities, and green spaces that deal with community needs.
- *Sustainable Design:* Integrate sustainability principles into the rehabilitation project. Incorporate green infrastructure elements such as trees, plants, and rain gardens to improve air quality, reduce heat island effect, and manage stormwater runoff. Use environmentally friendly materials and prioritize energy-efficient lighting and infrastructure.
- *Adaptive Planning:* Recognize that public spaces should evolve and adapt to changing community needs over time. Plan for flexibility and adaptability in the design, allowing for future modifications or expansions based on emerging requirements and community feedback.

Economic Guidelines

Mixed-Use Development: Encourage mixed-use development around rehabilitated public spaces. Foster a diverse range of businesses, such as cafes, shops, restaurants, and small-scale enterprises. This can help create a vibrant economic ecosystem and attract people to the area.

- *Business Support:* Provide support and incentives for local businesses to thrive in rehabilitated public spaces. This can include access to affordable rents, business development programs, marketing support, and networking opportunities.

SOCIAL GUIDELINES

- *Social Equity:* Pay attention to social equity considerations throughout the rehabilitation process. Ensure that the benefits of the revitalized public spaces are accessible to all residents, regardless of income or social status. Avoid actions that may lead to gentrification or displacement of vulnerable communities.
- *Local Employment:* Prioritize local employment opportunities during the rehabilitation process. Encourage the use of local labor, contractors, and suppliers. Provide training and skill development programs to increase the employability of residents.
- *Community Ownership and Engagement:* Foster community ownership and active participation in the rehabilitation of public spaces. Involve residents in the decision-making process, seek their input, and encourage their involvement in the ongoing maintenance and programming of the spaces. This can create a sense of pride, ownership, and social cohesion within the community.
- *Social Integration and Cohesion:* Design public spaces that promote social interaction and community cohesion. Include features such as gathering spaces, seating areas, community gardens, and sports facilities that encourage people to connect and engage with one another.

CULTURAL GUIDELINES

- *Community Engagement:* Involve the local community in the planning, design, and decision-making process. Seek their input, ideas, and feedback to ensure that the rehabilitated space reflects their needs, preferences, and aspirations.
- *Inclusivity and Accessibility:* Create public spaces that are accessible and inclusive to people of all abilities, ages, genders, and backgrounds. Ensure that the rehabilitated spaces are designed to accommodate diverse needs, including wheelchair accessibility, ramps, seating options, and consideration for sensory disabilities.
- *Flexibility and Adaptability:* Design public spaces that can adapt to the changing needs and activities of the community. Create multifunctional areas that can be used for different purposes, such as community events, markets, gatherings, or recreational activities.

- *Maintenance and Upkeep:* Develop maintenance plans and involve the community in the long-term care and upkeep of the rehabilitated spaces. Encourage community ownership and responsibility to ensure the sustained vitality and attractiveness of the public areas.

4. CONCLUSION

Many issues and distortions in urban form affect Sudanese cities in general, and Khartoum in particular. When colonization arrived, it transformed Khartoum into an infrastructure center, making it a constant source of appeal for the rural populace. The first colonizer identified Khartoum as his capital because of its unique geographical location and planned to improve its infrastructure primarily for economic, political, and safety purposes, ignoring the needs of the people at that time and causing civilizational shock in other towns. It is still a source of concern today. Several attempts were made to plan Khartoum since the beginning of colonization, and this plan was witnessed four times (McLean 1910, Doxiadis 1958, Mevitt 1974, and Doxiadis and Mustafa 1991). Since Maclean's first plan in 1910, however, all subsequent proposals have failed due to the planners' method of centralizing one city while ignoring the capital. Sudan gained independence in 1956, following a series of coups the first military rule began in 1969 and lasted for 16 years, the period following its fall witnessed a 4-year rise in democracy, after which the army turned against the government again in 1989 and its rule lasted 30 years, it was overthrown in 2019. People anticipated that the military dictatorship would cease permanently after his demise in 2019, yet coups continue to occur to this day.

Sudan's power struggle caused several kinds of issues that prevented urban growth. The country's infrastructure suffered because of the country's delayed comprehensive development. Sudan experienced the greatest decrease in urban growth during those 30 years, causing fundamental challenges in Khartoum's urban structure, particularly the continual and rapid migration from rural to urban because of wars and hunger. Due to a lack of planning policies and basic services, Khartoum's lands have been subjected to indiscriminate attacks by the displaced, and construction has increased on them in urban areas and agricultural lands owned by the government and the private sector contrary to all expectations.

The urban deterioration in Khartoum is sufficient evidence that the administrative situation is unsatisfactory, as this situation suffers from a lack of awareness and appreciation for the city's urban requirements, as well as indifference to people's need for public spaces, as it is the only form of entertainment that can be enjoyed considering the above-mentioned issues. This decline resulted in the informal and spontaneous usage of places, as well as the creation of new public spaces that lacked basic infrastructure and facilities but served as a response to the community's needs. In the absence of adequate support from local authorities, community initiatives have been developed to improve public spaces to address the city's poor urban form and the desire for space to mitigate grim socio-economic realities. These efforts succeeded but were hampered by a lack of planning and funding. On the other hand, the lack of compliance with sustainable urban development in Khartoum has led to a more unstructured and community-based approach to shaping public spaces. While these initiatives can somewhat fill the need for recreational and commercial activities, they often do not produce sustainable, well-designed areas that meet the city's long-term needs.

The research was intended to investigate several types of public spaces in Khartoum using field observations, qualitative data collection, and interviews with users who have a relationship with such

locations. The methodology that was used included determining if these areas allow and receive (The power of 10, activities that were defined by "PPS") ten different types of activity that would make them valuable and assure their continuation. An analysis of the most prominent social, cultural, economic, and political activities that are typically held in Sudanese public spaces was conducted. Furthermore, the research indicated that some of "The power of 10" being conducted but that these spaces are critically missing the urban design features connected to the fundamental infrastructure of public spaces. It has also been concluded that what makes these public areas relatively desirable is the ongoing creation of activities by the community. The community is what makes public space effective, sometimes local communities have established initiatives in their neighborhoods to rehabilitate the lack of urban infrastructure for those spaces without resorting to authorities who do not care about those spaces.

Through field observation, eight types of public spaces were investigated and analyzed in the methodology chapter, then 3 case studies were analyzed in a detailed and accurate analysis, taking into account the indicators that contribute to providing the ideal space by "PPS", an evaluation technique was developed to evaluate these public spaces to ensure their effectiveness and suitability for people.

It emerged that, in terms of the factor (access and linkages), most open public spaces, whether in the city or neighborhood space, facilitate access to them by any available forms of transportation and can be accessed at any time, as opposed to closed public spaces and private public spaces that cannot be accessed freely, it is only available at certain times for certain communities. All public, private, and enclosed spaces have an appropriate connection with their urban environment and evidence urban planning but are not well developed.

Concerning the factor (comfort and image), most open public spaces are barren places that have not been properly created to fit to the well-known shape of public spaces. Any of the elements of urban design of public spaces such as (corridors, seats, lighting and decoration service facilities, playgrounds, etc.) as well as do not contain any natural landscapes and are completely devoid of trees that can made shade especially that the Khartoum city is extremely hot, and sometimes the undeveloped public spaces were used as a landfill for waste, all of these negatives make the place unpleasant and unsuitable for gathering in. Closed and private public spaces, on the other hand, where most of the elements of urban design are available, as well as natural elements, they received this attention because they belong to either the private sector or citizens in first- or second-class neighborhoods formed local initiatives to develop and rehabilitate them.

In (Uses and Activities) factor it has been noticed that open public spaces host a variety of social, cultural, and economic activities for various types of societies, and that these activities supported in maintaining social unity between the inhabitants, who did not care about the quality of the place but the quality of the activities held in it, so the community did not abandon the space completely, but continued to reshape and use it according their requirements and needs. These activities decreased the isolation of the city's public places and contributed to renewing them occasionally. Different activities, in contrast, are held in

closed and private public spaces too, but their use is limited because they do not permit the practice of different types of socializing, such as "tea ladies" and street vendors.

Because open public places are appreciated by every segment of community, the (Sociability) factor is regarded as a non-inclusive element because private public places tend to be situated in first- and second-class neighborhoods, are used by a particular category of community, and have a social status that is established by the degree of the neighborhood (First class for rich, Second class for middle-income, third class for poor). Residential neighborhoods, and these spaces are only used by inhabitants of the neighborhood, making them socially isolated public space. Because closed public areas are not free of charge, only the financially able can enjoy them.

According to the outcomes, in order to improve public spaces in Khartoum, the city's urban development issues must first be tackled, else all solutions will be useless and unsustainable. As a result, urban, cultural, economic, and social guidelines have been proposed to address the issue of the city's sustainable development. Future developers and urban planners will be able to recognize the nature of pre-existing public spaces that were created spontaneously by communities using the research analyzing methods and proposed guidelines, would help in the creation of long-term sustainable solutions.

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