

Rethinking Public Open Space in Khartoum's Low-income Neighbourhoods. Lessons from African Cities

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Abstract

For half a century, continuous political and economic challenges in Khartoum, Sudan have perpetuated social inequity in the urban environment across generations. Poor-quality informal public open spaces compensate for the absence of accessible developed public spaces for the urban poor. Although there is a high supply and distribution of public open spaces within low-income neighbourhoods, yet, they are hardly noticed as a development opportunity for enhancing an aspect of life quality. Thus, this paper attempts to utilise the above-mentioned possibility by asking the question of how can public open spaces in low-income neighbourhoods be utilised? Aiming to identify suitable strategies of improvement. Through an exploratory investigation with an inductive component on public open spaces in developing countries, with Khartoum State in Sudan as a focal point, the methods are based on observations, desk research, literature review, and analysis of case studies. Furthermore, by highlighting the importance of public open spaces to individuals and local communities in the literature review, this study generates an Integrated Tri-pillar Framework (ITF) that is based on society, built environment, and economy to define overlapping contextual placemaking approaches and strategies for improving neighbourhood public open spaces in developing countries like Sudan. The framework links theory to practise, and is mobilised through analysing and interpreting analogous case studies on the success of public open spaces in African cities that share similarities in context with Khartoum, Sudan. The analysis hints at the possibility of empowering groups to take control in shaping their surrounding environment could lead to a greater sense of ownership and responsibility towards public spaces, potentially contributing to the creation of more active inclusive spaces. Finally, this study attempts to add to the limited academic work on this topic in Sudan, and concludes with holistic recommendations for upgrading public open spaces at the neighbourhood level.

Keywords: informal public open spaces, spatial injustice, Khartoum, Africa, bottom-up

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1. Introduction

Excessive privatisation of land, produced an oversupply of private open space or facilities that are inaccessible to the urban poor in deprived countries because of its fees (Skinner et al., 2018). This is the case for Khartoum, Sudan where majority of open spaces originally assigned for public use became privatised (Gali, 2017), and therefore, inaccessible for the urban poor. Thus, prioritising the pursuit of improving existing neighbourhood public open spaces (POS), especially in least-equipped neighbourhoods is warranted.

Today, Khartoum is projected under a tired light, showing the built environment in a poor state due to many contributing factors. Yet, the dominant variables in this equation are the challenged political and financial state of the country. These two issues are deeply intertwined as the deteriorated economy is broadly linked to the government's corruption and inability to manage the country's resources, an overarching theme on most difficulties the country has faced. As a result, social inequity has been perpetuated in the urban environment for generations.

The spatial injustice in Khartoum's public realm is portrayed in many ways. Lack of accessible POS is one (Alhuseen, 2015); forcing low-income groups, which make up an estimated 75.2 percent (World Bank, 2020) of a population of 46 million, to adapt to informal alternatives that function as active POS but located within undesirable environments. Underdeveloped yet lively, these POS are a natural result of bottom-up adaptations that manifested across low-income groups/neighbourhoods in Khartoum. Entitling these spaces to be rethought as social breathing spaces in the least, or fully active good-quality spaces that can benefit low-income groups at best.

The broad intention of this research is to identify strategies to improve POS in low-income neighbourhoods, particularly for the advantage of low-income groups. Thus, this paper *focuses on integrating three dimensions as pillars of centred focus - society, built environment, and economy - to explore a variety of available strategies that can be implemented in three phases to optimise POS in Khartoum's low-income neighbourhoods.*

To achieve the research's aim, three objectives will be met. The first objective would be to define a holistic framework encompassing suitable strategies to optimise POS for resource-poor countries. The second objective under the title 'Framework Validation' is to demonstrate the framework's versatility and potential for practical implementation in specific contexts. The third objective titled 'Wider Patterns Across Contexts' will be an extraction of recommendations to inform decision-making in developing neighbourhood POS in Khartoum.

In that fashion, the literature review will explore the intertwined concepts, impacts, and attributes of successful POS. It will also exhibit the contrasting reality of POS in developing countries, while focusing on the role of politics in the spatial injustice of POS, with Khartoum as a focal point. The literature review will conclude by presenting an Integrated Tri-pillar Framework (ITF) for enhancing POS. Furthermore, after describing the methodology, the framework validation section and the first part of the discussion section will satisfy the second objective; with an analysis and interpretation through the lens of the established framework, of existing pilot projects (case studies of action) done by UN-Habitat on POS in similar contexts to Khartoum. Finally, the second part of the discussion will construct a trajectory towards Khartoum's context and achieve the third objective.

2. Literature review

Concepts & Definitions

Urbanists and scholars have varying definitions of public space. Most agree that public spaces could be simply defined as those facilities and spaces between buildings that are open to the public and accommodate activities. For example, Carr et al. (1993) define public spaces as those platforms embedded in cities that provide people with spaces to enjoy activities, celebrate occasions, and casually socialise. Similarly, Tibbalds (1992) and Madanipour (1996) define the public realm as functional spaces that are accessible visually and physically in the urban fabric. They acknowledge the human factor associated with space by claiming that public spaces are where most human interactions happen. It is clear that accessibility, use, and social inclusion are important aspects of public spaces. Madanipour (2003) also adds that public spaces are associated with public functions and meanings. According to him, public realm and public space's functions interrelate, in the sense that 'public realm' is the social display whereas 'public space' is the stage accommodating social displays. Moreover, urban societal scholars like Lynch (1960), Whyte (1980), Gehl (1987), and Madanipour (2010) agree that 'places' are spaces that are interpreted by people in a unique way, which makes one place different to another. According to Lynch (1960), 'place identity' is a space with individuality attributes that make it recognised separately from other spaces. The Creation of 'place identity' depends on the physical settings of space, activities that occur, and meanings assigned to it by people (Carmona, et al., 2010).

Perhaps the most comprehensive definition of public spaces was compiled in 2015, when the Italian Institute of Urbanism (INU) in Rome produced The Charter of Public Space, in an attempt to unify definitions of public spaces:

“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, [...] social, and economic features. [...] [They] are a key element of individual and social well-being, the places of a community's collective life, expressions of [...] cultural richness and [...] identity [...]. The community recognizes itself in its public places and pursues the improvement of their spatial quality. [...] All public spaces should become 'places' [...] made accessible without barriers [...]. Public spaces which are not yet accessible and/or usable must be considered as 'potential public spaces', and therefore as a precious resource for the strengthening and renovation of the existing system of public space and, thus, of urban quality as a whole” (INU, 2015, para. 6-12).

Typologies

Formal public spaces encompass a wide range of types, from roads and pedestrian streets, to open and green spaces (i.e., parks and gardens), or public facilities such as markets, community, and educational centres, among many others (UN-Habitat, 2015). Informal public spaces on the other hand, can be given the same definition and types as above. The difference is that they are spaces that lack official oversight by authorities. In developing countries, they typically exist in forms of vacant land, combining emergent elements from all the above typologies in one space (Balikowa, 2015). Physically

characterised with undesirable attributes such as having litter, solid waste, and being generally uncomfortable for users. While providing a vague platform and a needed outlet for recreational uses; and informal -yet successful- economic activities (Bhan, 2019) in contexts where there is a lack of POS supply.

To simplify: formal public spaces are planned spaces whereas informal public spaces are emergent (Hamdi, 2004). However, it is important to note that the distinction between formal and informal public spaces can sometimes be ambiguous, and there may be spaces that combine attributes from both. Moreover, the definition and perception of these spaces can vary across geographical, social, and cultural contexts.

In the context of Khartoum, Balikowa's (2015) description of informal POS seems to closely resemble the characteristics of low-income neighbourhood POS (Figure 1), which will be the primary focus of this paper.

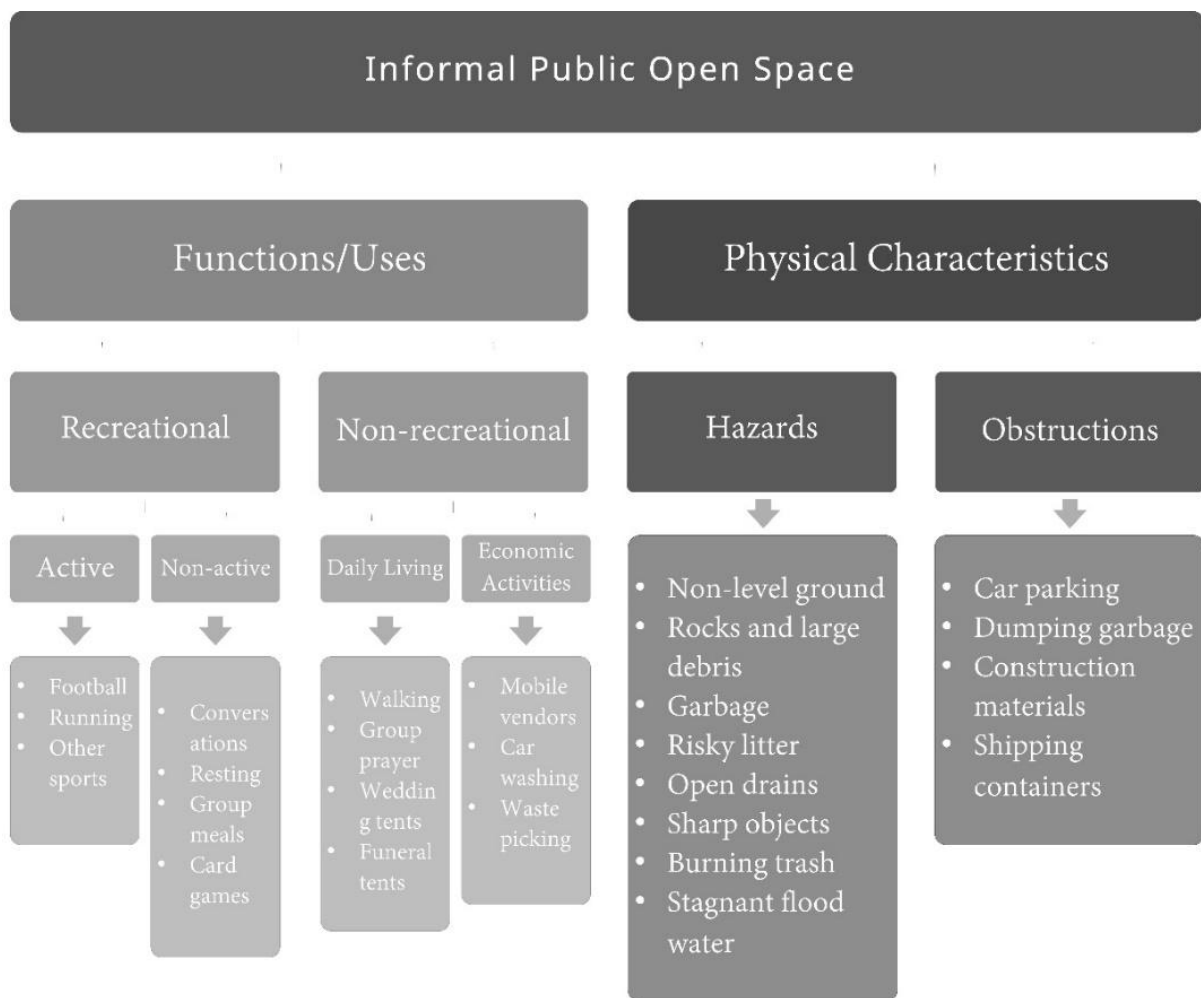


Figure 1: Characteristics of informal POS (based on Balikowa, 2015).

Attributes and Impacts of Successful Public Spaces

The significance of high-quality POS was thoroughly discussed in the disciplinary fields of sociology and urban design in the work of scholars such as Lynch (1972), Whyte (1988), Gehl (1987), and Lofland (1998); who all addressed the impacts of active POS on cities. This significance remains today - with Goal 11.7 of the Sustainable Development Goals (SDG 11.7) to “provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities” (United Nations, 2015). The United Cities and Local Governments (UCLG, 2014) also contributed to a growing body of knowledge on public space that influenced global policies, in the belief that activating public spaces can work as a way to improve life quality and reshape how cities function.

The definition of ‘high-quality’ varies between contexts and regions. Nevertheless, high-quality public spaces could normatively be described as places that prioritise local community needs in the design process; are comfortable, enjoyable, and attractive; are safe, accessible to all and promote walkability, create a sense of place and belonging, and improve land value. They also facilitate social cohesion by being full of people, active, and vibrant, accommodating complex uses, and are financially, socially, and environmentally sustainable (Kaw et al., 2020). Cox and Streeter (2019) claim that people who live in neighbourhoods containing high-quality public spaces are less isolated socially and trust others.

Consensus among scholars affirms that when public spaces operate adequately, they can invite micro investments, generate income, and create wealth (Simone, 2015; Bhan, 2019; Hamdi, 2004; Abdel Ati & Al-Hassan, 2016). This is particularly relevant in contexts where informal economy is present: revitalised POS can become a platform for informal enterprises to operate legitimately, providing the urban poor with livelihood opportunities (Simone, 2015). This includes Khartoum, where the informal economy constitutes 35.5 percent of the total GDP and informal workers comprise 65 percent of the labour market (Abdel Ati & Al-Hassan, 2016). To these groups, roadsides and POS frequently function as pivotal sites wherein informal street vendors and traders operate. (ILO, 2022).

2.1 Circumstances of Public Open Space and the Urban Poor in Khartoum

Before the 1956 independence, the British colony laid out Khartoum’s first masterplan and implemented a policy of classifying residential neighbourhoods into ‘1st, 2nd, 3rd’ classes (Eltayeb, 2003) as shown in (Figure 2). Land plots were distributed according to the socio-economic status of groups (Awad, 2011). Neighbourhood class determined the size of plots (Figure 3) that were given to residents (Pantuliano, et al., 2011). On top, parts of the city were named ‘*Khartoum: One, Two, Three*’, which extended this classification from the physical dimension to the social by further categorising groups (Ahmed, 1992).



Figure 2: Khartoum Neighbourhood Classification (based on Eltayeb, 2003). Source: Understanding slums: Case studies for the Global Report on Human Settlements, pp. 101

Neighbourhoods	Land Plot Size	Net Population Density
1 st Class	500 m ²	80 Persons/Hectare
2 nd Class	400 m ²	95 Persons/Hectare
3 rd Class	200 m ²	190 Persons/Hectare

Figure 3: The inverse correlation between land plot sizes and population density in neighbourhood classes (based on Awad, 2011).

After independence, the public realm has witnessed a steady deterioration due to political instability (Figure 4) in terms of the following aspects: environmental degradation, insufficient maintenance, and notably, POS inaccessibility (Ahmad, 2000). Lack of 'pro-poor' urban agendas was starting to manifest heavily through gentrification and ad-hoc urban planning decisions were made gradually, impacting the city's residents (Hamid & Bahreldin, 2013). Particularly when the 'Inqaz' government (1989-2019) privatised POS while trying to cover financial debts through selling important public lands to private owners (World Bank, 2011). This was paralleled with a culture of land grabbing and hoarding by the ruling party, which created an imbalance of power due to city-wide POS privatisation, leaving Khartoum's urban poor with a limited access to formal developed POS (EIKheir, 2017).

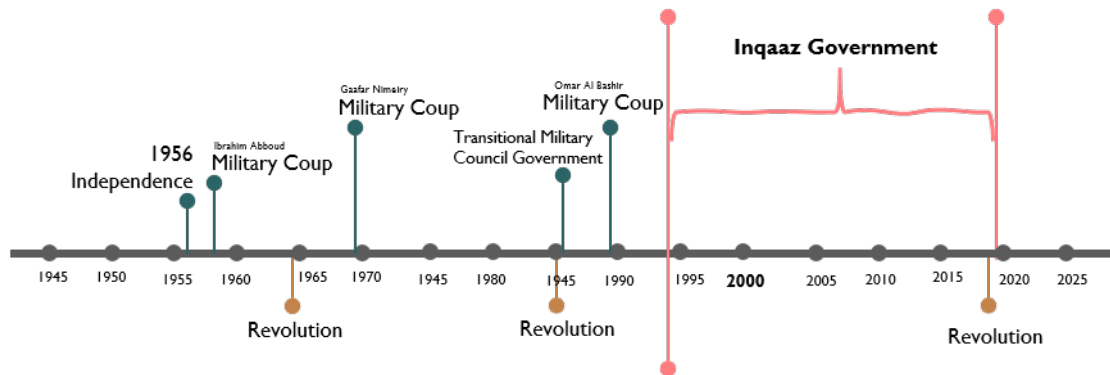


Figure 4: Timeline of political instability in Sudan post-independence, highlighting the duration of Inqaz era. Source: (Author)

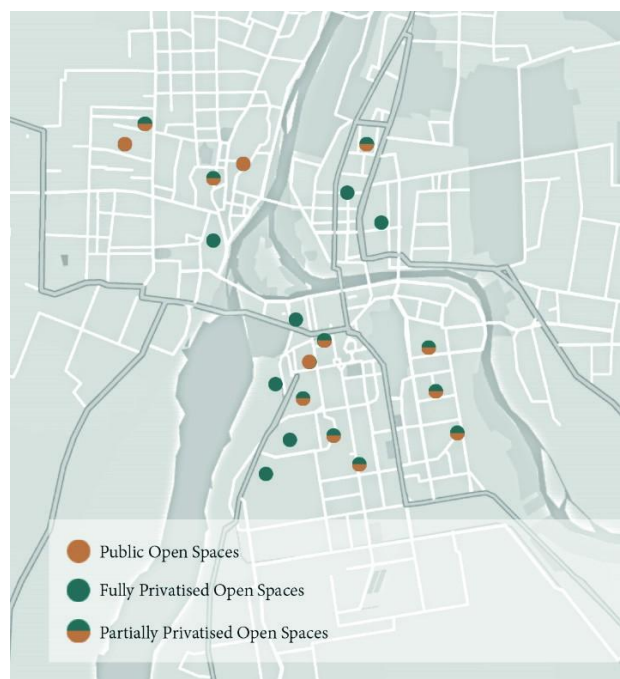


Figure 5: POS that became fully or partially privatised during the Inqaz era (based on Gali, 2017).

For example, (Figure 5) shows a sample of twenty open spaces that were officially assigned for public use in previous eras. Ranging in size between 20,000 m² – 135,000 m². Half of the spaces were partially privatised, and some had imposed entry fees to the spaces, while another 35% became fully privatised and converted to a different use such as private housing or a mall for profit. This left only a 15% of underdeveloped POS in Khartoum state (Gali, 2017).

Albeit, POS were privatised, leading to gatherings with a familial and sterile atmosphere and potentially impacting the democratic empowerment of people; which may have had implications for access to developed spaces, especially for low-income groups.

Furthermore, as land sales were treated as open commodities, they were mainly

affordable to high-income groups. This, paired with a transactional selling of POS to people who had direct ties to the system, led to the creation of gated recreational parks with entry fees (Ahmad, 2000).

In brief, the duality of endorsing private land investments and dictating the use of POS by the 'inqaaz' government may have significantly affected the accessibility of low-income groups. Consequently, the socioeconomic disparity and spatial injustice experienced inflation (Figure 6), potentially contributing to the creation of exclusive environments within urban areas.

However, this issue is juxtaposed with an opportunity that the following sections will address; i.e., despite the underdeveloped state of neighbourhood POS in Khartoum (Figures 8-11), yet, they are abundantly distributed (Figures 12, 13) (Awad, 2018). Entailing the rethought of developing these neglected spaces into alternative open spaces distinct from their developed or privatised counterparts (Figure 7).

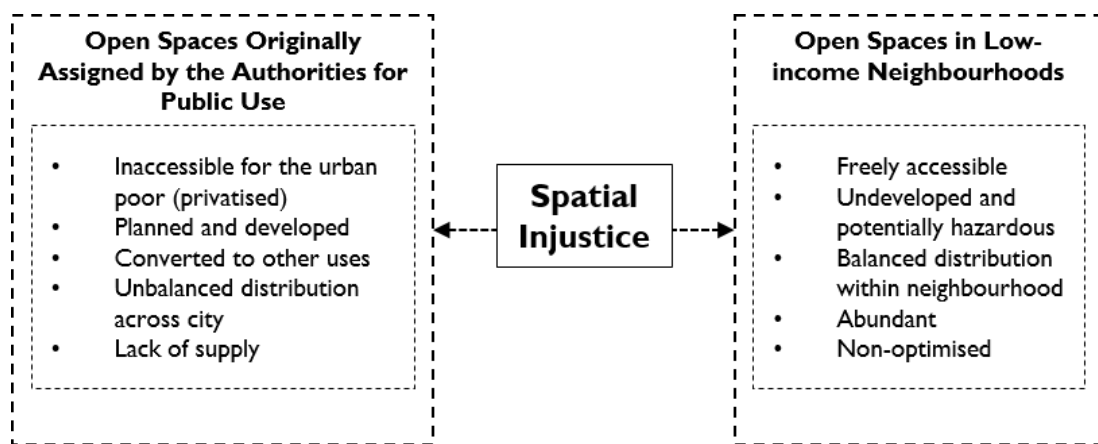


Figure 6: Spatial Injustice in Khartoum's urban open spaces – development without access vs. accessibility without development. Source: (Author)



Figure 7: Samples of privatized developed POS in Khartoum's high-income neighbourhoods. Source: (Awad, 2018)



Figure 8 (left): During the occasional rainy season, POS's poor drainage leads to flooding. Source: (Author)
Figure 9 (right): the state of a neighbourhood POS in Khartoum, with men playing football in undesirable environments. Source: (Author)



Figure 10-11: Low-income neighbourhood POS. Source: (Author)

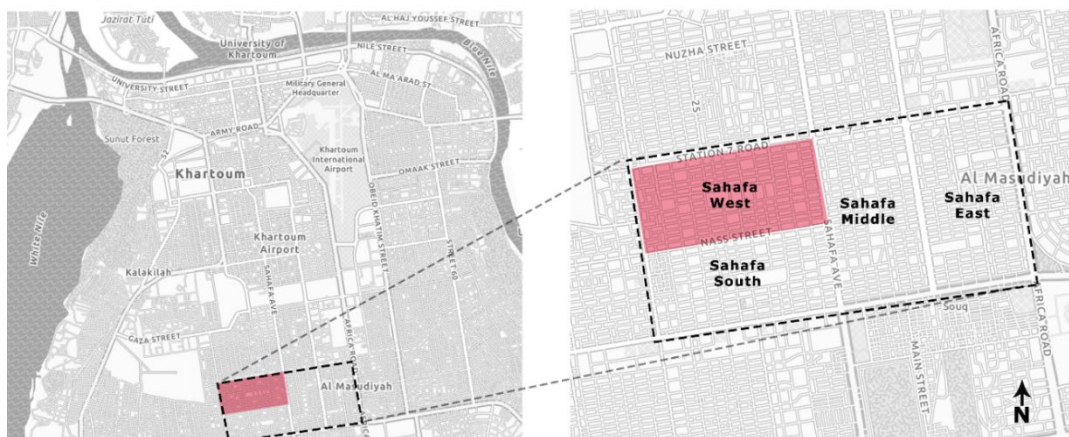


Figure 12: Location of 'Al Sahafa west' – a low-income neighbourhood in Khartoum.
Source: (Author's based on Google Maps)



Figure 13: POS amount and distribution in 'Al Sahafa West'. Source: (Author)

2.2. Public Open Space: Phases and Contextual Strategies

Phases: Planning, design, and management

Top-down action from governments toward revitalising POS is exemplified in some developing countries through establishing technical guidelines and standards alongside incentives for their implementation (Kaw et al., 2020). Context-specific factors influencing planning public space in cities include: cultural behaviours, economy, urban fabric, and legal policies to name a few (Garau, 2015). Place-based design requires users to be involved in the process of planning and design to incorporate their perceptions and ensure improvement is clearly directed towards benefiting the public.

On top, Hamdi (2004), Garau (2015), and Kaw et al., (2020) agree that management responsibility -especially in developing countries- of POS initiatives can be assigned to community-based organisations (CBOs). An effective supervision structure can be modified according to the place and context, all while taking into account the resources for funding.

Approaches and Strategies

'Placemaking' is a holistic multi-layered strategy of planning, designing, and managing public spaces that maximise assets of local communities and create accessible spaces, boosting happiness and well-being (PPS, 2019). In this sense, the (human, place,

economy)-centred approaches in (Figure 14) focus on society, the built environment, and economy respectively, as intertwined pillars that work together in the placemaking process to achieve active developed POS.

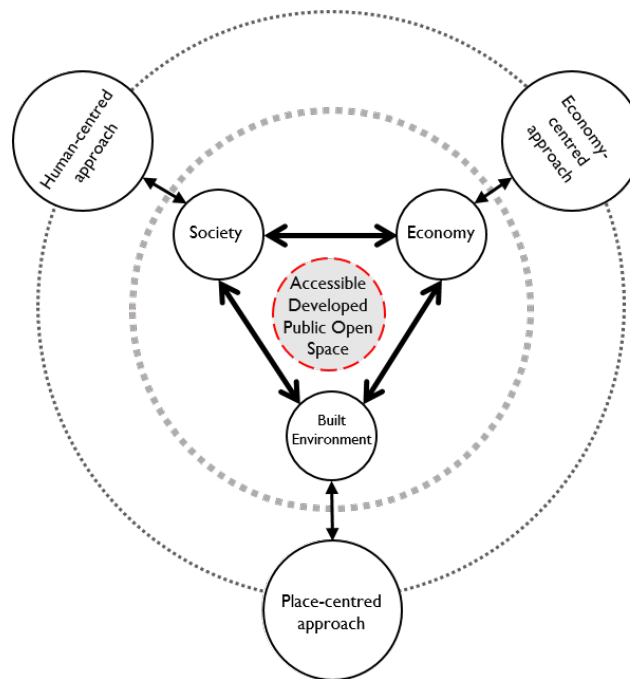


Figure 14: Three integrated pillars of focus in placemaking to develop active public spaces.
Source: (Author)

2.2.1 Human-centred Approach

At its core, this section echoes Lent and Studdert’s (2019) idea that empowering local communities by facilitating their ownership to take control of their neighbourhood POS is beneficial in improving well-being and social cohesion (Habitat III, 2016). Challenging the governmental and private sector’s notion of authorship and transferring power to communities, therefore, increasing their ownership towards their public spaces. This can have two layers:

a) Designing for Local Communities

A human-centred approach places the specific needs, habits, cultural inclinations, and conditions of neighbourhood inhabitants into the core of the design process. If the process is informed by these facets, the resulting POS may potentially become inviting to local communities, and in turn, encourages higher engagement while creating a sense of place and belonging (Gehl, 2010). Moreover, when a POS resembles a social hub that stimulates interactions, it may lead to opportunities for exchanging ideas and sharing knowledge (Katz & Wagner, 2014). Additionally, when the POS is accessible and inviting, communion between local communities across socioeconomic divisions may create a dynamic of brief suspension of inequality between these groups – thereby fostering a sense of shared responsibility toward the public realm (Lent & Studdert, 2019).

b) Participatory Process

Actively engaging neighbourhood inhabitants in the design process of their POS is an approach that utilises their direct insights on their needs, environment, and their collective desire to promote change (Garau, 2015).

By harnessing the collective knowledge and local wisdom of inhabitants and other stakeholders, this approach can help achieve several goals: 1) An understanding of the POS's intended users, which may lead to a better design response 2) Access to context-related insights and information sources, which helps in producing innovative solutions, 3) promoting a sense of ownership, which aids in maintaining the quality of POS, and 4) Promoting inclusion, for example, engaging women and girls helps create a gender balance, while involving children, and the elderly in the process creates diversity.

Additionally, participation may extend to management as well. In developing countries with communities relying on volunteerism, entrusting the management to CBOs funded by local budgets and fund-raisers can be a practical scenario of management (Kaw et al., 2020). This approach could be particularly compatible with the Sudanese society given their familiarity with collective civic stewardship and their long-standing social traditions of volunteerism to address various communal needs, known locally as "Nafeer" (Kushkush, 2013).

Moreover, the enjoyment of developed POS is connected to the behaviour of citizens (INU, 2015). However, the relationship between governments and communities may impact their engagement level with the public realm. In Khartoum, for example, people may prioritise caring for their homes' interiors over exteriors and streets due to a variety of fiscal and municipal challenges (Hamid, 2015). Some individuals may experience disconnect to areas outside their homes, and there could be expectations for the government to take responsibility for these spaces (Elkheir, 2017). This observation sheds light on how they perceive their city and their position within it, and how factors like apathy may contribute to certain aspects of the city's condition. Thus, encouraging people to actively participate in the process of developing POS may foster a stronger sense of ownership and connection to these areas, leading individuals to perceive them as an extension of their homes' vicinity.

2.2.2. Place-centred Approach

Developing and utilizing existing spaces in innovative ways incorporates identifying undeveloped land plots or areas in need of urban revitalisation, and considering investing in them in order to repurpose their use to become active places. The UN-Habitat (2015) recommends variety and mix in the types of POS strategies to corroborate spatial justice at neighbourhood level.

a) Urban Acupuncture

Architect and urbanist Lerner (2014) claims that small-scale interventions can multiply towards bigger impacts in cities. Stating that accessibility and supply of public spaces is more important than large footprints (i.e., developing small well distributed spaces can have a bigger impact on communities than one big space). Moreover, Shaftoe (2008) points out the value of smaller places, as 'breathing' spaces in neighbourhood layouts.

Incremental place-centred approaches have shown positive results; evidently in cities that have active public spaces correlating with high user satisfaction when transforming poor-quality POS to colourful inclusive spaces (Gehl, 2010).

b) Cost-effective Strategies

There are several forms of strategies to be applied in the design stage of public spaces. Deciding the best strategy is context specific. However, successful initiatives in developing cities share common strategies:

- *Tactical Urbanism*

Minor alterations to the physicality of the space ripple out bigger impacts of improvement (Whyte, 1980; Lerner, 2014). Nevertheless, these strategies have a short lifespan if not systematically supported by governments in terms of planning, ownership, and management.

- *Utilising Local Materials*

Using available local resources that neighbourhoods have can enhance spaces with low-cost solutions (e.g., recycled solid waste and billboard scraps can be used in fabricating furniture for POS like benches and seating, while paint can add vibrancy and colour to the space). Kaplan and Kaplan (1989) also denote the importance of greenery on aesthetics and how people psychologically perceive spaces. Seeking plants and creepers that grow with a minimum amount of water is a low-cost solution to provide shade and counter pollution in hot climates. Using mortar made from sand and earth to hold sun-baked bricks can be another low-cost solution to create walkways and pavements; mud can also substitute plaster for finishes (UNESCO, 2016a).

- *Synergy with Local Culture*

Cultural identity of neighbourhoods can be strengthened by investing in POS as a way to reclaim POS by using them for cultural activities. (UNESCO, 2016b). Urban public art is a vital ingredient in enjoyment of public space aesthetics and is cost-effective if connected to a master strategy. It can attract talented individuals or groups to a common space, fostering local community participation (Garau, 2015).

2.2.3. Economy-Centred Approach

This approach seeks to derive economic value from POS to benefit local communities. This value can be created in different levels: 1) Individuals, 2) Small businesses, 3)

Neighbourhood. POS becoming a hub for informal vendors and micro enterprises helps create a direct means of sustenance. In developing countries, informal artisans and street vendors portray a big share of informal economy and employment. For these groups, cities can become an engine to steer socioeconomic development by facilitating POS as hubs for local enterprises (Bhan, 2019; Simone, 2015; Skinner et al., 2018). Case studies suggest that informal vendors are willing to buy their feeling of security and legal stability for a reasonable amount of their returns (Dobson & Skinner, 2009).

Subsequently, the increased economic activity and traffic may attract complimentary small businesses adjacent to the POS.

Lastly, an active POS area could passively create value appreciation of neighbourhood land/properties that benefit communities. However, unintended consequences (e.g., gentrification) should be considered regarding the increased rent for residential and commercial real estate.

Additionally, financing and sustaining POS may be achieved through investing local funds and re-investing the returns back into the POS in this manner:

a) *Investing to foster economic activities*: Small investments in POS can achieve impactful results in strengthening communities in social and financial ways (UN-HABITAT,

2012). Capital can be endowed from a combination of private investors and community funds.

b) *Re-investing to create Self-sufficient POS*: Through implementing tax policies on land that has an increased value from the active POS, by guaranteeing a return to the managing stakeholders (communities, private sector, or governments). Then reinvesting the returns back into the public space to upgrade it and improve its amenities. Local enterprise establishments adjacent to developed active public spaces increase, and consequently, increase returns to the city.

2.3. Integrated Tri-pillar Framework (ITF)

(Figure 14) was unpacked in section (2.2.), and in this section, the figure is expanded to encompass a summary - represented in an Integrated Tri-pillar Framework (ITF) (Figure 15). Developing informal vacant land through incremental improvements in deprived neighbourhoods can indirectly generate income and create jobs for people if it is converted into a formal POS. Strategically prioritising a POS for gradual improvement brings powerful outcomes that can reduce poverty, provide development opportunities, and optimise land use. However, the cornerstone of success is creating human-centred inclusive POS through design, with the participation of users and stakeholders. Community engagement can yield fast results due to the high capacity of collectivist communities to be involved in projects improving their livelihood. Furthermore, managing the assets of public spaces in financially sustainable contracts include legitimating and triggering revenue from informal businesses. Therefore, the literature indicated that a developed accessible POS (Figure 15) is: 1) *socially and physically inclusive, aesthetically pleasing, and accessible*, 2) *active and lively*, 3) *strengthens civic pride and local identity of communities*, and 4) *heightens the economic potential and cultural activities*.

3. Methodology

This study adopts an exploratory approach with an inductive component. The iterative process of data collection and analysis allows for the exploration of emergent themes and patterns, contributing to a deeper understanding of the strategies that can enhance POS in low-income neighbourhoods. While an inductive component of case studies analysis helps to validate and strengthen the initial framework in order to generate new insights. Thus, the methods are based on desk research, literature review, and analysis of pilot projects as case studies. The presented data are from secondary sources collected from published books, academic journals, governments' publications, organisations' reports, conference papers, and internet search databases.

The literature review achieved the first objective and defined a theoretical framework encircling contextual approaches and strategies for improving informal POS in developing countries (POS-ITF). The framework will be validated through case studies analysis from countries that share commonalities in the geographical context with Khartoum. The descriptive nature of the research question in finding out what kind of strategies can improve POS, made the method of analysing case studies relevant to this study. Moreover, the main motive of the selection is to derive exemplars from the cases (Yin, 2018) to mobilise the framework. The analysis technique relies on matching patterns across the phases mentioned in the framework. Thus, the selected cases are confirmatory and presume practical replications. The protocol of selecting the case

studies aims at choosing cases of informal POS that closely relate to Khartoum's POS the most. Hence, the selection criteria were based on i) location, ii) type, and iii) scale. Firstly, all the cases are from African developing countries. Whilst each country in Africa has its own unique character and customs, however, there are prominent similarities on the state of POS and the collectivist nature of local communities. Secondly, the cases are similar in typology – they are all informal POS in low-income neighbourhoods that share characteristics with Khartoum's neighbourhoods. Thirdly, the cases vary in scale, contrasting in size of spaces and population. Finally, all the cases implement overlapping approaches (human, place, economy-centred) and strategies from the framework in (Figure 15).

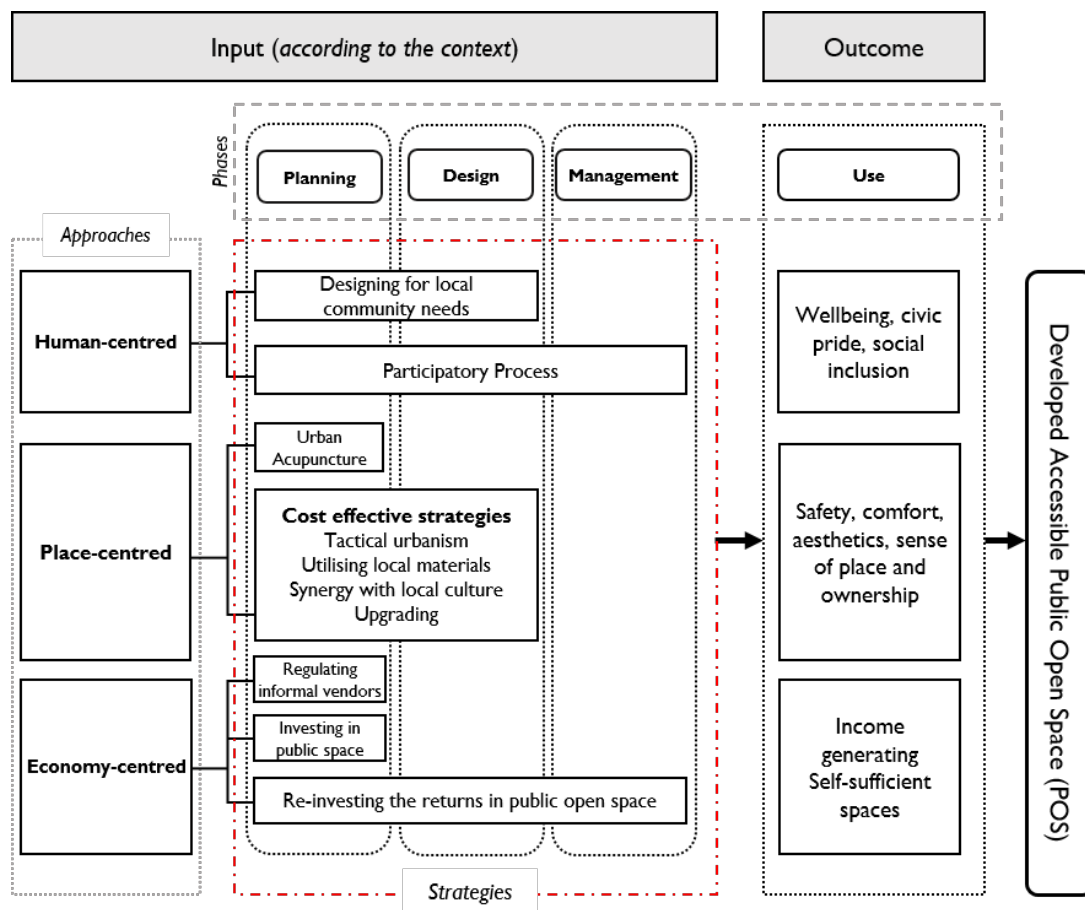


Figure 15: Integrated Tri-pillar Framework (ITF) Source: (Author)

Furthermore, each case study description is organised through reporting the context description, the input strategies, and the outcome. Followed by pattern-matching the input strategies according to the phases of public space. As a result, generalizable knowledge across contexts will be extracted in the form of recommendations for Khartoum.

4. Framework Validation: Case Studies

On bridging the disparity gap, a collaboration was initiated in 2018 between UN-Habitat, HealthBridge (a Canadian NGO), and local organisations in developing countries. Successful pilot projects were implemented for low-income populations - on holistic POS development. The following selected cases are located in Ghana (Mmofra Foundation, 2018), Uganda (APS, 2018), and Niger (Peaceful Roads, 2018). Which all appear to have *the significant lack of formal POS and the undesirable quality of POS* in common with Sudan.

A) Teshie Park – Accra, Ghana

Context: A vacant land (Figure 16) used mainly by children and youth, deteriorated and became a dumping ground and a space for storage for a municipal office. The POS functioned as a ground for training the football team of local youth and fitness enthusiasts, in addition to being the prayer ground that gathered religious groups. The site had challenging aspects, such as burst water pipes and overflowed storm water that caused regular flooding.



Figure 16 (left): Case (A): Site pre-intervention. Source: (Mmofra Foundation, 2018)
Figure 17 (right): Case (A): Site post-intervention. Source: (Mmofra Foundation, 2018)

Input: The primary objective of upgrading the space was to enhance recreational opportunities for the local community. This involved collaborative efforts from labourers, residents, and diggers to clear the site, replace pipes, and construct a sandbag barrier for drainage. Water tanks and taps were added, and the site's perimeter was secured using cost-effective, locally-sourced fencing materials. The fencing types varied, offering unique features such as a tire and wood fence allowing children to see into the area, and a steel mesh fence for advertisements. The existing sports area was divided to create a versatile pitch. Additionally, handcrafted play elements like painted steel frames, swings, recycled tire seats, and more were incorporated. Shading devices, painted walkway stones, and a bamboo maze were also added for further enhancement.

Outcome: After implementing the major physical upgrades to the park (Figure 17), the number of users significantly increased, because there were now places for adults to sit and zones for children to play. The users' increase correlated with an increase of diversity in the user groups. School children visited the space regularly after school to play and do homework. Local community members often occupied the seating areas in

midday and evenings. In addition, the space attracted vendors that catered to the increased user number, and the mesh fence generated income through advertisement boards.

Project	INPUT				OUTCOME
	Approach	Planning Phase	Design Phase	Management Phase	Use Phase
Teshie Park Accra, Ghana	Human-centred	Collaborating with labourers, diggers, and residents	Residents collected materials Skilled local crafters prepared design components	Local community members	Increased diversity in user groups
	Place-centred	- Aiming to increase safety measures - Including the residents in informing physical design decisions	- Securing site parameter by building different types of fencing. - Replaced the pipes, and built a sandbag barrier near the drainage to omit regular flooding from burst pipes. - Installed handmade play components. - Shading devices made from waving reed structure was installed on top of the seats. - Added bamboo maze	N/A	New playground area attracted more children New seating attracted more adult occupants
	Economy-centred	N/A	Use of low-cost materials: old tires, leftover paint, recycled bricks. Mesh steel fence	Generating income through hanging advertisement boards	Increased user activity in space attracted local vendors

Table 1: Case (A): contextual application of placemaking approaches and strategies. Source: (Author’s based on Mmofra Foundation, 2018)

B) Lukuli Playground – Kampala, Uganda

Context: community-owned POS, predominantly used by male adults and youth for playing ball sports. Located in a low-income area where the local community’s recreational needs are neglected. Lukuli Playground was intended to cater to a large population of 12 parishes. The space had a combination of a playground, a sports ground, and green space. Local residents used it to dry laundry, graze animals, mine sand, and dispose garbage. Although the playground was accessible, the space lacked children play facilities. The low quality was clearly seen in the playground and amenities shortage was demonstrated in the only existence of goal posts. The space was hazardous, with litter thrown around due to lack of trash cans (Figure 18), broken pieces of glass and sharp stones on the ground, in addition to lack of lighting, seating, water taps, toilets, and first aid facilities. The unlevelled ground, open drains, and stray animals also created safety concerns.

Input: The main priority for the upgrade aimed to address installing toilets, managing waste, and halt flooding. The project provided a building that contained disabled-inclusive toilets, changing rooms, and an office for the POS management. The drainage in the site was fixed, the ground was properly levelled, football and netball courts were added, and a significant number of tree seedlings was planted and wrapped with used mosquito nets to prevent their abuse by stray animals. Additionally, a play area for children was created and it included wood hand crafted swings, benches, and small cars – created by a resident who was a local carpenter.



Figure 18 (left): Case (B): Site pre-intervention. Source: (APS, 2018)
 Figure 19 (right): Case (B): Site post-intervention. Source: (APS, 2018)

Outcome: Adding a netball court and children's area significantly boosted children's enjoyment (Figure 19), as older football players no longer posed barriers. Inclusivity heightened diversity and tripled users - netball court drew women, playground attracted disabled children. Flood issues tackled, space turned active even before construction completion. The new facility building catered inclusively, meeting majority needs.

Project	INPUT				OUTCOME
	Approach	Planning Phase	Design Phase	Management Phase	Use Phase
Lukuli Playground Kampala, Uganda	Human-centred	Meeting with local residents to extract design ideas and inform needs and decisions	Local carpenter hand crafted wooden swings, wooden benches, and wooden small cars in children play area	Local Community	Total user number increased by 190%
	Place-centred	Discussions on: installing toilets, managing waste, stopping flooding	-Levelling the ground -Constructing a facility building in the space -Creating a playground -Vegetation planting	Vegetation protected with recycled mosquito nets	More disabled children and women were able to access the space and enjoy it
	Economy-centred	N/A	N/A	Facility building contained an office for the public space management for the local residents	N/A

Table 2: Case (B): contextual application of placemaking approaches and strategies.
 Source: (Author's based on APS, 2018)

C) Yantala Open Space – Niamey, Niger

Context: Niamey's low-income neighbourhoods lack formal public spaces, and the existing ones are of poor quality and at risk of privatization. Despite rapid city growth, only two parks out of seven are functional. Among them, 'Yantala Open Space' stands in a traditional neighbourhood within a grouping of lower-income communities. Initially vacant and lacking amenities (Figure 20), this area was regularly utilized by residents, mainly for football. Its proximity to a mosque further enhanced its status as a popular community gathering place.



Figure 20 (left): Case (C): site pre-intervention. Source: (Peaceful Roads, 2018)
 Figure 21 (right): Case (C): site post-intervention. Source: (Peaceful Roads, 2018)

Input: The project employed an inclusive participatory approach through a Minecraft workshop (Block by Block, 2018), involving various local community members and governmental bodies. Their collective focus was on meeting recreational needs, such as introducing a playground and play facilities. Throughout the design phase, community engagement continued through site events, contributing to both physical changes and subsequent management efforts. The project encompassed 35 infrastructure enhancements, including a community garden for produce, swings, colourful tire fence representing the Niger flag, tire tunnel, toilets, refreshment centre, and fish ponds. Additionally, football and pétanque grounds were built, while addressing waste management and water availability.

Project	INPUT				OUTCOME
	Approach	Planning Phase	Design Phase	Management Phase	Use Phase
Yantala Open Space Niamey, Niger	Human-centred	implementing an inclusive participatory process through 'Minecraft' game workshop and collaborating with school children, women, and the elderly	Inviting community participation through site events Responding to the needs of the local community	Joint management between local residents and a parliament member	Increase in activity within the space Increased feelings of ownership and enjoyment
	Place-centred	Fulfilling recreational needs	Enclosing the space with a recycled tire fence. Creating a 'refreshment centre' within the space. Creating playground and play facilities for children. Connecting water to the space through developing an irrigation system. Constructing a football and petanque grounds.	NA	Four times an increase in users from diverse groups (women, children, elderly)
	Economy-centred	An added value of economic activity within the space	-Community garden. -Fish pond.	-Gardening and preparing vegetables. -Fish farming.	Creation of monetary returns

Table 3: Case (C): contextual application of placemaking approaches and strategies. Source: (Author's based on Peaceful Roads, 2018)

Outcome: The project provided the local community with a safe, comfortable, and inclusive place to socialise and relax. The playground resulted in an increase in children and youth users from day till night (Figure 21). Other infrastructural changes resulted in an increased number of women, elderly, and football/pétanque players. An irrigation system was specifically developed for the project and connected water to the community garden and toilets. Moreover, the fishponds were used for fish farming purposes, and the local community sold the prepared fish in the refreshment centre, generating income for the park. Implementing this project was considered a good model for the rest of public spaces in the city. Provoking public space policy changes in Niamey, as a local parliament member supported the park financially and technically.

5. Discussion

5.1. Patterns across phases

The input of the cases is organised according to the phases that contained the strategy, and the stakeholders at each phase. Planning, design, and management phases constitute the input, while the outcome is demonstrated in the POS use phase - post intervention.

Planning Phase

The international and local NGOs in all cases were the main facilitators of each intervention from the start. Positioning the local community as the main active stakeholder, while the government was a passive stakeholder that supported the projects technically and monetarily (e.g. case C).

In this phase, data from the local community was collected to inform what changes each space needed, while also involving the people in the decision-making process of the type of interventions to be implemented. This stage forms the foundation for all other stages; therefore, an appropriate amount of time needs to be spent to assess the quality of the space in order to identify what is needed.

Throughout the cases, the spaces started at an underdeveloped level, which made them a blank canvas to work on. Denoting the importance of the participatory process especially in this phase. One of the tools used was the *Minecraft workshop* that allowed diverse groups of all ages to add their voice to the discussion through visuals. Perhaps the element of incorporating 'play' attracted more people, especially younger groups. However, it is worth noting that the use of Minecraft may not be the most cost-effective approach. Adding the element of fun and play is not exclusive to a workshop that requires computers and devices which could be hard to acquire in some contexts. Opting for other low-cost means of adding the play element can be through papers and crayons or chalk and a blackboard to draft ideas by the participants. The main goal here is to have pulling factors that attract diverse participants, so the voice of most is heard and considered, without imposing potential financial burdens on the stakeholders.

As many people in low-income neighbourhoods might be sceptical at first due to a potential mistrust in authority, the use of traditional techniques alone might not bring many participants unless there is a compelling reason that brings them. Socialising opportunities with neighbours or play opportunities for kids can be factors that attract sceptics. For this reason, the initial process of raising awareness is crucial and works as a conversation starter, while the workshop extends the conversation to achieve practical

objectives. In addition, it injects excitement in the participants from the targeted local community, motivating them to participate in the following phases.

Design Phase

This phase marks the realization of significant infrastructural changes aligned with the identified needs from the planning stage. The local community, central as stakeholders in each case, transforms plans into tangible actions with the guidance of NGOs. Procuring materials, including repurposed items like old tires and recyclable waste, becomes a focus. Neighbourhood carpenters and metalsmiths play a role in crafting these materials into functional amenities.

Moreover, local residents contribute what they can, from plants to reusable materials, expediting the process as seen in case C. Capturing and channelling the initial enthusiasm of volunteers onto the site is crucial during this phase. Witnessing neighbours taking the lead can inspire more locals to participate. However, disorganization and technical hurdles resulting from poor planning can lead to delays that dampen the spirits of initial participants. Thus, sustaining excitement throughout this stage is pivotal. Strategies like organizing construction events to attract more residents or conducting opening ceremonies post-completion can maintain momentum. Granting targeted local communities influence in the planning and design phases results in heightened ownership and responsibility (Lent & Studdert, 2019).

Management Phase

Communities handled cases independently, overseeing security, facility administration, and generating income (case C). This phase's completion sets an example for policymakers in replicating inclusive processes for informal POS. Neighbourhood committees, trustees, and vendor groups managed spaces in cases (B) and (C). Empowered individuals feel responsible and motivated for ongoing management post-NGO involvement. Self-driven planning, design, and management lead to enduring protection, sustaining advantages of formalized POS. Conversely, without rewarding efforts, excitement fades, causing gradual deterioration.

Use Phase

The use phase results from prior stages' integration. Despite short implementation, cases yielded impactful evidence. Informal spaces formalized, awareness of POS significance surged (cases A, B). User growth and community involvement paralleled increased ownership, showing community-responsive spaces foster activity. Trust heightened between local communities and government (Daniel, 2018), bridging bottom-up and top-down. Data ambiguity exists on impact, visuals possibly biased, but user increase and time spent indicate active, enjoyable spaces (Gehl, 2010).

5.2. Wider patterns across contexts

The observed similarities in physical attributes and typology that these POS -pre-upgrade- have with Khartoum's low-income neighbourhood POS make them exemplary analogies on how POS can be developed to become inclusive spaces that are fully active and responsive to residents' needs. With case (C) being the closest in character to Khartoum's low-income neighbourhoods. While these strategies were implemented across contexts, yet, they exhibited successful results mainly because they were tailored to the specifics of each context in the planning phase.

Although the framework's intertwined approaches are overarched by the 'human' factor, it also heavily overlaps with 'place' and 'economy' dimensions. The three outlooks work together through connected strategies, to eventually produce successful POS. Through this lens, the following recommendations summary is extracted:

Firstly, evidence supports the notion of engaging people in the process from the start as the core catalyst is a pivotal element in the success of any urban project (Habitat III, 2016). Thus, learning the local community's needs in Khartoum's low-income neighbourhoods is the first step in a responsive human-centred approach. Followed by involving all parts of the community, especially the groups that do not have an active voice like women, children, and the elderly, ensures social inclusivity and results in diversity, empowerment, feelings of belonging, and a shared responsibility (Lent & Studdert, 2019).

Secondly, the study suggests the important element of mobilising government officials in Khartoum's localities into realising the livelihood and monetary returns that formalised POS in low-income neighbourhoods can generate. An economy-centred approach, in the least, ensures community street vendors and informal traders are benefitted, which facilitates diversity in the space, and at best, provides self-sufficient POS, which ensures long-term sustainability.

Lastly, the case studies analysis provides insight into employing low-cost strategies and utilising local materials in the infrastructural implementation stages creates comfortable - aesthetically pleasing spaces. Informal POS in Khartoum's poor neighbourhoods can become more than sandy polluted football fields, and upgraded into beautiful vibrant places that residents of all groups seek as a destination, reaping their financial rewards, and most importantly - enjoying their stay.

Certainly, prioritising POS agendas in Sudan can minimise the negative impacts that lack of accessible socially-inclusive spaces create. The economic value alone justifies motivating research bodies, policymakers, government officials, and most importantly, the local communities to focus on public space advancement in Khartoum.

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