Proceedings of the 3rd Conference for Planning Students and Young Graduates

Spatial Planning, Urban Development Challenges/ Opportunities, Resilience and Smart Cities with focus on 4IR

Dr George O Onatu & Prof Trynos Gumbo

CONFERENCE

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UNIVERSITY OF JOHANNESBURG

3rd Conference of Planning Students and Young Graduates

"Spatial Planning, Urban Development Challenges / Opportunities, Resilience and Smart Cities With Focus on 4IR"

Dr George O. Onatu and Prof. Trynos Gumbo (Eds)

UJ Press

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List of Abbreviations

$	Dollar(s)
1IR	First Industrial Revolution
2IR	Second Industrial Revolution
3IR	Third Industrial Revolution
4IR	Fourth Industrial Revolution
AI	Artificial intelligence
AMA	Accra Municipal Assembly
ANC	African National Congress
BRT	Bus Rapid Transit
CARA	Conservation of Agricultural Resources Act
CBD	Central business district
CEO	Chief executive officer
CoGTA	Department of Cooperative Governance and Traditional Affairs
CPSYG	Conference of Planning Students and Young Graduates
DMA	Density, Mix, and Walkability
EIA	Environmental Impact Assessment
FEBE	Faculty of Engineering & the Built Environment
GAMA	Greater Accra Metropolitan Area
GDP	Gross domestic product
GIS	Geographic Information System
GPS	Global Positioning System
ICT	Information and communications technology
IDP	Integrated Development Plan

ITDP	Institute for Transportation & Development Policy
km	Kilometre(s)
km^2	Square kilometre(s)
KNUST	Kwame Nkrumah University of Science and Technology
LEHCo-op	Lesotho Housing and Land Development Company
LHLDC	Lesotho Housing and Land Development Corporation
m	Metre(s)
M	Maloti
MDG	Millennium Development Goal
MISA	Municipal Infrastructure Support Agent
MRT	Mass Rapid Transit
MSDF	Municipal Spatial Development Framework
NADMO	National Disaster Management Organisation
NEMA	National Environmental Management Act
NMT	Non-motorised transport
NTMP	National Tourism Master Plan
PAC	Pan Africanist Congress
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
QR	Quick Response [code]
RDP	Reconstruction and Development Programme
RSA	Republic of South Africa
SACN	South African Cities Network
SACPLAN	South African Council for Planners
SDF	Spatial Development Framework
SDG	Sustainable Development Goal

SEZ	Special Economic Zone
SHHA	Self Help Housing Agency
SPLUMA	Spatial Planning and Land Use Management Act
Stats SA	Statistics South Africa
UFS	University of the Free State
UJ	University of Johannesburg
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UN-Habitat	United Nations Human Settlements Programme
USA	United States of America

Conference Overview

Conference of Planning Students and Young Graduates (CPSYG)

24-26 October 2022, University of Johannesburg, South Africa

In recent years, Africa has been recognised as one of the fastest-growing continents in the world. Cities have played a pivotal role as the principal driver of unprecedented economic growth and development. While these cities continue to develop and attract investments, the focus on sustainable smart cities is gaining attention from a multitude of stakeholders. Cities are no longer confined to defined geographical boundaries but are emerging, evolving, and connecting in the form of regions and adapting to opportunities for growth, expansion, and sustainability. Urban planners, built environment experts, and other stakeholders have larger roles to play in unfolding the paradigm of sustainable and smart cities at various levels of the planning lifecycle.

The conference aims to discuss a broad range of topics, including, but not limited to, the following key themes: sustainable cities; smart cities with 4IR; integrated urban planning; urban and rural development/migrations; urban governance and management; city regions; e-governance; smart infrastructure; green infrastructure; city performance and indicators; building codes; service delivery challenges; human settlements; inclusive participation and development; informality and housing challenges; decolonial cities; and climate change and adaptation / disaster management.

We wish to express our gratitude to the conference sponsors for their steadfast support, the keynote speakers for their valuable time and contributions, the conference

attendees for their generous sharing of ideas, and all conference participants. The organising committee members, helpers, and student volunteers also deserve special recognition. Most importantly, we thank the Department of Urban and Regional Planning for its support of the initiative over the years.

Have a wonderful time, and we shall see you soon for another cycle of the event.

Dr George O. Onatu (PhD)

Introduction

The Conference of Planning Students and Young Graduates (CPSYG) was founded in 2014 as a brainchild of the staff of the Department of Urban and Regional Planning at the University of Johannesburg (UJ). It is an international academic conference devoted to promoting scholarly planning and built environment research and discussions. Its secretariat is located in the Department of Urban and Regional Planning at UJ, School of Civil Engineering & the Built Environment, Faculty of Engineering & the Built Environment. Since its establishment, it has organised two conferences, with this particular one being the third in the series. For the first time, this conference provides an important avenue for young practitioners to relate to and interact with young academics. It is one of the few conferences that has successfully brought together all associations of planning schools in Africa and their institutes under one umbrella to share views and programmes. This conference has been endorsed by both the Committee of Heads of Planning Schools and the 11 planning schools in the Republic of South Africa. It serves as an important breeding ground for identifying talent, nurturing future planning researchers, matching potential postgraduate students with supervisors, and developing long-lasting academic and research project relationships.

The papers presented share important information on cutting-edge issues and the contemporary problems of modern cities; starting from the ancient times of the Tigris and Euphrates up to the era of the Industrial Revolution. The Industrial Revolution is noted to have led to the transition from agriculturally based communities to an industrial, and subsequently spatially centred, society. This recent, unabated global urban growth has resulted in the expansion of informal settlements throughout the cities of the Global South. The power struggles and dynamics among the relevant stakeholders that play out in these settlements have resulted in significant structural inequalities and marginalisation, as evidenced by the situation in one of the oldest townships in South Africa,

Alexandra. The findings suggest possible solutions for how municipalities can monitor pollution with the aid of state-of-the-art technology drones. In another vein, one of the presenters shared recent work on wetland ecosystems, highlighting how their high levels of biodiversity and economic and social significance still lack sufficient legal protection and research, and face enormous threats, including unsustainable activities. The nexus between urbanisation and development was also addressed, with findings suggesting that it is very difficult to separate the two, as each impacts the other.

Creating sustainable cities that can resist both climate change and unexpected growth, which is one of the overall objectives of Sustainable Development Goal (SDG) 11, was found by one of the presenters to be very extensive and complex, especially when viewed from the perspectives of housing provision and sustainable human settlements. Another insightful paper discussed the use of the Fourth Industrial Revolution (4IR) to monitor and revitalise mining towns, most of which are not properly planned. Issues surrounding service delivery in the informal settlements of Alexandra, particularly in Stjwetla, were also noted. The findings suggest further densification and possible relocation if suitable land can be made available by the government, but all of this can only progress once restitution problems are resolved. Transport planning and design were also addressed, with an investigation into non-motorised transport that compared Singapore, Shanghai, Lagos, Jakarta, Johannesburg, and Cape Town.

City competitiveness, which is a new area of study, has come into the spotlight. It refers to a city's ability and capabilities to exploit or create competitive advantages, resulting in high economic growth relative to its competitors. With globalisation currently sweeping across the globe, many local governments are being pushed to enhance and maintain the competitive advantage of their territories. Factors that influence competition in cities are multifaceted and context-specific; however, location and human capital are essential endowments for competitiveness.

Other international experiences and interesting research agendas showcased at the conference include the raiding of low-income areas in Lesotho, where government-subsidised housing units intended for the poorest of the poor and the marginalised were eventually taken over by middle-income earners. Similarly, in Ghana, it was presented that the state's role in the creation of urban informality and flood vulnerability in urban areas of developing countries is on the rise. The state creates urban informality by acquiring land for state purposes and not using it as intended. These lands are often left unused for long periods, leading to encroachment by the urban poor. In other instances, the state changes the use of these lands, which may not align with land use planning.

A case study from Zimbabwe argues for the need for tourism infrastructure and services that can accommodate unforeseen uncertainties, such as the COVID-19 pandemic.

In summary, all the papers presented provided additional ground for robust engagement and debate on the need for all stakeholders to find common ground on how to create smart cities that are both resilient and sustainable, thereby bridging both nexuses.

Aim

The 3rd CPSYG (2022) aims to provide a forum and platform where young planning students, built environment and related students, as well as young professionals, researchers, practitioners, and other stakeholders can discuss and contribute to integrated urban planning, development, implementation, governance, social justice, equity administration, and the monitoring of sustainable and smart cities. It also aims to promote research networks and connections among young planners and professionals. The conference is seen as an important avenue for sharing experiences, providing a mentoring platform, and creating a learning environment outside the classroom for young researchers, practitioners, and even established researchers who are eager to go the extra mile in propagating and promoting planning knowledge and discourse.

Keynote Speakers

- Prof. T. Shongwe: Opening Speech, Vice Dean: Research and Internationalisation, Faculty of Engineering & the Built Environment (FEBE) – University of Johannesburg
- Prof. Jeffery Mahachi: Head of School of Civil Engineering & the Built Environment, FEBE – University of Johannesburg
- Mr Martin Lewis: Chief Executive Officer (CEO): South African Council for Planners (SACPLAN)
- Mike Makwela: Senior Programme Coordinator – PlanAct
- Mr Sabelo Goniwe Mahlangu: Presidency: Infrastructure South Africa, Mpumalanga Lead Coordinator
- Mr Msinzi Myeza: CEO: Council for Built Environment South Africa
- Mr Itumeleng Nkoane: Area Manager: Germiston, Ekurhuleni Metropolitan Municipality
- Mr David Chamboko: Former Executive Director: Development Planning & Housing Midvaal Municipality

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Ms Mpumi Mzobe University of Johannesburg
Mr Mhlalisi Mndzebele University of Johannesburg
Ms Linda Mujakachi University of Johannesburg
Mr Andisa Mufungisa University of Johannesburg

Mr Pogiso Golele Department of Agriculture, Land Reform and Rural Development, Pretoria

Peer-Review Process

All papers were double-blind peer-reviewed by a team of experts and scientifically scrutinised by the Review Committee before being accepted, after all comments and corrections were addressed by the authors.

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Paper Identifier, Paper Title, and Authors

No.	Title	Authors	Corresponding author	Affiliation	Email
1.	Emergence and Evolution of Alexandra Township in Johannesburg: A Study on the Development of a Mixed Settlement	George Okezie Nkere, Jeffrey Mahachi, George Onatu, Mhlalisi Mndzebele	George Nkere	UJ	okezie_2000@yahoo.com
2.	Adopting a Systematic Literature Review to Assess the Relationship Between Urbanisation and Economic Development	Sizolwakhe Innocent Mtetwa, Nolwazi Qumbisa, Lesiba George Mollo	Sizolwakhe Mtetwa	Central University of Technology	smtetwa@cut.ac.za
3.	Exploration of Policy and Legislation for Managing Water Infrastructure Assets in Rustenburg Local Municipality, South Africa	Tshifhiwa Mudau, Mischka Dunn, Abraham R. Matamanda	Tshifhiwa Mudau	UFS	vhadaudk@gmail.com
4.	Policy and Legal Framework of Wetland Ecosystems in Nandoni, Limpopo Province, South Africa	Priscila Banda, Trynos Gumbo	Priscila Banda	UJ	priscbanda@gmail.com

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5.	The Influence of Non-Motorised Transport Systems Around The World: A Case Study of Singapore, Shanghai, Lagos, Jakarta, Johannesburg, and Cape Town	Kiara Lawrence, Trynos Gumbo, Zaakirah Jeeva	Kiara Lawrence	UJ	kiaral@uj.ac.za
6.	Resilience, Spatiality, and the Planning of Tourism: A Literature Review	Andrew Chigudu	Andrew Chigudu	University of Zimbabwe	achigudu558@gmail.com
7.	Exploring the Possibilities of the 4IR for Revitalising a Declining Mining Town	Dane Buttner, Janette Britz	Dane Buttner	UFS	danebuttner@ymail.com
8.	Exploring the Presence of Urban Informality in Botswana: Case of Backyard Renting in Mogoditshane, Greater Gaborone	Onkemetse Nage, Jennilee Kohima, Eric Yankson	Onkemetse Nage	Department of Town and Country Planning; Ministry of Lands and Water Affairs	onkenage@gmail.com
9.	State Demolition and Forced Eviction as Flood Vulnerability Management in Accra, Ghana	Aisha Adams, Clifford Amoako	Aisha Adams	KNUST, Kumasi, Ghana	aishadams22@gmail.com

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10.	Institutional Downward Raiding in Housing: Challenges for State-Subsidised Housing for Low-Income Groups in Developing Countries: The Case Study of Linakotseng Maseru, Lesotho	Ramapulane Mphanya, Trynos Gumbo, George Onatu	Ramapulane Mphanya	UJ	ramamphanya@gmail.com
10.	Exploring the Relationship Between Urban Renewal and Sustainable Development in City of Mbombela	Frans Magalo, Ockert Pretorius	Frans Magalo	UJ	fmongala@gmail.com
11.	Competitive Cities: An Exploration of Location and Human Capital in South African Cities	Mpho Mashego Vuyiswa Letsoko	Mpho Mashego	UJ	mashegompho65@gmail.com
12.	Impacts of Poor Basic Service Delivery on the Development Of Sustainable Human Settlements and Improved Livelihoods: Case of Stjwetla, Alexandra	Sfiso Mngomezulu, George Onatu	Sfiso Mngomezulu	Zutari	sfiso.mngomezulu@zutari.com

Emergence and Evolution of Alexandra Township in Johannesburg

A Study on the Development of a Mixed Settlement

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Abstract

The emergence and evolution of the township of Alexandra in Johannesburg, South Africa, is a significant chapter in the urban history of the region. As a distinctive mixed settlement,

it represents the complexities and challenges associated with the development of urban spaces in a segregated society. This paper explores the origins and development of Alexandra and examines the historical background of the township and how it has transformed over time. It investigates the historical, social, economic, and cultural factors that have shaped this vibrant community. By analysing its early formation, urban planning, and subsequent changes, this study aims to understand the dynamics that contribute to its growth, transformation, and challenges. The growth of Alexandra as a mixed settlement has outpaced government attempts to improve infrastructure, provide sufficient housing and services, and mitigate disasters and vulnerabilities. A multidisciplinary approach, combining archival research, interviews, and spatial analysis, offers a comprehensive examination of the complexities surrounding this settlement. The findings provide insight into the difficulties and opportunities that can inform future policies and interventions aimed at addressing the challenges faced by Alexandra and promoting sustainable development. A fundamentally new strategy is imperative.

Keywords: Alexandra Township, Johannesburg, mixed settlement, emergence, evolution, development.

Introduction

The emergence and evolution of the township of Alexandra in Johannesburg, South Africa, is a significant chapter in the urban history of the region (De Satgé & Watson, 2018). As a distinctive mixed settlement, it represents the difficulties and challenges associated with the development of urban spaces in a segregated society (Cirota, 2017). Alexandra exists in a precarious grey area; balancing eviction, devastation, and death on one side, and legality, safety, and full participation on the other (Yiftachel, 2009). Typically, Alexandra exists outside the administrative boundaries where basic services can be readily provided (Myers, 2021). Paradoxically, despite being part of the urban system, these emerging settlements in South African cities experience marginalisation and detachment from the formal metropolis, which contributes to socio-spatial isolation

and economic inequalities, contrary to the goals of creating an inclusive and liveable city (Matamanda, 2020). The problem of the "development of a mixed settlement" revolves around understanding the complex historical, social, and economic dynamics that have shaped the development of Alexandra.

Studies conducted in the past on informal urbanism in Johannesburg, South Africa, have tended to focus more on efforts to upgrade informal settlements (Cirolia et al., 2017; Delius, 2019) without examining their emergence and evolution. This study explored the development of Alexandra as a mixed settlement type in order to provide a comprehensive understanding of its historical, social, economic, and cultural dimensions. By examining the factors that have influenced its growth and transformation, this paper seeks to shed light on the challenges and opportunities faced by this vibrant community. Conducting a historical study of Alexandra as a mixed settlement type is essential because it offers a multifaceted view of urban development in a segregated society, provides valuable lessons for urban planning, and respects the community's history and experiences. This research can contribute to more inclusive and sustainable urban development in South Africa and serve as a valuable reference for similar contexts worldwide.

Emergence and Evolution Concept of a Mixed Settlement Development

The emergence and development of a mixed settlement involve the development of areas where different types of land uses and residential groups co-exist. This process typically unfolds over time, and is influenced by various social, economic, and political factors.

A Brief Overview of the Concept

Emergence is a concept that refers to a complex process that is influenced by the interactions between diverse individuals and groups (Goldstein, 2011). The emergence of a mixed settlement often develops gradually or is planned to accommodate a diverse population and land uses (Van Oostrum, 2021). These

settlements may begin as small informal communities that grow over time or are intentionally designed to promote mixed use and integration (Gao & Lim, 2023). Such areas might include a mix of residential, commercial, industrial, and recreational spaces that attract people from various backgrounds and income levels (Generalova et al., 2018).

Emergence can be understood from two perspectives: weak emergence and strong emergence. Weak emergence is evident in the development of social networks, economic activities, and cultural practices, which lead to shared norms, traditions, and informal institutions (Wilson, 2016). These occurrences are observable and analysable, which illustrates the dynamic nature of social life in a mixed settlement (Gao & Lim, 2023). In contrast, strong emergence is present in the development of collective identity and social cohesion, despite the diversity of its residents (Wilson, 2016). This emergent quality is characterised by shared experiences, values, and aspirations that shape the collective identity of the community. It cannot be reduced to its parts, as it arises from the interactions between individuals from different backgrounds; each contributing to the unique fabric of a mixed settlement's social landscape (Generalova et al., 2018).

Emergence is a crucial factor in shaping the dynamics and identity of a mixed settlement such as Alexandra, which reflects the complex and adaptive nature of community life in such environments.

On the other hand, evolution is the process through which living organisms change over time, which leads to the diversity of life on Earth (Hansen et al., 2021). Evolution is driven by mechanisms such as natural selection, genetic drift, mutation, and gene flow, which collectively result in the adaptation and modification of species to their environments (Kristensen et al., 2020). However, evolution also encompasses the social and cultural changes that occur in diverse communities, such as mixed settlements, which allow researchers to gain insight into the complex interactions and transformations that occur in urban environments (Brooks et al., 2018). This process is

not limited to biological changes but also includes shifts in social norms, cultural practices, economic structures, and community dynamics (Brooks et al., 2018). Cultural exchange and integration are key aspects of social evolution in mixed settlements, as individuals from different backgrounds interact and co-exist, often blending traditions, languages, and customs (Bogumil & Chase-Dunn, 2021). This can lead to the emergence of new cultural identities and expressions. However, the evolution of a mixed settlement occurs when it undergoes changes in response to broader socio-economic trends or shifts in local policies (Brooks et al., 2018). These changes may involve demographic shifts, economic growth or decline, infrastructure development, and alterations to the built environment. Over time, the area's original character transforms to reflect new patterns of land use, residential preferences, or cultural influences (Kristensen et al., 2020).

Social structures and institutions undergo changes as the population grows, which leads to the emergence of new social organisations, community networks, and governance structures (Bogumil & Chase-Dunn, 2021). These changes can reflect shifts in power dynamics, social hierarchies, and collective decision-making processes (Brooks et al., 2018). Economic evolution is also a significant factor in the development of mixed settlements; as industries change, opportunities arise, and socio-economic conditions fluctuate. This can impact employment patterns, income distribution, access to resources, and the overall economic well-being of the community (Bogumil & Chase-Dunn, 2021).

Furthermore, the concept of the emergence and evolution of mixed settlements offers valuable insight into how cities and towns develop, adapt, and respond to changing circumstances. It underscores the importance of inclusive planning and governance to ensure that these areas support the well-being of all residents and contribute to broader urban development goals.

In addition, a mixed settlement is a residential area where individuals from diverse social, economic, cultural, and ethnic backgrounds co-exist (Ballard & Rubin, 2017). It is characterised

by the presence of people with varying socio-economic statuses, ethnicities, religions, and cultural practices in the same geographic space (Bogumil & Chase-Dunn, 2021). In a mixed settlement, residents interact with one another, share public spaces, and may have access to a range of amenities and services (Eller et al., 2021). Mixed settlements can arise due to historical circumstances, migration patterns, urbanisation, or intentional planning efforts aimed at promoting diversity and integration (Dovey et al., 2020). They can be found in both urban and rural settings and can range in scale from neighbourhoods in a city to entire towns or districts (Gibbs et al., 2018). Indeed, diverse populations characterise many urban areas around the world, and this diversity is not unique to Alexandra. However, when Alexandra is referred to as a "mixed settlement" in a special context, it often highlights several specific factors that make it unique within the South African and Johannesburg contexts.

Factors That Influence the Development of Mixed Settlements

Several factors shape the emergence and evolution of mixed settlements. These include urbanisation, migration, socio-economic inequality, housing policies, and investment patterns. The interplay of these factors determines the nature and pace of change in these areas.

Challenges and Opportunities

Mixed settlements can present both challenges and opportunities for residents and local authorities. On the one hand, they may face issues such as overcrowding, inadequate infrastructure, and social tensions that arise from diverse populations. On the other hand, they can foster social cohesion, economic vitality, and cultural exchange, which promote more equitable and sustainable urban development (Ma et al., 2022).

What efforts have been made so far to conduct a historical study or research on the emergence and evolution of a mixed settlement? There are several local and international historical studies of townships similar to Alexandra, Johannesburg, which is a mixed settlement type. Some examples include Soweto, one of the most well-known townships in South Africa, which

has a rich history that has been extensively studied. Research has focused on its origins, the role it played during apartheid, and its development in the post-apartheid era. District Six in Cape Town, an inner-city residential area, was subject to forced removal during apartheid, with a focus on the displacement of its racially diverse inhabitants. Studies have examined its history, cultural significance, and ongoing efforts for land restitution. Dharavi, one of the largest slums in Asia located in Mumbai, India, has been studied in terms of its growth, economic activity, and social organisation. Research has also explored efforts to improve living conditions and provide better infrastructure in Kibera, Nairobi. As one of the largest urban slums in Africa, Kibera has been studied for its history, social dynamics, and grassroots initiatives to improve quality of life. Research has investigated the impact of government policies and international aid on the community.

These examples demonstrate that studies on mixed settlement types, such as Alexandra in Johannesburg, span various regions, each with unique historical contexts and trajectories. They provide valuable insight into the challenges and opportunities faced by these communities, as well as the broader social, political, and economic forces that shape them. To date, considerable literature has examined the emergence and evolution of mixed settlements on both local and international scales. However, there remains a notable gap in research that specifically addresses the emergence and evolution of Alexandra at the local level, considering its status as a mixed settlement. This paper thus explores the historical, social, economic, and cultural influences that have moulded the dynamic community of Alexandra. Through an examination of its inception, urban development, and subsequent shifts, this paper seeks to explain the multifaceted changes driving its development and transformation, with the aim to extract insights to guide future research.

When researching evolution in mixed settlements such as Alexandra, numerous questions may arise, as shown in Table 1.

Table 1: Research Aim, Questions, and Objectives

Aim	
To understand the historical, social, and economic factors that have influenced the development and evolution of Alexandra as a mixed settlement.	
Research questions	**Research objectives**
1. What are the historical factors and policies that have led to the establishment and development of Alexandra?	To identify the historical factors and policies that contributed to the establishment and development of Alexandra.
2. How have the patterns of migration, growth of population, and social transformations changed or shaped Alexandra over time?	To investigate migration patterns, population growth, and social changes in Alexandra from its inception to the present.
3. What are the economic activities and opportunities in Alexandra?	To assess the economic activities and opportunities in Alexandra and its impact on the development and transformation of Alexandra.
4. How have infrastructure development and housing in Alexandra addressed the needs of its residents?	To examine the development and challenges of infrastructure and housing in Alexandra, and their effects on residents' quality of life.
5. What role have local and national government policies played in the development of Alexandra?	To evaluate the influence of government policies on the development and governance of Alexandra.
6. How have issues of integration and segregation evolved in Alexandra?	To explore the dynamics of integration and segregation in Alexandra.

Table 1 clearly outlines the research aim, questions, and objectives to facilitate a comprehensive understanding of the study's focus areas. The research aim, questions, and objectives provide a starting point for examining the multifaceted dynamics of evolution in mixed settlements and addressing issues related to historical factors and development, social and demographic changes, economic development, infrastructure development and housing, government policies, and changes

in integration and segregation in Alexandra. Through interdisciplinary research and collaboration, scholars can gain a deeper understanding of the complex and dynamic nature of mixed settlements and contribute to the development of inclusive, sustainable, and equitable urban environments.

Methodology and Approach

This study examined the historical development and growth of the Alexandra township in Johannesburg, South Africa, using a multidisciplinary approach. Conducted between June 2023 and December 2023, the research focused on the township's historical development and growth. The settlement was chosen due to its proximity to the city and its historical significance during the apartheid era as one of the oldest townships in Johannesburg and South Africa. The research methodology involved collecting and examining historical records, documents, and various sources to reconstruct the past. Quantitative surveys were conducted with 40 households, and interviews were held with long-time residents and community leaders who have witnessed or were involved in the township's development. Data were gathered on community perceptions, needs, and preferences related to past development initiatives. A focus group was conducted with eight to 10 participants to validate the findings and gather additional insights. These personal accounts provided unique insights, memories, and perspectives that enriched the historical narrative. The research methodology ensured the validity and reliability of the results.

Historical Background of Alexandra: Early Origin and Establishment

This section provides a historical account of Alexandra by tracing its origins from precolonial times to the present day. It explores the key events and influences that shaped its development, and highlights the impact of colonialism, urbanisation, and apartheid policies.

Precolonial Era and Early Settlements

Understanding the historical factors that have shaped the community provides valuable insight into its current social, economic, and spatial dynamics. The history of Alexandra in South Africa stretches back to precolonial times when indigenous communities inhabited the area, continuing through to the late 19th century during the colonial period. It was initially established as a township for Black South Africans and other non-white population groups.

Brief Overview of the Historical Timeline of Alexandra

Figure 1 illustrates a brief overview of Alexandra, with a rich history that can be traced back to the precolonial era, when indigenous communities initially utilised the land. South Africa's colonial and apartheid history has left a profound impact on its residents and the land's development, which significantly shaped the subsequent development of the township.

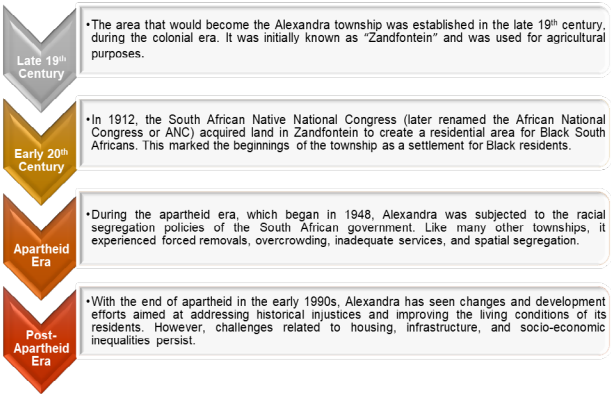

Figure 1: Overview of the Historical Timeline of Alexandra Township. Source: http://www.southafrica.net/za/en/articles/entry/article-southafrica.net-the-battle-of-blaauwberg

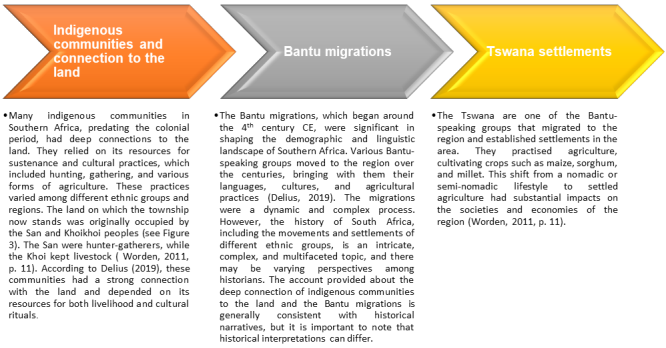

Figure 2: The Context of South African History

Figure 3: The Khoisan People. Source: Dreamstime (2023)

Colonial Influence, Land Dispossession, and Urbanisation

It is crucial to note and understand that the development and emergence of Alexandra were heavily influenced by colonial and apartheid policies that aimed to enforce racial segregation and to control the movement and opportunities available to Black South Africans. Furthermore, the development of Alexandra has been profoundly shaped by a series of key events and influences throughout its history, including the impacts of colonialism, urbanisation, and apartheid policies on the growth and transformation of this township.

Table 2: The Impact of Colonialism, Urbanisation, and Apartheid Policies on the Growth and Transformation of Alexandra

Arrival of the European colonisers and land dispossession The arrival of European colonisers, including the British, in Southern Africa in the 19th century was a pivotal moment in the region's history, as it led to the imposition of colonial rule. This arrival resulted in the dispossession of land from indigenous communities and displacing African communities from their ancestral lands – a central policy that forced Black communities to lose their lands and resources (Thipe, 2020). Consequently, this led to the segregation of land for Black residents and created a lasting legacy of inequality and spatial injustice in Alexandra (Finlay, 2018).
British control The late 1800s saw the extension of British colonial control into various parts of Southern Africa, including what is now South Africa. The British colonial authorities asserted their influence and authority over the region (Oliver & Oliver, 2017).
Urbanisation, labour migration, and township establishment The presence of European colonisers and subsequent urbanisation led to the establishment of townships like Alexandra in the early 20th century (Thipe, 2020). Rapid urbanisation in Johannesburg during the latter part of the 19th century and the early part of the 20th century significantly impacted Alexandra . The discovery of gold attracted thousands of people, which resulted in a massive influx of migrant labourers, primarily in the mining industry (Akinola, 2020). Alexandra became a residential area for these workers by providing a place to live while they worked in the mines (Ubisi, 2019). However, rapid population growth and urbanisation imposed immense pressure on infrastructure, housing, and social services, which led to challenging living conditions and perpetuated poverty and inequality (Ubisi, 2019).
Apartheid-era policies and forced removals The establishment of townships such as Alexandra was heavily influenced and shaped by apartheid-era policies that enforced racial segregation and discrimination. The apartheid era, which began in 1948, significantly impacted the spatial organisation of South African cities and communities (Ubisi, 2019). The Group Areas Act of 1950 designated areas for different racial groups, which created unequal living conditions (Leonard & Dladla, 2020). The Alexandra township, located near Johannesburg, was established for Black people, which excluded them from predominantly white urban centres.Forced removals and demolitions were carried out to enforce apartheid policy, which led to overcrowding and resource strain.

Families and communities were uprooted from their homes and relocated to Alexandra, which resulted in further overcrowding and strained resources (Dladla, 2019).
Forced relocation During this time, Black residents were forcibly relocated from other areas and resettled in townships such as Alexandra, which was designated for Black residents. These forced relocations were part of the apartheid government's strategy to enforce racial segregation and control the movement and settlement of different racial groups (Finlay, 2018).
Economic interests This is one way the British colonial and apartheid authorities sought to consolidate their control over the region and implement policies that served their economic interests (Beavon, 2022). These policies included land dispossession, labour exploitation, and control over valuable resources.

The above historical account highlights the impact of colonialism and apartheid on the development of Alexandra and South Africa, with emphasis on the deeply entrenched legacy of racial segregation and forced removals. Rapid growth in urban centres such as Johannesburg created a demand for cheap labour, which resulted in the establishment of townships such as Alexandra to segregate and control the African labour force. The early development of Alexandra was shaped by the mining industry's demand for labour and the desire to separate different racial groups (Delius, 2017).

Figure 4: Apartheid Policy Forced Removal. Source: South African History Online (2024)

Township Establishment and Development

The Alexandra township, originally known as "Brickfields" due to its brickmaking industries, was officially established in

1912 as the "Alexandra Native Township" (Leonard & Dladla, 2020). Named after Alexandra, the wife of Sir Alfred Milner (Nieftagodien, 2014), the township was strategically located near Johannesburg to provide cheap labour for the growing industries and mines (Dladla, 2019). It was one of the first urban areas designated for Black African residents in Johannesburg (Davies, 2012). Despite facing segregationist policies and racial discrimination, Alexandra became a vibrant and close-knit community (Delius, 2017). Initially, the township had limited infrastructure and basic amenities, as well as overcrowding, inadequate facilities, and a lack of proper sanitation, healthcare facilities, and educational institutions (Beavon, 2022). The absence of urban planning and limited resources contributed to the challenging living conditions faced by its residents (Dladla, 2019).

Over the years, Alexandra experienced a steady influx of migrants from rural areas seeking employment opportunities in the city (Beavon, 2022). This population growth further strained the already stretched resources and exacerbated the challenges faced by the community (Abrahams & Everatt, 2019).

South Africa's Apartheid Era

Alexandra, situated in Johannesburg's north-eastern region, has a complex historical background that is deeply connected to South Africa's broader history (Dladla, 2019). The township's history is rooted in the apartheid era, during which Black South Africans were forcibly removed from their homes, which resulted in the establishment of townships such as Alexandra (Mbanjwa, 2018). Historical narratives highlight the resilience and agency of the residents in fostering a sense of community and resistance in the township (Ballard & Hamann, 2021). The establishment of Alexandra was part of a broader system of racial segregation and control enforced by the apartheid government (Thipe, 2020). Initially, the township was developed as a temporary settlement for Black migrant workers in urban centres such as Johannesburg, with minimal infrastructure and services (Leonard & Dladla, 2020).

Overcoming Apartheid

Figure 5: Nelson Mandela's House Where He Rented a Room as a Young Man When He First Came to Alexandra, Johannesburg, in 1941. Source: Researcher

During the apartheid era, the National Party government enforced racial segregation and discrimination in Alexandra from 1948 to 1994, which resulted in marginalisation and neglect (Thipe, 2020). The government's policies aimed to suppress the Black majority population, which led to inadequate services and limited economic opportunities for the residents (Leonard & Dladla, 2020). Alexandra has been a centre of political activism, hosting anti-apartheid leaders and activists, and witnessing significant social and political events (Zelenova, 2019). Notable figures, such as Nelson Mandela, have also lived in the township (Dzikiti & Leonard, 2016). The township served as a hub for political and social movements (Zelenova, 2019), with organisations such as the ANC and the Pan Africanist Congress (PAC) having a strong presence in the township (Thipe, 2020).

The township also holds cultural significance, including being known for its rich musical heritage and the development of indigenous genres such as marabi and jazz (Leonard & Dladla, 2020). The historical context of apartheid-era policies profoundly impacted the spatial and socio-economic dynamics of Alexandra (Leonard & Dladla, 2020), which disrupted existing social networks and cultural ties. Forced removals further interrupted these networks, and inadequate infrastructure created challenging living conditions (Mbanjwa, 2018). This historical context also shaped socio-economic disparities in the

mixed settlements, with Black residents being systematically marginalised and having limited access to education, employment opportunities, and social services (De Jager, 2019). Racial segregation policies resulted in unequal resource allocation and perpetuated social and economic inequalities (Thipe, 2020).

Post-Apartheid Developments

After the end of apartheid in 1994, South Africa's democratic government was established to address historical injustices faced by Black residents and to promote inclusive urban development (De Jager, 2019). However, the legacy of apartheid continues to shape the socio-economic dynamics and challenges faced by the community of Alexandra (Mbanjwa, 2018). Despite these efforts, poverty, unemployment, crime, and inadequate resources persist in the township (Dladla, 2019). Understanding the historical context helps to recognise the resilience, agency, and aspirations of the residents, as well as the spirit of community activism (Zelenova, 2019). Alexandra continues to face numerous challenges, including high levels of poverty, inadequate infrastructure, and limited access to quality education and healthcare (Thipe, 2020). Efforts towards sustainable development and community empowerment are crucial in addressing these ongoing challenges and fostering positive change in the township (Auright, 2018). Acknowledging historical legacies allows policymakers, researchers, and community members to work towards rectifying historical injustices and creating a more equitable and inclusive future for the residents of Alexandra (De Jager, 2019). The history of Alexandra provides a foundation for understanding its present challenges, informs policy and urban planning decisions, empowers the community, and highlights the ongoing need for social justice and inclusive development efforts (Zelenova, 2019). It is essential to acknowledge and address this history in order to foster a more equitable and sustainable future for the residents of Alexandra.

Findings and Discussions

The historical analysis revealed that Alexandra emerged as a result of various socio-political and economic factors, including urban segregation policies, labour migration, and forced removals during apartheid-era South Africa. Its establishment in the early 20th century was characterised by overcrowding, inadequate infrastructure, and limited access to basic services, which reflect the systemic inequalities of the time.

Over time, Alexandra has evolved into a vibrant community marked by resilience, solidarity, and cultural diversity. Despite facing numerous challenges, residents have developed strong social networks, grassroots organisations, and communal spaces that foster a sense of belonging and collective identity. These social dynamics have played a crucial role in shaping the township's identity and resilience in the face of adversity.

The economic analysis revealed a complex landscape in Alexandra, which encompasses both formal and informal sectors. While formal employment opportunities are limited, the township has become a hub of informal economic activity, with small businesses, street vendors, and informal markets thriving amidst the challenges of poverty and unemployment. The entrepreneurial spirit and resourcefulness of residents have contributed to the resilience of the local economy.

Cultural factors play a significant role in shaping the identity and cohesion of Alexandra. The township is home to a diverse population that represents various ethnicities, languages, and cultural traditions. Despite this diversity, residents have developed a shared sense of community identity that is rooted in a common history of struggle and resilience. Cultural events, traditions, and expressions serve as important markers of identity and pride in the township.

Urban planning and development in Alexandra have been characterised by a lack of investment, inadequate infrastructure, and the growth of informal settlements. Decades of neglect and underdevelopment have led to overcrowded living conditions,

insufficient sanitation, and limited access to basic services such as water and electricity. The spatial organisation of the township reflects historical patterns of segregation and inequality, with informal settlements and formal housing developments existing side by side.

Lessons Learned and Recommendations

The findings highlight the need for holistic and inclusive approaches to urban development in mixed settlements such as Alexandra. Investment in basic infrastructure, housing, healthcare, education, and economic opportunities is essential to improving the quality of life for residents and fostering sustainable development. Furthermore, community participation, social cohesion, and cultural preservation should be central to any development initiatives to ensure that the unique identity and resilience of the township are preserved and celebrated.

This study underscores the complex interplay of historical, social, economic, and cultural factors that shaped the emergence and evolution of Alexandra. By understanding these dynamics and drawing lessons from the township's experiences, policymakers, urban planners, and community stakeholders can collaborate to build inclusive, resilient, and sustainable communities that promote social justice and equitable development.

Conclusion

The research conducted on the emergence and evolution of Alexandra in Johannesburg, a mixed settlement type, has shed light on its historical, social, economic, and cultural dimensions. The findings highlight the challenges faced by the township, including poverty, crime, inadequate infrastructure, and governance issues. However, they also reveal the efforts made towards transformation and sustainable development, such as upgrading and redevelopment initiatives, community empowerment, preservation of cultural heritage, and the achievement of urban resilience and sustainability. The

significance of addressing the unique needs and characteristics of mixed settlements such as Alexandra cannot be overstated. The township's historical background, influenced by colonialism, urbanisation, and apartheid policies, has shaped its development and created distinct challenges that require tailored solutions. The paper underscores the importance of understanding the social dynamics, cultural heritage, and economic activities in the township, as well as the role of community empowerment and participation in fostering sustainable development.

The implications of this research extend beyond Alexandra. It serves as a valuable case study for policymakers, urban planners, and researchers who are interested in understanding and addressing the challenges faced by mixed settlements in other urban contexts. The findings highlight the need for comprehensive strategies that integrate economic development, social empowerment, environmental sustainability, and cultural preservation. Future research should focus on evaluating the long-term impacts of the initiatives implemented in Alexandra and assessing their effectiveness in addressing the identified challenges, and identifying areas for improvement. Further investigation into the dynamics of community empowerment, cultural preservation, and sustainable urban development in mixed settlements will contribute to the knowledge base and inform policy decisions.

By understanding the historical, social, economic, and cultural dimensions, policymakers and stakeholders can design targeted interventions that promote inclusive development, enhance quality of life, and empower the community. The findings and implications of this research pave the way for future endeavours to create sustainable, resilient, and vibrant mixed settlements that embrace their cultural heritage and meet the needs of their diverse populations.

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Adopting a Systematic Literature Review to Assess the Relationship Between Urbanisation and Economic Development

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Abstract

For decades, urbanisation has been proven to be a catalyst for change and economic development. This transition is beneficial as urban areas gain new skills and expertise, while rural areas receive remittances from migrants. Numerous studies have focused on the challenges of this phenomenon, but omitted its positive contributions. This study thus investigated the relationship between urbanisation and economic development. A systematic literature review was employed to collect data, which comprised a total of 48 papers. The results concluded that urbanisation contributes to the economic development of both urban and rural environments and further suggested

strategic rural-urban linkages that lead to sustainable cities and communities. This means that development cannot occur without urbanisation and vice versa, as rural-urban migration is not only a result but also a cause of economic, social, and human development. Achieving development in urban and rural areas therefore necessitates the migration of people, who will either demand certain urban elements or bring their expertise for development.

Keywords: Development, rural-urban linkage, sustainability, urbanisation.

Introduction

The last three decades have seen urban areas, predominantly cities, become the main habitat for humankind worldwide due to economic and demographic changes (Kacyira, 2012, pp. 58-60). Noteworthy trends have emerged in urban spaces, including the expansion of urban areas' physical extent, the growth of built environments, the reduction of natural resources, disturbances in biodiversity-rich zones, and urban expansion into areas with limited economic development (Seto et al., 2013, p. 2). This phenomenon is termed urbanisation. Urbanisation refers to the migration of people from rural to urban areas, or from one urban area to another, in search of employment opportunities, better living standards, and improved livelihoods (McDonald et al., 2013, pp. 32-35).

Urbanisation is a multidimensional phenomenon. Specifying what would have happened to the environment in society if urbanisation had not occurred is therefore extremely difficult (Güneralp & Seto, 2013). It is driven by factors such as increased ease of communication and transport, economies of scale and agglomeration economies, increased personal contact among workers and entrepreneurs, and efficiency gains from high population density in cities (Bai et al., 2012, p. 34). When people migrate to cities, they leave their homelands, often rural areas, for urban industry employment. This significantly transforms the frugality of nations as they urbanise. Urbanisation is often a fundamental element of the urban

solution when viewed from a nation's economic development and human well-being perspective (McDonald et al., 2013, pp. 34).

Various studies have presented this subject as an undesirable phenomenon, neglecting its positive impact and contribution to both urban and rural areas (Henderson, 2003; Henderson et al., 2014; Brülhart & Sbergami, 2009; Güneralp & Seto, 2013). This study therefore aimed to assess the relationship between urbanisation and development by investigating and contrasting the positive and negative factors of urbanisation. This is achieved by understanding urbanisation's implications for rural and urban areas, examining its positive and negative impacts, and determining how urbanisation and development can be integrated for sustainability. The findings will conclude whether urbanisation affects development or is merely a consequence of development.

Background of Urbanisation

The United Nations (UN, 2019) estimates that 55% of the world's population resides in urban areas. It is estimated that urban areas will shelter approximately 60% of the global population by 2030 and around 70% by 2050 (UN, 2019). The growth of the global urban population has not been swift; rather, it has gradually increased since 1800, when only 3% of humanity lived in cities (UN, 2019). By the 1900s, the world's urban population continued to grow but remained below 10% (Davis, 1955). In 1950, there was dramatic population growth, with estimates suggesting that approximately 729 million people worldwide lived in cities, corresponding to 29% of the global population (UN, 2010). By 1960, global urbanisation had increased rapidly to approximately 998 million people in the world's cities. In 1985, the urban population reached 1.98 billion, and by 2010, it had risen to 3.49 billion (McDonald et al., 2013). The urban population currently amounts to 4.4 billion people (Ivers, 2022).

Urbanisation is widely associated with various challenges in urban areas (Michaels et al., 2012). These challenges include, among others, urban sprawl, housing shortages, poverty,

unemployment, sanitation issues, informal settlements, health hazards, environmental degradation, depletion of natural resources, and crime (Ritchie et al., 2018). Nonetheless, urbanisation presents significant benefits to both rural and urban areas, which are often overlooked by urbanisation research (Turok, 2017). The United Nations Human Settlements Programme's (UN-Habitat, 2016) Urban Agenda emphasises this point by stating that cities are powerful generators of a nation's economic prosperity. McKinsey (2012) supports this idea by asserting that urbanisation serves as a driver of economic progress through population concentration in cities.

The UN-Habitat's (2016) New Urban Agenda further reinforces this by confidently declaring that "throughout modern history, urbanization has been a major driver of development and poverty reduction. Urbanization has become a driving force as well as a source of development with the power to change and improve lives." In support of this, Glaeser and Joshi-Ghani (2015) argue that urbanisation is unquestionably a key driver of development since cities provide a platform for job creation, poverty alleviation, and prosperity. The conclusions drawn by several authors (McKinsey, 2012; Glaeser & Joshi-Ghani, 2015; Jedwab & Vollrath, 2015; Adams & Cuecuecha, 2013; Zhao & Qamruzzaman, 2022; Raihan et al., 2021) regarding urbanisation as a driver of growth imply that the migrating population has a widespread effect on a nation's economic activity. It is not merely a consequence but a source of growth (Turok, 2017).

Research Methodology

To achieve the research objective of assessing the relationship between urbanisation and economic development, a thorough systematic literature review was conducted. Relevant journal articles guided the study in investigating the implications of urbanisation for both rural and urban areas, the integration of urbanisation and development, as well as the impact of urbanisation and its contribution to development. Due to the extensive body of knowledge that exists on the subject, the authors conducted a qualitative systematic review to contrast

the positive and negative factors of urbanisation. A qualitative systematic literature review refers to a strategic analysis of literature using a methodical approach to summarise a vast amount of existing evidence with a detailed and comprehensive study plan that is aligned with the research objectives (Tawfik et al., 2019). This allowed the authors to explore the relationship between urbanisation and development in order to conclude whether urbanisation contributes positively to rural and urban development.

In the final stage of the systematic literature review, the titles and abstracts of papers published between 2003 and 2022 were examined for their relevance to the current knowledge gap. As shown in Figure 1, a total of 83 articles dated from 2003 to 2022 were selected for the study. Additionally, articles published between 1950 and 2002 were included in the search to trace the trajectories, policies, empirical evidence, and the progression of urbanisation. The authors found 112 articles from this period; however, only four papers were deemed relevant, as they provided the required pragmatic evidence for the study focus. To guide the systematic literature review of this research, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) method was employed. Figure 1 highlights the PRISMA process for data collection.

Databases such as Google Scholar, EBSCOHost, Scopus, and ProQuest Central were searched to locate relevant published papers. Using keywords such as development, rural-urban migration, sustainability, and urbanisation, relevant sources for this study were identified. A methodical review of relevant articles on the urbanisation-development nexus published in various journals was conducted to achieve this goal. Table 1 provides a summary of the publications cited in this study. The authors identified 83 journal articles from the four databases: 37 from Google Scholar, 15 from ProQuest Central, 12 from EBSCOHost, and 19 from Scopus. These databases were selected because they provided relevant open-access articles that were easily found. The PRISMA flow diagram in Figure 1 displays the number of papers sourced from each database.

After the screening process, 23 articles were deemed irrelevant and excluded. The authors then reviewed 60 articles, excluding 16 papers that were duplicates of existing articles. From the remaining publications, 44 papers were selected based on their relevance to this study. Among these 44 articles, 16 were sourced from Google Scholar, 11 from Scopus, nine from ProQuest Central, and eight from EBSCOHost. An additional four articles were chosen for their historical and empirical evidence, as well as their insights into urbanisation progression. Figure 1 presents this information in detail. The authors subsequently read the articles thoroughly to address the main question of whether urbanisation positively contributes to the economic development of urban and rural environments.

The process began with skimming the titles, abstracts, and conclusions to determine whether each paper aligned with the research focus. The authors then meticulously perused the contents of the articles deemed relevant to the study, which defined the direction of the research. To address the main question of whether urbanisation contributes positively to economic development, the study assessed the implications of urbanisation in both urban and rural areas, the impact of urbanisation and its contribution to development, as well as how urbanisation and development can be integrated to yield a positive impact.

Table 1: Research Publications and Number of Articles

Publications	Number of papers
Books	1
Ecology of Food and Nutrition	1
Economic History	1
Economics and Business	1
Empirical Evidence Articles	4
Energy	1
Environment and Urbanisation	1
Environmental Research Letters	1

Publications	**Number of papers**
Environmental Science and Technology	2
Frontiers in Psychology	1
International Journal of Research	1
International Journal of Social Economics	1
International Journal of Urban and Regional Research	2
Journal of Chemical and Pharmaceutical Research	1
Journal of Contemporary Urban Affairs	1
Journal of Economic Growth	2
Journal of Urban Economics	2
Migration and Development	3
Reports	11
The American Journal of Sociology	1
The Routledge Companion to Planning in the Global South	1
Tropical Medicine and Health	1
Urbanisation, Biodiversity, and Ecosystem	1
Websites	4
World Bank Economic Review	1
World Development	1
Total	**48**

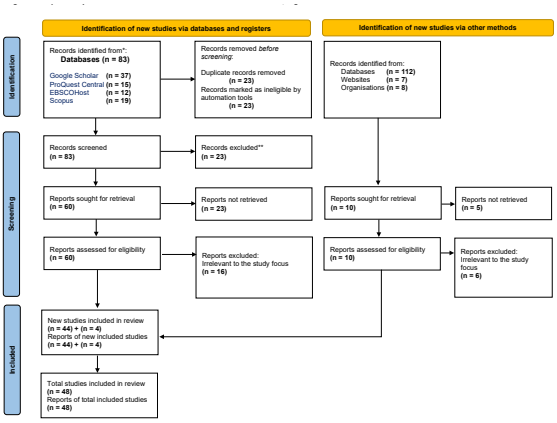

Figure 1: PRISMA Flow Diagram. Source: Adapted from Page (2020) and Tawfik et al. (2019)

Results and Discussion

The Implications of Urbanisation in Rural and Urban Areas

The commonly used empirical evidence when assessing the nexus between urbanisation and development is in the form of countries' urbanisation rates and average income comparisons (Duranton, 2014). The findings show that highly urbanised countries tend to prosper, as they display high economic growth due to the increased urban population (Henderson, 2003). Duranton (2014) agrees with Henderson's (2003) research and supports the urbanisation-growth relationship with data from 2012, which included 189 countries. These findings indicate that 1% of urbanisation equated to five gross domestic product (GDP) per capita points, which highlights the significance of the urbanisation-development linkage. However, Scott and Storper (2015) argue differently and view urbanisation as a consequence of development. They suggest that the urbanising population is drawn to cities by industrialisation and pushed by the introduction of technologies in agricultural activities. It is therefore possible for urbanisation to occur without any change in economic growth and vice versa (Scott & Storper, 2015).

The studies conducted by Jedwab and Vollrath (2015) and Turok and McGranahan (2013) agree with Scott and Storper's (2015) findings, which explored the nature of cities and were published in the International Journal of Urban and Regional Research. They suggest that several developing countries have rapidly urbanised without experiencing development or economic growth over time. Duranton (2014, p. 3) further contrast this argument by stating that the relationship between urbanisation and development is utterly unclear. It is difficult to conclude the urbanisation-development linkage without a clear understanding of what causes development – whether education, urbanisation, or even technology – and whether development is a consequence of urbanisation, and how much of the five GDP per capita points can be attributed to urbanisation (Duranton, 2014). A snapshot comparison of urbanisation variance and development should therefore be conducted over a specified period to identify which phenomenon occurs first. Turok (2017) proposes that studies by Henderson (2003), Henderson et al. (2014), and Brülhart and Sbergami (2009) be analysed when assessing the nexus between urbanisation and development.

Henderson (2003) conducted a systematic review of 70 countries from 1960 to 1990. His findings indicated that urbanisation is a by-product of development, as he discovered that urbanisation increased alongside economic development, rather than stimulating growth. Henderson et al. (2014) view urbanisation as a minor transition that follows but does not influence development. Brülhart and Sbergami (2009) expanded on this subject by conducting a different study over the period 1960 to 2000, using data from 105 countries. They revealed a positive connection between urbanisation and development in low-income countries. This connection varied in terms of economic structure and location (Brülhart & Sbergami, 2009, p. 60), which makes the urbanisation-development nexus a significant area of analysis, particularly in developing countries (Turok, 2017).

Case Study of India: Urbanisation and Economic Development

The urbanisation-economic development nexus has been proven successful in various countries, including India, Japan, China, the United States of America (USA), Germany, France, Italy, Spain, and England (Nguyen & Nguyen, 2018). By doubling its urban population, Japan experienced a 3.4% increase in productivity. In the USA, this figure escalated to 6%, while countries such as France, Germany, Italy, Spain, and England saw a 4.5% increase in productivity as a result of their doubled urban populace (Nguyen & Nguyen, 2018; Saliminezhad & Bahramian, 2019). These countries demonstrate a remarkable correlation between urbanisation and economic development. However, due to the scope of this study, this paper only explored the urbanisation-economic growth relationship in India.

Indian cities have experienced economic growth driven by an increased urbanisation rate (Narayan, 2014). India's urban sector continuously contributes to the country's GDP, which signifies the importance of urbanisation in fostering economic growth (Daniel, 2013). Between 1950 and 1951, India recorded a GDP contribution of 29%. This figure rose to 47% between 1980 and 1981, and by 2009, the urban sector contributed approximately 63% to the GDP (Government of India, 2013). Figure 2 illustrates the correlation between urbanisation and development. Over the years, the rise in urbanisation or urban population has significantly contributed to the country's economic growth and GDP (Chen, et al., 2014). Table 2 further illustrates this relationship by analysing various cities in India. The results indicate that cities that experience higher levels of urbanisation also made a substantial contribution to GDP or per capita income.

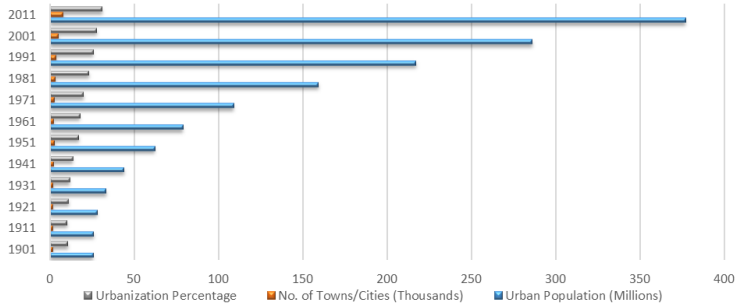

Figure 2: The Correlation Between Urbanisation and Development. Source: Government of India (2013)

Table 2: The Relationship Between the Level of Urbanisation and Per Capita Income. Source: Chen et al. (2014); Government of India (2013); Narayan (2014)

States	2010 – 2011	
	Level of urbanisation	Per capita income
Andhra Pradesh	33.5	39 434
Arunachal Pradesh	22.7	34 366
Assam	14.1	21 793
Bihar	11.3	12 100
Chhattisgarh	23.2	25 788
Delhi	97.5	108 876
Goa	62.2	104 445
Gujarat	42.6	53 789
Haryana	34.8	59 140
Himachal Pradesh	10	46 821
Jammu & Kashmir	27.2	27 881
Jharkhand	24.1	24 330
Karnataka	38.6	40 332
Kerala	47.7	49 391

States	2010 – 2011	
	Level of urbanisation	Per capita income
Madhya Pradesh	27.6	22 091
Maharashtra	45.2	59 735
Manipur	30.2	22 867
Meghalaya	20.1	35 191
Mizoram	51.5	36 732
Nagaland	29	42 511
Orissa	16.7	23 875
Punjab	37.5	44 783
Rajasthan	24.9	27 625
Sikkim	25	64 693
Tamil Nadu	48.4	51 117
Tripura	26.2	36 826
Uttar Pradesh	22.3	48 240
Uttaranchal	30.6	17 378
West Bengal	31.9	32 299

The Impact of Urbanisation and Its Contribution to Economic Development

Nexus of Urbanisation and Economic Development

Both urbanisation and economic development involve complex and varied processes that occur distinctly in different urban spaces. Turok (2017) views urbanisation as the concentration of labour and capital that fuels development and continued prosperity in an urban area. Jedwab and Vollrath (2015) concur with Turok's (2017) inference and posit that urbanisation and development have a symbiotic relationship that benefits countries and states when properly synchronised. Nonetheless, in certain countries and regions, this relationship may be disrupted if it is influenced by other factors. As a result, urbanisation and development may sometimes occur independently to mitigate the negative impact on a country's

economic state (Jedwab & Vollrath, 2015). Recognising this complementary relationship between urbanisation and economic development necessitates the creation of economically functional urban environments (Collier & Venables, 2015).

The urbanising populace tends to demand more goods, services, infrastructure, housing, and so forth, which attracts business development and stimulates employment, thereby boosting the economy of the urban environment (Collier & Venables, 2015). Urbanisation further agglomerates firms in the city centre, which engenders various economic activities that meet the needs of the increasing population. This guarantees reduced transport costs, competition, affordable goods and services, and employment opportunities, as well as functional economic performance (Turok, 2017). The relationship between urbanisation and development was evident and effective during the Industrial Revolution, which dramatically increased productivity and the economy (Scott & Storper, 2015). Gollin et al. (2015) argue that the reason several researchers have discovered adverse results regarding the contribution of urbanisation to economic development is the varied economic performance of the countries in which they conducted their studies. Developing countries often fixate on consumer economics rather than producer economies, which has dissuaded increased urban productivity, income, and employment opportunities and perpetuated poverty, informal settlements, etc. (Gollin et al., 2015; Nguyen & Nguyen, 2018).

Remittances

The relationship between urbanisation and industrialisation has been evident, with previous studies (Raihan et al., 2021; Bayangos, 2012; Zhao & Qamruzzaman, 2022) demonstrating that urbanisation can reinforce development, which stimulates employment opportunities, boosts productivity, and generates income (Turok, 2017). As people urbanise, the demand for various goods, services, infrastructure, and housing escalates, which leads to the development of enterprises and job opportunities (Collier & Venables, 2015). This development offers numerous benefits to rural areas, such as enhanced quality

of life, remittances, better education, and reduced poverty (Hemant, 2020; Adams & Cuecuecha, 2013). Consequently, the urbanising population becomes empowered to support their families in rural areas by remitting a portion of their salaries. Furthermore, this transition enables migrants to afford a better lifestyle and access quality education. Through the money they send to their families, livestock can be procured, farming processes can be improved, and businesses can be developed, thereby stimulating job opportunities, generating wealth, alleviating poverty, and ensuring prosperity (Hemant, 2020).

A study on energy consumption among Belt and Road Initiative countries illuminated the benefits of remittances (Zhao & Qamruzzaman, 2022). The findings suggested that remittances have proven to be an effective source of income for rural families connected to the urbanising population (Raihan et al., 2021). This hypothesis was supported by the increased demand and consumption of energy in relation to the percentage increase in remittances (Rahman et al., 2021; Sahoo & Sethi, 2020).

Remittances refer to the sum of money sent by the urbanising population to their native countries or families to assist them in attaining the necessary resources and products derived from the salaries and wages earned through employment abroad (Muneeb et al., 2021). This source of income can be regarded as a positive linkage between the Global North and Global South. Countries in the Global South are experiencing a high emigration rate of skilled personnel to Global North countries. However, these Global South countries receive over $441 billion in income through remittances, which contributes to approximately 10% of their GDP (Ratha et al., 2016). This symbiotic relationship between the Global North and Global South is beneficial for both regions, as the Global North gains productivity and economic development through skilled labour, while the Global South receives remittances from the urbanising populace (Ratha et al., 2016). The recipient countries of these remittances include sub-Saharan African countries, India, China, the Philippines, France, Mexico, and others. Meanwhile, the Global North countries that provide these payments include,

among others, the USA, Germany, Australia, Saudi Arabia, the United Arab Emirates, and Kuwait (Ratha et al., 2016; Raihan et al., 2021; Bayangos, 2012).

Emigration transmittals are an enabling mechanism that allows rural families to meet their basic needs and further improve their livelihoods (Adams & Cuecuecha, 2013). They unleash families' potential to attain success and a better quality of life (Hemant, 2020). A case study of the Philippines conducted by Bayangos (2012) on the link between remittances and personal income supports the conclusions drawn regarding urban transmittals. The results indicated an increase in personal income and consumer expenditure, along with numerous indirect outcomes (Bayangos, 2012). They have had a positive effect through increased demand in sectors such as construction, retail, financial institutions, insurance, real estate, and transport. Subsequently, remittances provide families with human capital and enhance their economic production through access to quality education and health (Miao & Qamruzzaman, 2021). They assist families in improving their productive investments, which will guarantee sustainable family income (Muneeb et al., 2021). Remittances can therefore lead to a better quality of life, quality education, reduced poverty, and business development opportunities for rural families in the urbanising population (Hemant, 2020).

The Integration of Urbanisation and Economic Development

The urban population imposes substantial pressure on the earth's ecosystems through the concentration of resources in urban areas to satisfy residents' daily needs (McDonald et al., 2013). Consequently, a larger area is required to supply urban citizens with the environment's resources and services (McDonald et al., 2013). South African rural areas, rich in biodiversity and greenlands, are well suited to sustain urban citizens, thus stimulating rural economic growth. Biodiversity is an essential component of the ecosystem services that contribute to human material welfare and livelihoods (Güneralp

& Seto, 2013). Several components that make people's homes functional are provided and supported by biodiversity, including food, building materials, potable water, and fuel (Bai et al., 2012). The transfers of money from the urbanising population to rural families create opportunities for environmental conservation, food production, grazing land, livestock production, and more (Sahoo & Sethi, 2020). These important factors guarantee economic growth, reduced climate effects, decreased food insecurity, and business development (Walsh & Van Rooyen, 2015). As such, urbanisation is beneficial to both urban and rural environments (Muneeb et al., 2021).

Sustainable growth and development necessitate a robust relationship between rural and urban areas (Dower, 2013). Previous studies have shown the impact of remittances paid by urbanising individuals in improving the state of rural environments through agricultural support, quality healthcare, business development, and more (Adams & Cuecuecha, 2013; Bayangos, 2012; Chen et al., 2014; Dower, 2013; Turok, 2017; Zhao & Qamruzzaman, 2022). While the urbanising populace experiences better quality of life, employment opportunities, and quality education, rural families also benefit from remittances that enhance their livelihoods (Miao & Qamruzzaman, 2021). Cali and Menon (2013) advocate for the rural-urban connection, as it has been proven to be a driving force in poverty alleviation through remittances, consumer linkages, and non-agricultural jobs. In support, the Organisation for Economic Co-operation and Development (2013) posits that rural-urban partnerships encourage economic development through increased production of public goods, capacity building, achieving economies of scale, improved governance, and controlled negative externalities. Rural-urban linkages therefore integrate urbanisation and development, thereby attaining positive economic, social, and environmental outcomes (Xijia et al., 2014; Turok, 2017).

Conclusion

The assessment of the urbanisation-development nexus raises a significant question: Does urbanisation affect development? In response, the implications of urbanisation for rural and urban

areas were clarified, urbanisation's impact and its contribution to development were discussed, and the integration of urbanisation and development for sustainability was addressed. Although various studies have suggested that urbanisation has no positive contribution beyond being a consequence of development, the results of this study indicate that urbanisation is not merely a consequence of economic development but also a source of development and several benefits. Employment opportunities, quality education, healthcare, improved standards of living, business opportunities, and wealth generation in rural environments provide evidence for this claim. The study experienced a few limitations, one being that the analysis was conducted by reviewing various research works from different countries and time periods. Future research should therefore focus on assessing the relationship between the patterns of urbanisation and development in South Africa using current data based on the same timelines across all cities.

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Exploration of Policy and Legislation for Managing Water Infrastructure Assets in the Rustenburg Local Municipality, South Africa

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Abstract

The purpose of this paper is to explore the policy and legislative framework for managing water infrastructure assets in the Rustenburg Local Municipality. The lack of asset management policies and the implementation of legislation have left municipalities without asset information for planning. Although infrastructure assets improve quality of life and drive economies, if infrastructure asset management policies and legislation are not in place and adhered to, water provision cannot be realised. A qualitative research design, including

a desktop (document) review of policies and legislation on infrastructure asset management and a review of literature from 2011 to 2023, was employed. The findings of the reviews indicate that the Constitution of South Africa grants the right to access water through cooperation among the spheres of government in water infrastructure asset management. The Municipal Finance Management Act promotes the internal control of assets and financial affairs for the maintenance of infrastructure. The Local Government: Municipal Systems Act develops an Integrated Development Plan involving community participation for identifying challenges related to infrastructure assets. The Water Services Act establishes a Water Service Development Plan that provides population size information and addresses water infrastructure asset maintenance. The Rustenburg Local Municipality Integrated Development Plan promotes the use of information and communications technology in support of a smart city for the realisation of a technological water infrastructure asset management system. The Rustenburg Local Municipality Asset Management Policy encourages the development of an asset register for the compilation of infrastructure asset information. These policies complement one another for the realisation of infrastructure asset management and water services; however, they fail to address the concept of smart urban water management, which utilises smart sensors for real-time data collection to improve operations and communicate with citizens while monitoring water resources, storage, distribution, and wastewater treatment.

Keywords: Rustenburg Local Municipality, smart city theory, smart urban water management, service delivery, water infrastructure asset.

Introduction and Background

South African municipalities cannot fulfil their constitutional mandate of delivering sustainable basic services due to their inability to manage their assets effectively (Jerome & Nel, 2021). As the population grows, the demand for water service delivery increases, which results in infrastructure assets becoming overloaded (Boshoff, 2009). It is estimated that the

demand for water in South Africa will exceed supply by 2025 if no action is taken regarding the implementation of a legislative framework and policies for water infrastructure assets (Koatla, 2011). Many South African municipalities are in a disastrous financial position, which has serious consequences, as they are unable to deliver essential services such as water (Brand, 2018). These service delivery challenges stem from the failure to maintain existing or new infrastructure (Mpehle, 2012; Tsheola, 2012). It is therefore crucial to manage infrastructure assets, as they are vital to the prosperity of life (Uddin et al., 2013) and have a positive impact on economic growth (Ruch & Geyer, 2017) through effective policy implementation. However, municipalities do not update their asset registers due to a failure to implement asset management policies (Boshoff & Pretorius, 2010), which results in their inability to predict infrastructure performance.

The implementation of policies and regulations in terms of water infrastructure assets has been emphasised in Agenda 2030's Sustainable Development Goals (SDGs). SDG 6 focuses on the provision of clean water and sanitation for all in a sustainable manner through the proper management of water infrastructure assets. However, inadequate water provision due to poor policy implementation regarding water infrastructure has led to community unrest and vandalism of municipal infrastructure (Majuru et al., 2012). To address the management of water infrastructure assets and water service provision, SDG 9 emphasises the utilisation of technology and innovation (Allen et al., 2018), while SDG 17 encourages collaboration, partnerships, and cooperation among communities and all levels of government to realise effective water service delivery. As such, inclusivity in managing water infrastructure assets is achieved. This approach has cascaded to the regions on the African continent through Africa Agenda 2063, which provides insight into regional perspectives on improving cities through sustainable development by focusing on governance and inclusive growth (Tshiyoyo, 2017). Nationally, the South African government introduced the National Development Plan: Vision 2030, which prioritises infrastructure programmes such as

information and communications technology (ICT) connectivity for the management of water infrastructure assets (National Planning Commission, 2012), while also addressing social issues such as poverty and inequality in a sustainable manner.

The legislature of the South African government consists of a democratic model with three spheres: national, provincial, and local government, as stated in Section 40 of the Constitution of South Africa, 1996 (Republic of South Africa [RSA], 1996). The mandate of this model is to strategise service delivery in order to bring government services closer to the people. The national government is responsible for developing the policy framework and providing support to local municipalities; for example, the Department of Cooperative Governance and Traditional Affairs acts as a custodian of local government (Department of Cooperative Governance and Traditional Affairs, 2019), while the Department of Water and Sanitation offers assistance regarding water infrastructure asset management and water service provision.

The provincial government's function is to support municipal capacity to strengthen and improve service delivery to communities (Asha & Makalela, 2020). Section 154 of the Constitution states that provincial governments should identify solutions to these challenges and provide support to municipalities (RSA, 1996). Local government operates the closest to the communities in terms of service delivery, such as water provision. Section 151(1) stipulates that developmental local government should be democratic and accountable to its citizens and should ensure service delivery to the people. For instance, water service provision is a constitutional right, as outlined in Section 27(1) of the Constitution (RSA, 1996).

However, there is a lack of water infrastructure asset management policies and implementation of legislation by municipalities. Furthermore, it has been noted that municipalities do not comply with various municipal policies that govern water infrastructure assets (Kang, 2019). This has resulted in unreliable management of infrastructure asset information that inhibits infrastructure asset managers from

conducting effective municipal planning, safeguarding, and maintenance of these assets (Chari et al., 2018).

Aim of the Study

The broad aim of this study was to investigate the alignment of local government policies in managing infrastructure assets to improve water service delivery.

Significance of the Study

Municipalities are obligated by the Constitution, Section 27(1)(b), to provide water, which is a basic need and right for everyone (RSA, 1996). However, several challenges hinder the provision of water to communities, such as inadequate infrastructure maintenance, ageing infrastructure, population growth, increasing infrastructure demands, poor data management, and mismanagement of resources (Singh & Ogra, 2016). As a result of these challenges, municipalities are increasingly experiencing pipe bursts and leaks, which lead to greater water losses and adversely affect service delivery (Love et al., 2018).

It is imperative to implement and adhere to policies and legislation on infrastructure asset management. Such implementation can provide control over and safeguard information regarding infrastructure assets, their condition, and how they can be maintained. This study contributes to the body of knowledge on urban geography, targeting researchers, practitioners, policymakers, engineers, and municipal managers. It aims to enhance understanding of the implementation of water infrastructure asset policies to manage governmental affairs, including the challenges and solutions facing water service provision to communities.

Theoretical Underpinnings of the Study

The study focuses on the smart city theory and its frameworks, particularly the human smart city framework, which involves people and their participation in a city's governance (Kersting

et al., 2016); the institutional smart city framework, which encompasses the collaboration between state and civil society to improve service delivery (Belissent, 2011); and the technological smart city framework, which employs technologies to address societal problems (Bashynska & Dyskina, 2018). Sikora-Fernandez and Stawasz (2016, p. 86) define a smart city as a concept that is aimed at managing cities in a modern way using advanced technologies while conserving resources to achieve desired outcomes. The smart city theory was selected for this study due to its technological innovations, such as smart devices and sensors, which generate real-time data focusing on smart urban water management. This approach aims to enhance the connectivity of water infrastructure assets from the source (dams) through distribution (networks) to wastewater treatment plants.

Methodology

The study used a qualitative research approach, focusing on a review of literature from 2011 to 2023 and the legislative framework that guides the use of water infrastructure assets. The researchers utilised an interpretivist research paradigm, as it would facilitate the acquisition of in-depth knowledge of the phenomenon under investigation (Creswell, 2014). The research design adopted in this study was a qualitative research method, concentrating on secondary data collection through a document (desktop) review of municipal policies and legislation regarding water infrastructure assets. A document review study is defined as "the review by the researcher of written materials which can include personal and non-personal documents such as archives, annual reports, and policy documents" (Mohajan, 2018). The researchers undertook a document review to gain an understanding of the implementation of water infrastructure asset management policies and regulations in the Rustenburg Local Municipality. The study examined the following policies and legislation: the Constitution of the Republic of South Africa, 1996; the Municipal Finance Management Act, No. 56 of 2003; the Local Government: Municipal Systems Act, No. 32 of 2000; the Water Services Act, No. 108 of 1997; the Rustenburg Local

Municipality Integrated Development Plan (IDP); and the Rustenburg Local Municipality Asset Management Policy.

Description of the Study Area

The Rustenburg Local Municipality is located in the Bojanala District Municipality in the North West province, as illustrated in Figure 1, and has a total population of 734 243. It is one of five local municipalities: Rustenburg, Madibeng, Moses Kotane, Moretele, and Kgetlengrivier. Rustenburg is a large town situated approximately 112 km north-west of Johannesburg and Pretoria, at the foot of the Magaliesberg mountain range. It is regarded as the fastest-growing municipality in South Africa due to the economic impact of the world's three largest platinum mines – Sibanye Stillwater, Anglo Platinum, and Impala Mine – which are located around the city (Mudau et al., 2014).

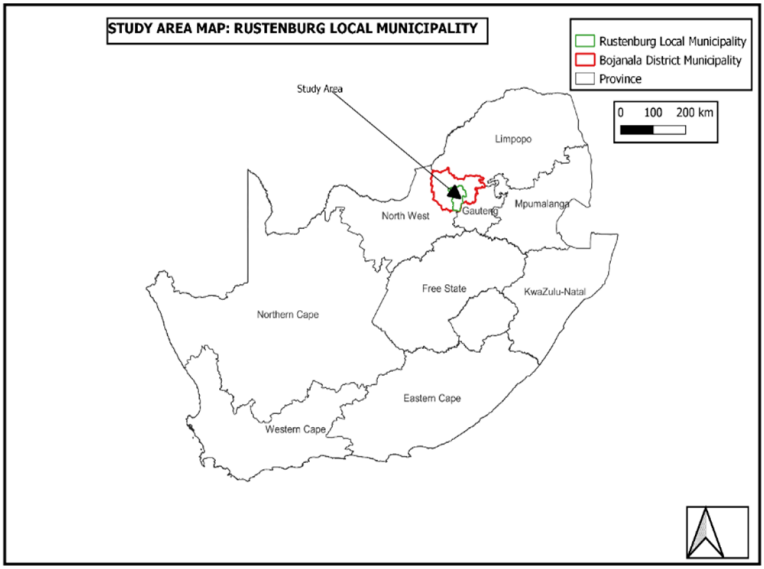

Figure 1: Study Area Map. Source: Own construction (2022)

Review of the Constitution of the Republic of South Africa, 1996

The 1996 South African Constitution was promulgated on 18 December 1996 and came into effect on 4 February 1997. The Constitution outlines its purpose as healing the divisions of the past and establishing a society that is based on democratic values, social justice, and fundamental human rights (RSA, 1996). The Constitution in Section 27(1)(b) stipulates that everyone has the right to have access to water, while Section 152(1)(a-e)(2) emphasises that local government must ensure the provision of services to communities in a sustainable manner and involve communities in this process (RSA, 1996). Section 153 outlines that a municipality must structure its budget and planning processes to prioritise the basic needs of the community (RSA, 1996). Section 41(1)(c)(h)(i-vi) states that all spheres of government must provide effective, transparent, accountable, and coherent governance for the Republic to facilitate cooperation among one another in intergovernmental relations (RSA, 1996). The Constitution of South Africa was selected for this study in support of the study's aim, as it suggests that if infrastructure management is in place, including community participation, cooperation among spheres of government, and good budgeting and planning processes, water service provision will be effectively rendered to communities.

Review of Local Government Policies and Legislation on Asset Management

South African municipalities are constitutionally mandated to provide services to communities. However, these services must be delivered through reliable infrastructure assets. Scholars have identified various challenges that affect service delivery in municipalities, such as a lack of an updated asset register, poor infrastructure data management, insufficient skills capacity, ageing infrastructure, and increasing infrastructure demand (Meehan, 2014; Oyedele, 2022). The South African government established the Municipal Infrastructure Support Agent (MISA)

to assist municipalities in addressing infrastructure challenges (MISA, 2016). MISA was created to provide technical and financial aid to municipalities to tackle these challenges. However, the responsibilities of MISA and those of the municipalities are not clearly defined (Bormann & Gulati, 2014). Nhleko and Inambao (2019) indicate that for municipalities to succeed in their functions, they must maintain well-performing, reliable infrastructure to prevent community protests.

Review of the Municipal Finance Management Act, No. 56 of 2003

The Municipal Finance Management Act was administered and adopted in South Africa in 2003 (RSA, 2003). The objective of the Act is to ensure sound and sustainable management of the financial affairs of municipalities and other institutions in the local sphere of government (RSA, 2003). This Act was chosen for this study with consideration of the financial status of the municipality in relation to asset management for the provision of water services to the communities of Rustenburg Local Municipality. Maintenance of infrastructure assets requires a budget; the Act was therefore beneficial for this study regarding the management of infrastructure assets. The Municipal Finance Management Act, in Sections 63(1)(a)(b)(c), 63(2)(a)(b)(c), and 96(1)(a)(b) and (2)(a)(b), states that the accounting officer of the municipality is responsible for the management of assets, safeguarding, internal control (including the asset register), and providing an information system for asset accountability.

Review of the Local Government: Municipal Systems Act, No. 32 of 2000

The Local Government: Municipal Systems Act was administered and adopted in 2000 (RSA, 2000). The objective of the Act is to provide the core principles, mechanisms, and processes necessary to enable municipalities to move progressively towards the social and economic upliftment of local communities (RSA, 2000). The Act promotes community participation in Sections 16(1)(i-v) and 42, as well as the drafting of an IDP as stipulated in Section 23(1)(a)(b)(c). Municipal councils adopt the IDP in accordance with Section

25(1)(a)(b)(c)(d)(e) of the Act (RSA, 2000). This Act plays a significant role in the study as it encourages community involvement in identifying challenges related to infrastructure assets, such as burst pipes that require maintenance. Section 4(2)(d) of the Local Government: Municipal Systems Act states that local government must ensure the provision of services to communities in a financially and environmentally sustainable manner (RSA, 2000). The Local Government: Municipal Systems Act encourages municipalities to apply sound asset management principles and systems to enable them to achieve sustainable financial provision for basic services (RSA, 2000). Section 73(2)(a)(b)(c)(d)(e) of the Local Government: Municipal Systems Act stipulates that the provision of basic municipal services should consider the need for prudent, efficient, and effective use of available resources, as well as the requirements for financial and environmental sustainability (RSA, 2000).

Review of the Water Services Act, No. 108 of 1997

The Water Services Act was administered and adopted in 1997 (RSA, 1997). The objectives of the Act are to provide for the right of access to basic water supply, to establish water services development plans, and to facilitate the gathering of information in a national information system (RSA, 1997). This Act was chosen for this study to guide the management of water infrastructure assets for water provision. Section 3(1)(2) of the Act stipulates that everyone has the right of access to basic water supply, and municipalities must ensure that this right is realised based on their water service development plans (RSA, 1997). Furthermore, Section 11(1) outlines that municipalities, as water service authorities, should provide access to water services. The Water Services Act, in Section 12(1)(a), highlights that municipalities must draft a Water Service Development Plan (RSA, 1997). This plan must detail all information pertaining to water service provision, including population size, water infrastructure assets, and maintenance, as stipulated in Section 13(a-h) of the Act (RSA, 1997). Additionally, Section 67(1) stipulates that the minister must ensure that there is a national information system on water services (RSA, 1997). This

system must record and provide data for the development and implementation of water services information, as outlined in Section 68(a)(b)(i–iii) of the Act (RSA, 1997).

Review of the Rustenburg Local Municipality Integrated Development Plan (IDP)

The Rustenburg Local Municipality developed an IDP guided by the Municipal Systems Act of 2000. The plan emphasises the importance of intergovernmental relations, with the Rustenburg Local Municipality participating in the district IDP forum to align plans and implement projects (Rustenburg Local Municipality, 2022). It also elaborates on the use of ICT in support of the smart city initiative and the Fourth Industrial Revolution, aiming for the realisation of a technological water infrastructure asset management system (Rustenburg Local Municipality, 2022). This system will ensure effective planning that will lead to accurate reporting of assets and appropriate spending of the asset maintenance budget (Rustenburg Local Municipality, 2022). To ensure proper maintenance, the Rustenburg Local Municipality should develop an asset maintenance plan.

Review of the Rustenburg Local Municipality Asset Management Policy

The Rustenburg Local Municipality adopted an asset management policy guided by the Municipal Finance Management Act of 2003. This policy empowers the municipal manager to regulate the acquisition, safeguarding, and maintenance of all municipal assets (Rustenburg Local Municipality, 2021). It also states that department heads procuring assets on behalf of the Rustenburg Local Municipality must ensure that only those assets necessary for the efficient, effective, and economical delivery of intended services are acquired (Rustenburg Local Municipality, 2021). Furthermore, the policy stipulates that assets that require periodic maintenance must be properly maintained to ensure that the intended benefits of the procured assets are realised (Rustenburg Local Municipality, 2021). Additionally, the policy encourages the development of an asset register in the

municipality for the planning and tracking of assets (Rustenburg Local Municipality, 2021).

Discussion

The findings of the literature and document review of policies and legislation concerning water infrastructure asset management indicate that the Constitution of South Africa serves as the umbrella for all other policies and legislation. The review also revealed a need for municipalities to implement policies and legislation that support infrastructure asset management to improve water service delivery. For water to be provided to communities as a constitutional right, several processes must be followed, including community participation to identify areas that require water infrastructure assets. This should be included in the IDP, as guided by the Local Government: Municipal Systems Act. The budget for the acquisition and maintenance of infrastructure assets, as guided by the Municipal Finance Management Act, should be adhered to. Lastly, the management of water infrastructure asset information should utilise the Water Service Development Plan and asset register as a database in the municipality, as guided by the Water Services Act.

The Constitution of the Republic of South Africa, 1996

The review of the South African Constitution emphasises the importance of providing access to water for everyone, as it is a human right stipulated in Section 27(1)(b) of the Constitution (RSA, 1996). However, water service provision can only be effective in a democratic developmental local government that is accountable to its citizens. The Constitution promotes cooperation in the form of stakeholder engagement among national, provincial, and local spheres of government to work together for the management of water infrastructure assets and to improve water service provision.

The Rustenburg Local Municipality, through its IDP, supports intergovernmental relations among all spheres of government to align plans and facilitate the implementation

of water infrastructure asset projects for the benefit of communities. This approach is also supported by the smart city theory, which served as the guiding framework for this study. This theory emphasises an institutional smart city framework where community involvement and input are valued, as well as collaboration among different departments, municipalities, and businesses for the management of water infrastructure assets (Albino et al., 2015). This collaboration will ultimately lead to the realisation of effective water service delivery through the exchange of ideas.

The Municipal Finance Management Act, No. 56 of 2003

The review of the Municipal Finance Management Act emphasises the responsibility of the accounting officer for the management of assets, internal control, sustainable management of financial affairs, budgets, and the use of the asset register, as stated in Sections 63(1)(a)(b)(c) and 63(2)(a)(b)(c) of the Act (RSA, 2003). This is also noted by Boshoff and Pretorius (2010), who indicate that the chief financial officer is ultimately responsible for activities associated with asset usage. The Rustenburg Local Municipality Asset Management Policy adheres to the stipulations of the Municipal Finance Management Act regarding the accounting officer being the custodian of municipal funds and assets, who regulates the acquisition, safeguarding, and maintenance of all assets. Municipalities lack an updated asset register where water infrastructure asset information is stored, which results in inadequate tracking records of water infrastructure assets for planning, which affects the maintenance schedule for these assets. Nsanganzelu and Nelson (2011) opine that water infrastructure assets should be safeguarded in a robust manner by implementing internal control systems.

Municipalities are under serious pressure to provide water services to communities within their municipal infrastructure budget allocation for operations and maintenance. They are encouraged to allocate and invest funds to improve infrastructure conditions and performance by adopting efficient and sustainable infrastructure management strategies

(Abusharar, 2012). It must be noted that municipalities generate income through revenue enhancement in the form of billing customers via smart metering. However, if municipal water infrastructure asset information is not up to standard, it compromises the municipality's ability to generate income. The lack of implementation of policies regarding water infrastructure assets leaves municipalities with inadequate funding, which subsequently affects the maintenance of municipal assets. Bikam and Chakwizira (2021) opine that inadequate funding results in neglected maintenance of municipal assets, which impacts water infrastructure. The IDP of the Rustenburg Local Municipality concurs with the issues of inadequate funding and lack of expenditure on the asset maintenance budget due to insufficient planning. This ultimately leads to poor water service delivery to communities.

The Local Government: Municipal Systems Act. No. 32 of 2000

The Local Government: Municipal Systems Act elaborates more on community participation and drafting of municipalities' IDPs, as stated in Section 16(1)(a) of the Act (RSA, 2000). Water infrastructure asset management in municipalities can be achieved if citizens are involved in the affairs of the municipality. The Rustenburg Local Municipality should prioritise public participation wherein communities can participate in water resource management and water infrastructure asset management, to communicate asset management plans, and seek feedback so that water service delivery can be achieved. Bryson et al. (2013) mention that community participation is vital in local government because municipalities can plan projects based on what the community needs. This provides municipalities with information regarding any service delivery concerns about infrastructure assets. Such community participation can enable municipalities to identify the poorest communities and marginalised sectors of society to participate in local governance (Cloete, 2012).

When citizens participate in water infrastructure asset management in a municipality, it improves the chances of avoiding vandalism and community unrest. This is because,

when communities understand the importance of water infrastructure asset management, they are more likely to conserve water and its infrastructure assets sustainably. The involvement of citizens in municipal affairs regarding the implementation of water infrastructure asset management policies and community participation is elaborated on in the human smart city framework, which served as a guideline for this study. This framework emphasises the significance of human (citizen or community) participation in governmental affairs. Consequently, a city is considered smart when investments in human and social capital are achieved through participatory governance to improve living conditions (Kourtit et al., 2012).

The Water Services Act, No. 108 of 1997

The review of the Water Services Act indicates the importance of establishing a Water Services Development Plan, which serves as a compilation of water infrastructure asset information as stipulated in Sections 67(1) to (4) and 68(a)(b)(i-iii) of the Act (RSA, 1997). The Rustenburg Local Municipality Asset Management Policy, as guided by the Water Services Act, encourages the development of an asset register to track asset information for planning purposes. The water infrastructure asset information in a municipality is gathered for the purpose of municipal development. Makhari (2016) opines that water service delivery can be made easier by maintaining and monitoring water service management records. These records enable municipalities to track services provided to the communities (Ngumbela, 2021).

The Rustenburg Local Municipality should implement the Water Services Act to support the management of infrastructure assets and water service delivery to communities. Municipalities often fail to implement the Water Services Act due to a lack of skilled personnel to develop a Water Services Development Plan (Makaya et al., 2020). This hampers water provision to communities, which makes it difficult to pinpoint where there is a need for infrastructure asset maintenance due to insufficient information in the plan. The Water Services Act, in

Section 12(1)(a)(b)(i–ii), outlines that each municipality should prepare a Water Services Development Plan. Hove et al. (2019) indicate that the Water Services Act supports participatory water governance; however, authorities lack the means to effectively consult communities and the capacity to use community-generated data for service delivery. A lack of skills and relevant personnel in a municipality leads to inaccuracies in asset information, which affects the overall planning of water service provision.

The literature review indicates that municipalities face significant challenges related to the management of infrastructure; South Africa therefore requires innovative solutions to issues relating to water service delivery (Steyn, 2020). The implementation of water infrastructure asset management policies and water service delivery needs to integrate technological innovation based on a smart city framework to achieve smart urban water management. Policy and regulation reviews on water infrastructure asset management primarily focus on governance regarding community participation, stakeholder engagement, sustainable use of municipal finances, and the recording of infrastructure information for implementation in a municipality. These policies fail to address the concept of smart urban water development, which uses computer control to collect information, utilise data to improve operations, and communicate with citizens regarding the city's development (Grigg, 2022). Information about water infrastructure assets can be gathered using smart sensors to provide real-time data that identify actual failures, thereby enhancing water infrastructure assets (Du Toit & Stimie, 2023). This includes the monitoring and control of water resources, storage, distribution, and wastewater treatment.

Conclusion

The Constitution of South Africa established a government that has produced numerous policies and pieces of legislation for the implementation of water infrastructure asset management and water services since 1994. These policies were developed to rectify the imbalances of the past, where only the minority

had access to infrastructure assets and water service provision. This study reviewed the following policies: the Constitution of South Africa, the Municipal Finance Management Act, the Local Government: Municipal Systems Act, the Water Services Act, and the Rustenburg Local Municipality IDP and Asset Management Policy for the management of water infrastructure assets in the Rustenburg Local Municipality. The findings of this review emphasise the importance of government cooperation, wherein national, provincial, and local spheres of government must work together to provide water services while involving communities in governmental affairs and valuing their ideas.

These policies also emphasise promoting financial sustainability in municipalities to ensure that there is sufficient budget for the maintenance of water infrastructure assets, thereby enabling effective water provision. However, all the information pertaining to water infrastructure assets obtained from the communities is included in the IDP of the municipality. These policies further emphasise the development of a Water Service Development Plan and an asset register, wherein all the information on water infrastructure assets can be stored and utilised for municipal planning. The literature review elaborates on how the inability to manage water infrastructure assets and the lack of an asset register adversely affect service delivery. Additionally, the mismanagement of infrastructure assets has placed municipalities in disastrous financial positions due to their failure to implement and adhere to policies and legislation regarding the management of water infrastructure assets.

This study emphasises the use of smart urban water management, guided by the smart city theory, which served as a framework for this research. It aims to facilitate technological innovation for collecting and monitoring real-time data through smart sensors, from the source to the distribution networks. Although there is a knowledge gap in the policies regarding smart urban water management, this approach will assist municipalities in coordinating and controlling their water infrastructure assets, thus improving water service delivery to communities. As a recommendation, the Rustenburg Local Municipality should prioritise the implementation of all these

policies and Acts to ensure proper water infrastructure asset management. The smart urban water management concept should be incorporated into all these policies to achieve an integrated water supply.

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Policy and Legal Framework of Wetland Ecosystems in Nandoni, Limpopo Province, South Africa

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Abstract

This study investigated the gaps that exist despite policy enactments at international, national, provincial, and local levels regarding wetland conservation and development encroachment at the municipal level, specifically in the case of peri-urban landscapes in Nandoni, Limpopo province. This investigation is set against the backdrop of continued development expansion on wetlands in peri-urban areas, which results in their alteration. Consequently, this exposes theory-praxis policy contestations between the choice of wetland conservation for future generations and land use development initiatives.

Informed by the resilience conceptual framework, the study adopted a constructivist philosophy and a qualitative research approach to guide the data collection. A total of eight purposively selected key informants were involved in the data collection, comprising spatial planners, environmentalists, and traditional leaders. Purposively selected document reviews of wetland conservation laws such as the Constitution of South Africa, the National Environmental Management Act, the

Water Services Act, the Conservation of Agricultural Resources Act, the Spatial Planning and Land Use Management Act, the Local Government: Municipal Systems Act, the Thulamela Spatial Development Framework, the Thulamela Integrated Development Plan, and the Thulamela Land Use Scheme were used to help triangulate the study's claims.

The findings reveal that various activities, such as brickmaking, farming, and residential development, have adversely affected wetlands in Nandoni's peri-urban villages of Budeli, Mutoti, and Mphego. These activities have consequently led to wetland degradation in the form of erosion of wetland banks, loss of wetland vegetation, water pollution, and a decline in wetland fauna. This has highlighted a policy mismatch between what is supposed to be followed and what is actually taking place in the planning environment. It is recommended that sustainable practices be adopted to support both the community and the wetland landscape environment, alongside fostering strong stakeholder partnerships informed by existing local policies.

Keywords: Policy, legal framework, wetland ecosystems, Nandoni, ecological resilience.

Introduction

Despite wetland ecosystems having high levels of biodiversity and economic and social significance, they lack sufficient legal protection and face enormous threats from unsustainable activities (Nature and Culture International, 2022). Contemporary studies on the policy framework for wetland ecosystems advocate for ecosystem-based adaptation, which involves people using biodiversity and ecosystem services to adapt to the adverse effects of climate change and promote sustainable development. Turner and Jones (2013) emphasise that much attention has been paid to the formulation and operation of sustainable management strategies for wetlands in recent years. In Africa, the South African government's policy on wetlands reflects the recognition that, to be truly effective, strategies for wetland conservation need to include

a combination of proactive measures for maintaining healthy wetlands, along with actions to reverse past degradation. In South Africa, the rural poor depend on the services that wetlands provide for their livelihoods and utilise the resources at a household level, especially in times of crop failure or drought (Emerton, 2005). Subsistence-level populations prefer wetlands for their agricultural and fishery activities due to their higher productivity. Even though wetlands are clearly valuable, freshwater ecosystems are among Africa's most undervalued resources. As a result, the services that wetlands provide continue to be degraded, either due to a lack of understanding or for short-term economic gain.

In the case of peri-urban villages in Nandoni, namely Budeli, Mutoti, and Mphego, local land use is rapidly expanding, and its associated activities have a significant negative impact. The land near these wetlands is mostly overgrazed and denuded, and are progressively deteriorating from Mutoti village to Muledane as the floodplains are converted into maize fields and small vegetable gardens. The area below Budeli is being developed into fields. Furthermore, gullies and ravines are being stripped of vegetation by people in search of firewood. The southern bank of the river features substantial cultivated fields, particularly maize. Although there are still some wooded areas, especially in the gullies, the region is generally overgrazed.

This research study investigated the policy and legal framework associated with the case, and highlights that despite existing policies, there are continued violations concerning development expansion onto wetland ecosystems. It advocates for the peri-urban community's interaction with wetland ecosystems through the adoption of sustainable practices amid spatial development, facilitated by integrated policy interventions to protect these sensitive landscapes. This systematic inquiry aimed to establish sustainable policy frameworks through stakeholder partnerships and engagement, thereby reducing the policy mismatch between wetland conservation policies and their implementation in the planning environment.

Conceptual Synopsis

Globally, many wetlands have been exploited or used unsustainably, which resulted in a 35% loss of global wetlands since 1970 (Ramsar Convention on Wetlands, 2018). Wetlands and nearby communities share an important relationship. Communities in proximity to wetlands benefit significantly from them, as wetlands provide protection from extreme weather events such as floods, storm surges, erosion, and heatwaves. In addition to these benefits, wetlands assist in water management through their ability to store large quantities of water, replenish aquifers, reduce harmful flooding, mitigate soil subsidence, and buffer drought risk during dry seasons. This, in turn, creates long-term solutions for adapting to climate change while also sequestering substantial amounts of carbon emissions and providing liveable environments for recreation through the integration of wetlands in urban or rural settings.

According to Walker (2020), resilience is the ability to cope with shocks and to continue functioning in much the same way. It is a measure of how much an ecosystem or society can change before it crosses a tipping point into a different state that it then tends to remain in. This study was centred on the concept of ecological resilience, which assumes the existence of multiple stability domains and the system's tolerance of disturbances that enable transitions between stable states. Ecological resilience is defined by the magnitude of disturbance a system can absorb before changing stable states. Resilience is the ability to adapt and change and to reorganise while coping with a disturbance (Oberlack et al., 2018). A resilient system responds to a disturbance by altering the relative amounts of its different parts and how they interact, thereby changing its functioning. It remains the same type of system by learning from a disturbance, which enables it to better handle a similar disturbance in the future. In addition to the characteristics of resilience, governance plays a pivotal role in environmental systems, particularly in wetland ecosystems. This is realised through appropriate policy structures reflected in effective and strategic planning for wetland conservation and the enforcement of development ordinances that result in reduced expansion of

development, in its various forms, of environmentally sensitive landscapes (Herbert et al., 2020). Governance structures, in the form of institutions and policy formulation (plan implementation), are not sufficient on their own and should be complemented by proactive policy implementation plans that will aid in maintaining healthy wetland ecosystems, along with actions to reverse past and ongoing wetland degradation.

Despite the existing policies established at various levels, from national to local and municipal, regarding wetland conservation in peri-urban landscapes, selected villages along the Nandoni Dam experience significant theory-practice gaps, which are compounded by a rapidly expanding economy and a booming population. The choice between conserving wetlands for future generations and pursuing land use development for various purposes, such as residential, industrial, and commercial, becomes a challenging dilemma. Nandoni's peri-urban villages in Limpopo, such as Budeli, Mutoti, and Mphego, face issues, including the expansion of land use development, serious alterations in wetland quality due to encroachment, the overdrawing of water and soil to support brickmaking activities, and the extension of agricultural practices onto wetlands. These challenges undermine the governance structures that are in place for wetland conservation and hinder the development of effective mitigation measures to bridge these gaps in both planning and practice.

Study Area

The study area was Nandoni Dam (22°56'45.00" S and 30°20'07.00" E), which falls under Wards 18 and 19 of the Collins Chabane Local Municipality and Wards 19, 20, 26, 36, and 41 of the Thulamela Local Municipality in the Vhembe District Municipality, Limpopo province, South Africa (see Figure 1). It is located 16 km southeast of the town of Thohoyandou. Nandoni Dam was constructed on state-owned land (Department of Rural Development and Land Reform, cited by Lilimu, 2023) and is administered by three traditional authority territorial councils. These councils are responsible for allocating parcels of land for specific uses by individuals

or organisations. The construction of Nandoni Dam began in 1998 and was completed in 2005. The project was driven by the authorities' desire to upgrade water resource management, alongside the aim of enhancing economic development through water-based recreation and tourism (Department of Water Affairs and Forestry, 2003). Local communities were led to expect that economic development would arise from the recreational use of the dam. It was anticipated that water-related recreation and ecotourism development in the study area would not only create employment opportunities for local communities but also improve their lives and livelihoods. Furthermore, the dam was expected to act as a catalyst for new developments and initiatives in the area to alleviate poverty. This study investigated the policy and legal framework of wetland ecosystems in Nandoni, Limpopo province, focusing on the selected peri-urban villages of Budeli, Mutoti, and Mphego, as shown in Figure 1.

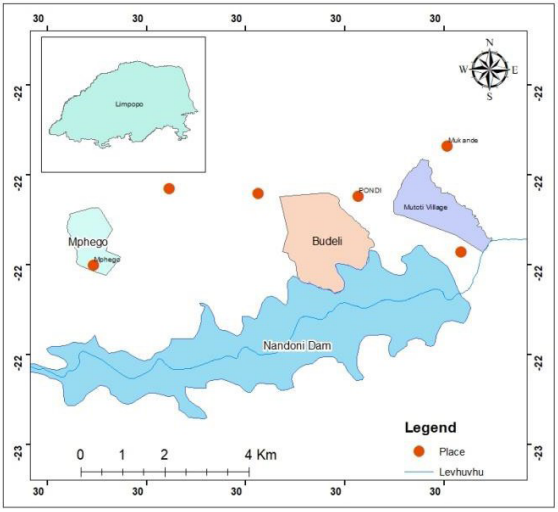

Figure 1: Map Showing the Budeli, Mutoti, and Mphego Villages Along Nandoni Dam in Limpopo Province, South Africa. Source: Researchers (2022)

Research Methodology

Research Design

The research employed a case study descriptive design that was aimed at understanding and describing the ongoing developmental expansion of wetland ecosystems and the resulting alterations in three peri-urban villages, namely Budeli, Mutoti, and Mphego. From a policy perspective, the study reveals gaps between policy theory and practice and highlights the continued violation of policies by residents through human activities, despite operational policies established at both the national and municipal levels. The phenomenon under investigation is the ongoing developmental expansions in these three spatially configured peri-urban villages.

Research Approach

The research employed a qualitative research approach with the main goal of obtaining data through open-ended and conversational communication. This approach not only focused on what people thought but also on why they thought so, which allowed the researchers to engage further in probing and questioning the key informants based on their responses to understand their motivations and feelings. The qualitative research approach was ideal for this study as it sought to uncover responses that highlight the experiences, meanings, and perspectives related to gaps in the policy and legal framework, particularly in the context of the continued expansion of development activities on wetland landscapes despite existing policy provisions. The key informants' experiences were complemented by a document review, which aimed to interpret documents to give a voice to the research (Bowen, 2009).

Sampling Design

The study employed non-probability sampling, specifically purposive sampling, to select key informants such as spatial planners, environmentalists, and traditional leaders, using the researchers' judgement to determine the sample. Purposive sampling was also utilised in selecting key legislation related

to wetland conservation and development monitoring. Table 1 provides a summary of the key informants selected and the legislative frameworks used in the study.

Table 1: Summary of Key Informants and Legislative Frameworks Used in the Study

Key informants	Spatial planners (4)
	Environmentalists (1)
	Traditional leaders (3)
Legislative frameworks	Constitution of South Africa (1996)
	National Environmental Management Act (NEMA) (1998)
	Water Services Act (1997)
	Conservation of Agricultural Resources Act (CARA) (1983)
	Spatial Planning and Land Use Management Act (SPLUMA) (2013)
	Local Government: Municipal Systems Act (2000)
	Thulamela Spatial Development Framework (SDF) 2019-2023
	Thulamela Land Use Scheme (2020)
	Thulamela Integrated Development Plan (IDP) 2021/2022 –2023/2024

The study included eight key informants, comprising four spatial planners from the Department of Spatial Planning, one environmentalist from the Department of Environment at Thulamela Local Municipality, and three traditional leaders from Budeli, Mutoti, and Mphego villages. A total of nine legislative frameworks were selected for document review, as listed in Table 1.

Data-Collection Instruments

The study utilised both primary and secondary data sources, including key informant interviews with spatial planners, environmentalists, and traditional leaders. The data collected

focused on wetland quality, size, and spatial configuration, the degree of development expansion, wetland conservation policies, gaps between wetland theory and practice, as well as policy mitigation measures and the resilience of wetland ecosystems. Secondary data were employed to systematically collect, review, and evaluate legislative framework policy data relevant to the study.

Data Analysis

The responses from the key informant interviews were analysed using thematic analysis. This analysis focused on activities encroaching on wetlands, the causes of these activities, their effects on wetland ecosystems, policies regarding wetland conservation and development encroachment, theory-practice gaps in wetland conservation, and the mitigation measures employed to address policy gaps between blueprint and practice, along with conclusions and policy directions. Document reviews were used to augment the key informant interviews and to ensure data reliability and validity. Legislative documents were examined and interpreted to provide meaning, enhance understanding, and develop verifiable knowledge.

Presentation and Discussion of the Results

This section presents the findings on policies, gaps, and mitigation measures related to wetland conservation and development encroachment. It addresses activities that encroach on wetlands, the causes of these encroachments, the effects of expanding activities on wetland ecosystems, and concludes with policy directions. The findings are based on key informant interview responses and a review and interpretation of legislative frameworks to gain a deeper understanding of how planning policy and practice converge and diverge in the context of wetland ecosystem management in peri-urban areas, specifically in the case of Nandoni in the Limpopo province, South Africa.

Policies, Gaps, and Mitigation Measures in Terms of Wetland Conservation and Development Encroachment

The Constitution of the Republic of South Africa, 1996

In South Africa, the Constitution of the Republic of South Africa, 1996 (as amended), stipulates that spatial planning is the responsibility of all three spheres of government: local, provincial, and national. It further establishes a system of cooperative governance that empowers these three spheres to share both legislative and executive powers (Currie & De Waal, 2001). Through Section 24, all three spheres of government are both effective and responsible for environmental management, and are required to fulfil the primary duty of ensuring environmental protection (Republic of South Africa [RSA], 1996).

Section 24 of the Constitution states that "everyone has the right to an environment that is not harmful to their health or well-being; and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development". The Constitution therefore makes provision for environmentally sensitive landscapes, such as wetlands, and outlines how they should co-exist with their neighbouring communities. If utilised, these resources should be used wisely to ensure their maintenance for present and future generations. Section 24 embodies an environmental right, with Section 24(b) laying the foundation for the development and implementation of legislation and additional supplementary measures to ensure environmental protection while upholding socio-economic development (Herbst, 2015). Wetlands are implied in this environmental right (Cameron & Katzschner, 2017).

The Constitution clearly stipulates the right to property, which is embedded in Section 25 on property rights. In Section 25(1), the Constitution states that "no one may be deprived of property", after which provision is made in Section 25(2) for

the expropriation of property "only in terms of a law of general application (a) for a public purpose or in the public interest" (RSA, 1996). The relevance of this section to the discussion is highlighted by the interpretation of public interest as articulated in Section 25(4)(a), where the Constitution directly states that "the public interest includes the nation's commitment to reforms to bring about equitable access to all South Africa's natural resources" (RSA, 1996). Section 25(4)(b) further states that property is not limited to land. The significance of this right lies in its impact on natural resource management decisions made by establishments based on property rights. A strong interdependence between property ownership and environmental protection has been established, particularly where there has been successful protection and conservation of wetlands based on their location. This relates to wetlands being better protected and managed in areas where land is owned by the state, thereby enhancing management decisions and accountability (Adger & Luttrell, 2000).

Another relevant section is Section 27(1)(b), in which the Constitution provides for a right of access to sufficient food and water (RSA, 1996). This right is relevant in the context of the multiple value systems that wetland ecosystems benefit. The social value that is attributed to wetlands for sustainable livelihoods has a direct link to access to water and water quality issues. Moreover, the section on the water regime examines in detail the upholding of this right.

Section 32 enshrines the right of access to any information held by the state, as well as any information held by another person that is required for the protection of any rights (RSA, 1996). This right is central to the successful protection and conservation of natural resources, including wetlands. A lack of access to information results in the public's inability to participate properly and actively in environmental decision-making processes (Fabricius et al., 2003). The state has provided a legislative measure in the form of the Promotion of Access to Information Act, No. 2 of 2000, which outlines comprehensive procedures that must be followed to enable the realisation of this right.

Another relevant right is discussed in Section 38, which provides for the enforcement of rights. This section allows anyone listed therein to approach a competent court if a right in the Bill of Rights is infringed or threatened (RSA, 1996). This right empowers any citizen of the country to become involved, which implies that any member of the public has the right to approach a court to take suitable action to promote the sustainable use of natural resources (Fabricius et al., 2003). This includes wetlands and aligns with the provisions of Section 38(d), which specifies that "the persons who may approach a court are … (d) anyone acting in the public interest". This could include the environment when read alongside the aforementioned Section 25 and, more importantly, in conjunction with the environmental right in Section 24 (RSA, 1996).

The peri-urban populace is not excluded from interactions with natural landscapes such as wetlands, as demonstrated by various activities and their effects in the villages of Budeli, Mutoti, and Mphego. There are violations of the laws concerning wetlands in these areas. The key informants highlighted several examples: in Budeli and Mutoti, residential development has expanded onto wetlands, and in Mphego, brickmaking activities have degraded and polluted wetlands, leading to a loss of surrounding wetland vegetation. Additionally, farming in Mphego has converted wetland sites into croplands, while overgrazing and the retrieval of medicinal plants in Budeli and Mutoti have further contributed to the loss of wetland vegetation. These scenarios, reiterated by the key informants, violate the rights enshrined in the Constitution, as neighbouring communities to natural landscapes are not co-existing and are not using wetlands and their resources wisely, which create an imbalance. The interdependence between land ownership and environmental protection enables the state, through collaborative measures, to intervene in cases of land violations in order to mediate and rectify these issues. In the case of Nandoni's peri-urban villages, where violations involving wetland ecosystems occur, the local authority is not excluded

from decision making, as it is an active stakeholder in natural resource management.

The National Environmental Management Act (NEMA), No. 107 of 1998

The NEMA provides a national framework for environmental governance in democratic South Africa (Cameron & Katzschner, 2017). According to Du Toit (2016), the NEMA addresses several weaknesses found in previous environmental laws. The Act refines and expands the definition of the term "environment" from the original definition provided. It specifies the types of surroundings and conditions, and articulates the properties and circumstances that influence the health and well-being of humans (RSA, 1998). The Act further provides 18 environmental principles that are critical for environmental management and form the basis for all decision making that impacts the environment across all spheres of government (RSA, 1998). It does this by outlining specific principles in Section 2, which can be grouped into the following themes: sustainable development, decision making and cooperative government, environmental assessment and management, environmental justice, and stakeholder engagement (Rossouw & Wiseman, 2004). These principles are relevant to wetland conservation, protection, and wise use, as they relate to the maintenance of ecological character through the avoidance of biodiversity loss, pollution control and mitigation, and remedial measures where pollution has occurred (Herbst, 2015).

In line with Section 24 of the Constitution, Section 2(2) of the NEMA states that environmental management must place people and their needs at the forefront of its concerns, serving their physical, psychological, developmental, cultural, and social interests equitably (RSA, 1998). This provision indicates that the benefits of wetlands must also serve people and their needs equitably. The principles of sustainable development, as outlined in Sections 2(3) and 2(4)(a)(vi) of the Act, are relevant for the wise use of wetlands. Additionally, the environmental assessment and management principles detailed in Sections 2(2) and 2(4)(a) of the Act legislate pollution control and impact assessments (RSA, 1998). For example, in Section 28, the

NEMA prescribes a general duty of care not to cause significant pollution or degradation of the environment and, where harm is unavoidable, to take measures to reduce or stop the pollution (RSA, 1998).

In an instance where an emergency incident affects a wetland, the response procedures prescribed in Section 30 of the Act should be followed (Cameron & Katzschner, 2017). Such emergency incidents are defined in the Act as unexpected sudden occurrences, including major emissions, fires, or explosions that pose a danger to the public or can potentially cause serious pollution of, or harm to, the environment, whether immediate or delayed (RSA, 1998). The NEMA includes provisions for Environmental Impact Assessments (EIAs) that relate to environmental protection in new development ventures or projects undertaken by various stakeholders, including the local community. This strengthens the protection, conservation, and rehabilitation of sensitive environments, including wetlands (Herbst, 2015). EIA regulations and integrated management are regarded as key references for the protection and conservation of wetlands.

Local residents of Budeli, Mutoti, and Mphego are utilising wetlands and their resources. However, as evidenced by key informant responses, they are not using these resources equitably. The ecological character of the wetlands in these villages is being altered, which results in pollution, degradation, and an ineffective approach to policy enforcement. As a result, remedial measures to control and mitigate wetland violations are proving to be a dead end.

The Water Services Act, No. 108 of 1997

The policy applies to defined categories of development undertaken near watercourses, whether natural or constructed, within the boundaries of the Thulamela Local Municipality. In urban or peri-urban contexts, watercourses, whether natural rivers or constructed canals, serve the important function of draining stormwater runoff from both developed and undeveloped land, as well as providing natural habitats. The Act advocates for catchment planning, and

states that any development, particularly those within or immediately adjacent to floodplain areas, should adhere to the recommendations contained in the approved catchment and river management plan.

The Conservation of Agricultural Resources Act (CARA), No. 43 of 1983

The agricultural sector remains one of the main drivers of wetland degradation and loss in South Africa (Dini & Everard, 2016). Against this background, the CARA (RSA, 1983) is the most dominant legal instrument that protects and conserves wetlands located outside protected areas, prior to the introduction of the current suite of environmental and water legislation. The Act has the full authority to prescribe how natural agricultural resources should be used in the country (Herbst, 2015). In the 1980s, the CARA gained recognition for its relevance and effectiveness regarding wetland protection and conservation, as it was the only legislation that directly addressed these issues despite its primary objective being the conservation of agricultural resources (Breedt & Dippenaar, 2013). In fact, the CARA is said to have been a crucial law that governed wetland use up until 1997 (Lizamore, 2005). It remains relevant and effective even today.

The Act aims to provide control over the utilisation of the natural agricultural resources of the Republic to promote the conservation of soil, water sources, and vegetation, and to combat weeds and invasive plants (RSA, 1983). It also has direct implications for wetlands in terms of recognising their important role in the agricultural sector. The Act includes provisions for control measures considered crucial for achieving its objectives, as outlined in Section 6(1) (RSA, 1983). These control measures, explained in Section 6(2), relate to various activities that are aimed at maintaining the production potential of land, combatting and preventing the erosion and destruction of water resources, protecting vegetation, and addressing weeds and invasive plant species, or any other activities deemed necessary at the minister's discretion to fulfil the objectives of the Act (Siyaya, 2015).

Some of the specific provisions in Section 6(1) where the minister may prescribe required control measures include (e) the utilisation and protection of vleis, marshes, water sponges, water courses and water sources; (f) regulating of the flow pattern of runoff water; and (g) the utilisation and protection of the vegetation (RSA, 1983). These provisions are relevant for wetlands.

Regulation 15B(9) states that unless authorised in terms of the National Water Act, no land user shall allow Category 2 plants or invasive plant species to occur within 30 metres of the 1:50 year flood line of a river, stream, spring, natural channel in which water flows regularly or intermittently, lake, dam, or wetland (RSA, 1983, p. 5). With all the institutional and governance changes that South Africa has undergone in the new democratic dispensation, another concern regarding the CARA is that it does not have jurisdiction in urban areas located in municipal boundaries, due to the exclusions stated in Section 2(1) of the Act. The country was demarcated in 2002 into district areas that fall under district municipalities, separate from metropolitan municipalities.

This concern arises from the growing subsistence farming occurring in urban and peri-urban areas. However, according to the Department of Agriculture, Fisheries and Forestry, this concern is not valid, as no such case has been tested in court thus far (Lizamore, 2005).

In the peri-urban villages of Nandoni, it is evident from the key informants that subsistence farming is practised extensively, to the point of expanding onto wetlands. Enforcement is close to minimal, as peri-urban land is owned by traditional leaders and some of the land has not yet been promulgated by the Thulamela Local Municipality. This situation makes control difficult. Furthermore, what is enshrined in the CARA is not being met on the ground. In Budeli and Mutoti, the flood line is not being upheld in terms of restricting development activities close to it. Residential development is expanding beyond the stipulated flood line in

these villages, which has been reported to pose future threats in the event of flooding.

The Spatial Planning and Land use Management Act (SPLUMA), No. 16 of 2013

The SPLUMA provides the framework for all land use management and spatial planning legislation in South Africa. This Act has numerous aims, including the regulation of planning procedures and decisions addressing spatial imbalances that resulted from the apartheid era, and ensuring the integration of sustainable development principles in land use planning and regulatory tools. According to the SPLUMA, all spheres of government must prepare spatial plans; however, land use management is the responsibility of municipalities, in collaboration with local traditional councils. The SPLUMA requires local municipalities to develop land use management systems, including the implementation of IDPs and municipal SDFs, along with associated land use guidelines. In the case of the Nandoni peri-urban villages, which are under municipal jurisdiction, development should adhere to what is outlined in the municipality's SDF and IDP regarding the sustainability goals of equity and inclusiveness.

The Local Government: Municipal Systems Act, No. 32 of 2000

The Local Government: Municipal Systems Act provides the framework for local government functioning, encompassing integrated development planning, community participation, and service delivery. Under this Act, municipalities are required to prioritise development and service delivery that are financially, socially, and environmentally sustainable. Environmentally sustainable development and service delivery should aim to ensure that the risk of harm to the environment and to human health and safety is minimised to the extent reasonably possible under the circumstances, the potential benefits to the environment and to human health and safety are maximised to the extent reasonably possible under the circumstances, and that legislation intended to protect the environment and human health and safety is adhered to. In the case of Nandoni, the

findings from the data sources revealed a mismatch between natural resources and their utilisation, including development pursuits. The utilisation of natural resources in various human activities is surpassing conservation efforts, which compromises the needs of present and future generations.

The Thulamela Spatial Development Framework (SDF), 2019-2023

The SDF is part of a hierarchy of integrated plans that make up the land use management system currently being established to manage land use and development within a municipal jurisdiction, such as the Thulamela Local Municipality. The importance of the SDF lies in its ability to guide all decisions relating to the use, development, and planning of land and providing a strategic framework that spatially indicates how the implementation of the city's IDP should occur. The SDF is a five-year plan, which is revised annually in line with the IDP. It provides strategic multisectoral planning guidance concerning development priorities, transport planning, bulk infrastructure, and environmental directives, and it serves as a guide to more detailed local area plans, functional area plans, detailed precinct plans, and land use schemes.

The Thulamela Integrated Development Plan (IDP), 2021/2022 – 2023/2024

The Thulamela Local Municipality's IDP addresses key strategic issues identified in the National Spatial Vision and the Provincial Growth and Development Strategy. These issues include job creation, reversing the effects of apartheid, and improving access to quality education, healthcare, and social protection, as well as transitioning to a low-carbon economy. The IDP emphasises that to effectively manage development and minimise impacts on the natural environment and its associated ecosystem services, spatial planning must be enhanced and better aligned with the municipality's strategic development plans.

The Thulamela Land Use Scheme, 2020

A scheme is a tool used by municipalities to guide and manage development in accordance with the vision, strategies, and policies of their IDP and SDF, as well as the interests of the public, to promote sustainable development and quality of life. The Thulamela Local Municipality is the authority responsible for enforcing and executing the provisions of this scheme. As outlined in the SPLUMA and the Thulamela Municipality Spatial Planning and Land Use Management By-Laws of 2016, a land use scheme must be consistent with the municipal SDF and determine the use and development of land in the municipal area to which it relates, in order to promote minimal impact on public health, the environment, and natural resources, as well as social inclusion and efficient development. However, considering the study, current development does not sustain the environment and contradicts the principles enshrined in the Act.

Activities That Encroach on Wetlands

Recreational and Fishing Activities

Data collected from most of the key informant interviews revealed that recreational activities are taking place on wetlands in Budeli and Mutoti villages. It was further reported that some of the wetlands associated with these activities are privately owned by influential businesspeople in Thohoyandou. Wetland sites in these villages were noted to attract tourists, as well as recreational events such as Flower Garden festivals, weddings, and corporate gatherings, inspired by the surrounding nature in the form of vegetation and local species. The key findings highlight that the community members in Budeli and Mutoti engage in fishing activities along the wetland banks and rely on aquatic life, such as fish, as a source of food.

Retrieval of Medicinal Plants

The findings from the key informants, namely spatial planners, environmentalists, and traditional leaders, revealed that in Mutoti, wetland vegetation is primarily used as a source of medicinal plants by traditional herbalists and local villagers.

The collection of these wetland medicinal plants is often accompanied by worship activities around the wetland area. This indicates that wetlands, in this case, provide a dual function of provisioning and cultural ecosystem services. However, this practice is leading to the disappearance of native medicinal herbs due to overharvesting, with negative effects on the surrounding wetland ecosystems.

Grazing of Wetland Vegetation

The study results, based on key informant interviews with spatial planners, environmentalists, and traditional leaders, suggest that there is overgrazing of wetland vegetation by local community livestock, such as cattle, in Budeli. This practice, cited as being intensive, is leading to the deterioration of the quality of wetland vegetation.

Residential Development

The data collected from the key informant interviews revealed that the Budeli, Mutoti, and Mphego communities have benefitted from residential development, which has, however, adversely led to expansion onto wetland sites. In Budeli, some of this residential development has extended beyond the flood line. These expansions are deemed illegal by the local authority, and the traditional leaders are responsible for land allocation regarding rural or peri-urban land.

Brickmaking

The findings revealed that Mphego village is experiencing a unique activity of brickmaking that benefits the local community while contributing to wetland encroachment in the area. The key informants highlighted that brickmaking is considered a mining activity and is therefore deemed illegal by the Thulamela Local Municipality. The process involves digging up soil to manufacture bricks, and water from the wetland is also used in brick moulding.

Farming

The data collected from the interviews disclosed that farming activities in Mutoti, in addition to residential development, are leading to wetland encroachment. This process has resulted in the conversion of wetland areas being cleared for the cultivation of various crops that the villagers rely on for food.

Causes of Wetland Encroachment Activities

Poverty

The findings from the key informant interviews revealed that poverty leads to wetland encroachment, as villagers engage in activities close to wetlands to augment their livelihoods. Data collected through the interviews indicate that most people residing in Budeli, Mutoti, and Mphego are unemployed and lack decent sources of income, which contributes to their poverty. To earn a living, the residents turn to the environment for livelihood activities as an adaptive measure, which includes brickmaking, carpet weaving, and farming. While these activities sustain them, they have serious consequences for the environment. Activities are carried out on wetlands due to the availability of natural resources such as water, soil and reed vegetation found in these areas.

Population Expansion

The findings from the data collected from the key sources revealed that population expansion, which has led to new household formation, is also a contributing factor to wetland encroachment. The historical background on the relocation of affected households when the Nandoni Dam was built from 1998 to 2005 indicates that people were settled in villages close to the dam as a proactive measure. All the key informants highlighted the Nandoni land compensation issue as a contributing factor to population expansion, as there was no readily available land to offer as an alternative, and following the land resettlement and compensation, the population increased in the peri-urban villages of Budeli, Mutoti, and Mphego. This resulted in the creation of inequalities that affect the locals' quality of life.

Wetland encroachment is viewed as a coping strategy to make good use of the natural resources found within them. It was reported that this arises from the understanding that wetlands are naturally occurring, free, and not owned by anyone, from the villagers' perspectives, thus allowing anyone in the villages to access them for their own benefit without facing any confrontation.

Poor Planning

Poor planning in the context of land resettlement during the construction of the Nandoni Dam was a significant finding regarding the causes of wetland encroachment identified in the study. It was noted that people were not supposed to be resettled close to the Nandoni Dam in the first place, as this area is characterised by wetlands. The planning process was viewed as reactionary, leaving villagers with little or no option other than to settle in environmentally sensitive areas. It was emphasised that a proper resettlement plan is needed to preserve the area near the Nandoni Dam to ensure that the wetlands remain in their natural state without any (further) development.

Weak Enforcement Coupled With Greed

The findings also revealed that weak enforcement by the local authority is a cause of continued wetland encroachment. Data collected from the key study sources showed that the issue of land ownership, coupled with land tenure systems that facilitate easy and cheap land transactions, has increased the level of wetland encroachment in the selected peri-urban villages. Traditional leaders have the mandate over rural land allocation; the local authority therefore has no voice but comes in to manage what has been deliberated. It was highlighted that this disjointed incremental planning approach in the selected peri-urban villages under study, particularly regarding enforcement by the local authority, leads to a dead end in the case of Mphego, which is characterised by brickmaking (a mining activity by law) and involves notice issuance in cases of non-compliance. The issuance of three notices implies litigation as the next stage of dispute resolution, and due to the fragmented

power of the local authority, the case will not yield a desirable outcome, as the local authority lacks the land mandate in the area of jurisdiction. The process of law enforcement therefore becomes a repetitive cycle.

Lack of Education on the Benefits of Wetlands to the Environment

The findings from the key sources indicate that a lack of education or awareness of the benefits of wetlands to the environment is another cause of wetland encroachment. It was noted that local residents need to be continuously educated on the advantages of the natural environment in contrast to development activities that lead to environmental deterioration. All the key informants strongly agreed that being equipped with adequate knowledge would foster a change in mindset in seeking to balance the competing demands of livelihoods with the sustainable use of natural resources.

Effects of Activities Expanding Onto Wetland Ecosystems

Alteration of the Size and Quality of Wetland Sites

The findings from the data collected from the key sources revealed that adverse effects from urban development encroachment activities are compromising the size and quality of wetlands surrounding ecosystems. Brickmaking in Mphego village was cited as having detrimental effects on both the surrounding ecosystem and the wetland itself. These effects include water pollution affecting water quality, the removal of soil from wetland bodies and banks, which leads to wetland degradation, and the destruction of natural vegetation during the soil excavation process for brickmaking, which affects the ecosystem balance. The findings also revealed that Budeli and Mutoti are experiencing solid waste dumping in some of their wetland bodies, which affects water quality, aquatic life, and aesthetic quality.

Conversion of Wetland Sites to Other Uses

The alteration of wetland sites through conversion to other uses, such as farmland, and their subsequent disappearance have

been identified by the key informants as having a significant effect through the activities conducted on the wetlands by local villagers. Farming, as a human activity in Mphego, has also been highlighted as a factor that leads to the conversion of some seasonal inland wetlands into agricultural land, which results in the disappearance or drying up of these wetlands. This has led to the introduction of new plant species that may not co-exist harmoniously with natural wetland vegetation; as a result, some invasive species have been introduced in the process. The use of fertilisers in these agricultural activities has affected the mineral composition of the wetland soil, which in turn influences the type of vegetation and how it copes in the altered soil environment.

It was also noted that in Budeli and Mutoti, land clearing to accommodate recreational facilities has destroyed the natural vegetation. Furthermore, some visitors to these areas (tourists) dump solid waste, such as plastic and metal, which may not be biodegradable. This waste negatively affects the aesthetic beauty of these wetlands and harms or interferes with the aquatic life in these wetland systems.

Grazing of livestock is another human activity that has led to instances of overgrazing, which affects the state of natural vegetation. The turnaround time for vegetation growth is lengthy, which impacts the ecosystem; other wetland organisms that rely on such vegetation for survival could be affected, potentially leading to extinction.

Land Tenure System

The key findings revealed that the land tenure system that allows cheaper and easier land transactions in Budeli and Mutoti has led to illegal residential development, which results in the destruction and eventual disappearance of the wetlands. This is primarily due to the use of impervious building materials that prevent water seepage to their foundational structures and surrounding properties. Additionally, it was noted that some of the residential and commercial developments do not follow proper EIA procedures; consequently, these projects incur more costs than benefits to the surrounding ecosystem.

Conclusion and Policy Directions

This study concludes that the reviewed policies advocate for wetland conservation or protection; however, in practice, there is a mismatch due to human engagement with the local villagers residing in the selected peri-urban villages. This is evidenced by documented activities taking place on wetlands and the negative effects they produce. The policy directions proposed in this study recommend that there should be a balance between environmental protection and the pursuit of socio-economic development. The neighbouring peri-urban communities should co-exist with wetland ecosystems, using them wisely and sustainably in a manner that reduces pollution and ecological degradation. Continuous monitoring of the interactions between neighbouring communities and natural landscapes is essential, and must be supported by enforcement, fines, and incentives aimed at reducing wetland degradation. Furthermore, there is an interdependence between property ownership and the environment, and the local municipality, in this case, the Thulamela Local Municipality, has the legal right to enforce activities that it deems detrimental to the environment.

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The Influence of Non-Motorised Transport Systems Around the World

A Case Study of Singapore, Shanghai, Lagos, Jakarta, Johannesburg, and Cape Town

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Abstract

For the past few decades, cities around the world have sprawled, and citizens have become increasingly reliant on motorised transport to access services. This has led to severe traffic congestion and increased greenhouse gas emissions. In recent years, there has been a drive to create cities that are less dependent on motorised transport. Consequently,

non-motorised transport (NMT), such as walking, running, and cycling, is considered one of the more desirable forms of transport due to its various environmental, social, and health benefits. Since the majority of trips begin and end with NMT, improving NMT will also enhance motorised transport.

This research study adopted a case study research design and analysed literature on the integration of NMT and public transport in six cities: Singapore, Shanghai, Lagos, Jakarta, Johannesburg, and Cape Town. Data were collected through Google Scholar and the Web of Science and presented in the form of a literature review and a table summarising the lessons learned from each city. The study found that NMT provision boosts the use of public transport and vice versa. Government policies, plans, and regulations need to be established to control the use of dockless bikes. Safety measures, good infrastructure, and maintenance of NMT lanes are imperative for increased usage by users. Integration tools, such as smart payments, can seamlessly link NMT and public transport use to further encourage the utilisation of both. By analysing the six cases, the lessons learned can be applied to future planning and development regarding NMT and public transport integration.

Keywords: Non-motorised transport, public transport, policy, walking, cycling.

Introduction

For the past few decades, cities around the world have undergone swift and imbalanced development of transport systems that are extremely reliant on motorised transport (Gumbo & Moyo, 2022). This has led to severe traffic congestion and increased emissions of greenhouse gases (Moody, 2012, p. 1). Studies have shown that the transport sector emits more greenhouse gases than any other sector. In response, the transport sector has been realigned with new policies and guidelines aimed at remedying this situation. Most of these "solutions" have focused on mass transit systems, which commonly involve trains, buses, and minibus taxis, as well as rail-based Mass Rapid Transit (MRT) and Bus Rapid Transit

(BRT) that fall under public transport (Gumbo et al. 2022). However, a "historical" yet environmentally sustainable and cost-effective method of transport exists in the form of non-motorised transport (NMT). NMT is regarded as one of the more desirable forms of transport due to its various environmental and health benefits. Traditionally, NMT was viewed and used independently of motorised transport (Rahman, 2013, pp. 1–2).

Faster, newer modes of transport usually replace older, slower ones. This has led to reduced investment in walking and cycling, as they are considered relatively slow modes of transport. However, despite their slower pace, walking and cycling are still equally important. NMT improves the overall health of users, as it is a simple form of exercise (United Nations Centre for Regional Development, 2018, pp. 23-24). Walking is the most affordable form of NMT, as it is free; cycling, while requiring an initial investment, pays off in the long run as it is faster and requires less effort than walking (Götschi et al., 2016, pp. 1–2). Physically, socially, and economically disadvantaged people often rely on NMT to travel between Point A and Point B, typically to and from work. Improving NMT will therefore help to achieve social equity (Risimati et al., 2021). A significant amount of time, money, and planning goes into enhancing motorised transport; the fact that the majority of trips start and end with NMT means that improving NMT will also enhance motorised transport. Walking and cycling serve as recreational activities for users; promoting NMT therefore fosters a better lifestyle for all (Litman, 2017, p. 2).

This paper begins by reviewing literature on NMT, walkability, public transport, and transport as a whole. It then analyses six different case studies regarding their relationship with NMT and the application and integration of public transport. The paper concludes by summarising the various shortcomings and successes of each case study in a table that highlights the lessons learned.

Objectives

This study sought to:

- investigate the concept of NMT through walkability and transport through a literature review, and
- analyse different forms of NMT and public transport in six different case studies, namely Singapore, Shanghai, Lagos, Jakarta, Johannesburg, and Cape Town, in terms of their integration of NMT and public transport, as well as the lessons learned from each case.

The concept of walkability is significant when assessing the feasibility of travelling on foot. Walkability encompasses three components, namely density, mix, and access (Dovey & Pafka, 2019, pp. 96-101). Density is integral to walkability; a higher concentration of people in a certain area means that more facilities and services will be available within walking distance, which makes walking more feasible. Mixed land uses improve access by providing a variety of functions in an area, thereby shortening the distance between destinations. Urban planning studies have shown that mono-functional land zones hinder these close connections, which makes walkability challenging. Access networks refer to pedestrian flow, whether accelerated or slowed down. The concepts of "small blocks" and "pools of use", now referred to as pedestrian permeability and catchments, describe zones within walking distance based on both distance and time (Dovey & Pafka, 2019, pp. 96-101).

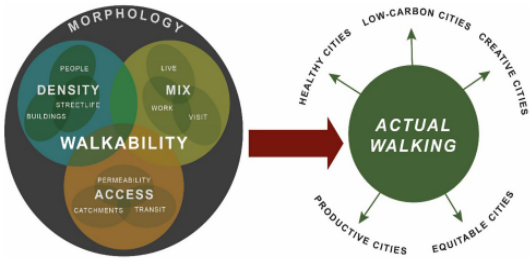

Figure 1: The Urban DMA (Density, Mix, and Walkability) and Actual Walking. Source: Dovey and Pafka (2019)

Transport is and has been a challenge in urban development, and poses many issues for planning. Urban development in most developing cities depends on motorised transport, which is given priority, while very little to no space on road reserves is allocated for the provision of NMT and its users. Motorised transport comes with many consequences, such as high resource consumption (fuel and materials to mass-produce these vehicles) and pollution in the form of greenhouse gases. Solutions to lessen the burden of heavy traffic on roads include reducing the total number of trips, which can be achieved through the provision of a more mixed land use neighbourhood. The other two methods are making public transport safer and more affordable, and promoting NMT (Selala & Musakwa, 2016, p. 587).

Almost all urban motorised trips (both private and public) are multi-modal, which means that some walking is involved to and from the "main" mode of transport, which is usually public transport or private vehicles. The distinction is that the walking involved in trips to and from private vehicles is often negligible, as it costs nothing and is very short due to the ample parking available close to users' desired destinations. This is why the majority of private motorised vehicle users continue to rely on private motorised transport (Ortegon-Sanchez & Hernandez, 2016, pp. 3-4).

NMT can be particularly useful for short trips, as it has a considerably lower environmental impact (Ortegon-Sanchez & Hernandez, 2016, pp. 3-4). NMT includes any form of transport that is not motorised, such as walking, cycling, skating, and animal-drawn transport (Selala & Musakwa, 2016, pp. 587-588). NMT also allows users to choose workable times and routes that suit their needs.

Methodology

The study adopted a case study analysis research design and investigated several cases based on the desired criteria. This study falls within a qualitative research approach. Secondary data were utilised in the form of books, journal articles, and

conference papers. The data were analysed and presented as a literature review. The sources were identified using the keywords "non-motorised transport" / "non-motorized transport" and "public transport". The data for the different case studies – Singapore, Shanghai, Lagos, Jakarta, Cape Town, and Johannesburg – were also sourced from various journal articles, conference papers, and other publications. All keywords for both the literature review and the case studies were sourced through Google Scholar and the Web of Science. The data were analysed in terms of the relationship to NMT and subsequently to public transport. The findings are presented in the form of a literature review and a table that summarises the lessons learned from each case study.

Results and Discussion

This section examines six case studies that focus on the relationship between NMT and public transport. Two case studies (Singapore and Shanghai) analyse developed countries, while two others (Lagos and Jakarta) explore developing countries. Additionally, two case studies (Johannesburg and Cape Town) investigate NMT and BRT systems in South Africa. Each case study presents distinct experiences and challenges associated with integrating NMT and public transport to enhance user experience in terms of affordability, safety, infrastructure, accessibility, and the legislative frameworks that regulate both NMT and public transport.

Singapore

Singapore's Land Transport Authority is going to implement a widespread network of cycle paths to promote a healthier and more sustainable mode of transport. This will be rolled out in selected Housing and Development Board areas to encourage cycling and walking. These pathways will connect MRT stations, bus stations, schools, shops, and other key locations (Zhou et al., 2020, p. 2).

Dockless bike-sharing (see Figure 2) in Singapore features stations that facilitate an integrated smartphone app that allows

users to scan a QR code for payment. Global Positioning System (GPS) sensors are implanted in the bikes to track and manage them, which provides scholars and researchers with access to ridership data. A study conducted with over 10 000 bikes and 1.5 million observations during a nine-day period found that an increase in the introduction of new bikes lowered the number of trips. Higher density and mixed land use in the built environment increased the use of dockless bikes. Improved infrastructure and support systems also encourage bike usage; however, rainfall and hot weather conditions negatively affect the amount of bike users (Shen et al., 2018, p. 695).

Figure 2: Dockless Bike-Sharing in Singapore. Source: Abdullah (2018)

The study found high bike usage around MRT stations and bus stops, which implies that dockless bikes are frequently used for last-mile trips. Singapore aims to integrate dockless bikes with public transport through smart payment systems. This has great potential to increase not only dockless bike trips but also to decrease public transport usage (Shen et al., 2018, p. 695).

Shanghai

Shanghai is known for having the largest port and longest subway system in the world. The city of Shanghai, China, has an ever-growing population, recorded at 26 million in 2019,

which is predicted to rise to 31 million by 2030. The city is characterised by tall buildings, which accommodate a high population density of 5 800 inhabitants per square kilometre, similar to that of London or Rio de Janeiro (Sudmant et al., 2020, p. 11). The two main social and environmental challenges faced in the city are traffic congestion and air pollution, which are both exacerbated by rapid population growth. Bike-sharing in Shanghai began in 2009, with stations installed in five of the central business districts. The number of public bikes rose to more than 80 000 in 2017, which makes it the city with the largest number of public bikes in the world.

However, in 2015, dockless bikes were introduced, and the number of bikes on the streets of Shanghai grew exponentially due to their low costs (see Figure 3); reaching 260 000 by the end of 2016, 630 000 by April 2017, and 1.5 million by August 2017 (Sudmant et al., 2020, p. 11).

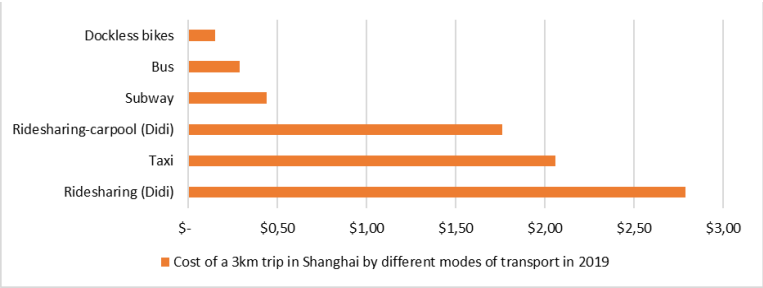

Figure 3: Cost of a 3-km Trip in Shanghai by Different Modes of Transport in 2019. Source: Sudmant et al. (2020, p. 11)

Problems arose in Shanghai when an oversupply of bikes became evident, with some areas reporting around 16 bikes per resident. This led to the shutdown of 10 bike companies. Sidewalks became overcrowded with bikes, and in some areas, there was a lack of biking infrastructure, which forced cyclists to compete with vehicles. This made it difficult for users to rely on cycling for their commute. Policy directives were the main turning point for Shanghai (Sudmant et al., 2020, pp. 12–13).

In 2017, the city introduced national urban bike-sharing regulations (Sudmant et al., 2020, pp. 12-13). The benefits of these regulations became evident in 2018 when real-time mapping and "georeferencing" were implemented. A mobile map was sent to all users, which indicated where they could and could not park, including a parking ban in seven locations. This initiative reduced illegal parking by 30%. The police had registered over 890 000 dockless bikes, and regulations regarding e-payments and insurance provided users with a sense of security. The regulations surrounding dockless biking policies aim to promote NMT. Planning in Shanghai is guided by the Shanghai Master Plan (2017-2035), with the main objective of creating "one networked, multi-modal, fully covered and highly intensive" public transport network. By 2035, the plan aims for 85% of all trips to be green, which means either public transport, walking, or cycling. Another strategy introduced to promote NMT is to bring "homes and workplaces closer together" by creating compact, connected, and coordinated urban development. Mixed-use development, coupled with improved public transport, bicycle lanes, widening of sidewalks, and speed bumps, will increase the use of NMT (Sudmant et al., 2020, pp. 12-13).

Lagos

Lagos has a growing population, estimated between 15 and 18 million in 2012, and is expected to rise to around 25 million by 2025 (Olawole, 2012, p. 2). Approximately six million trips are taken in Lagos every day, with 70% to 77% of these trips made using bus-based public transport, while the remainder relies on private vehicles (Alade et al., 2018, p. 3). Lagos introduced its first BRT system (see Figure 4) in 2008, which garnered significant attention (Olawole, 2012, p. 2). The BRT scheme transports approximately 10 000 passengers per hour.

Unfortunately, BRT stops are poorly maintained, inadequately designed, and poorly located (Alade et al., 2018, p. 3). The lack of law enforcement regarding BRT lanes in Lagos makes it difficult to demarcate these lanes. As a result, private vehicles frequently encroach on BRT lanes, which makes it

challenging for buses and passengers to access the service easily (Haas, 2019, p. 12).

Figure 4: Lagos Bus Rapid Transit (BRT) Buses. Source: Adekola and Ogundipe (2017, p. 10)

NMT, particularly walking, is the most common form of mobility in low-income households in Lagos (Alade et al., 2018, p. 4). Approximately 30% of mobility in Lagos is achieved through walking and cycling. The relationship with pedestrians in Lagos is hazardous, as there are very few walkways, footbridges, or underpasses, and no cycle lanes for bicycles. Pedestrians are forced to share the carriageway with motor vehicles. The inefficiency in NMT planning also leads to inadequate public transport provision, which results in many pedestrian accidents occurring at unsafe bus stops. The lack of proper NMT infrastructure to cross primary roads and highways restricts the easy movement of people and goods and creates poor pedestrian mobility. The issue stems from transport policy that neglects the promotion of NMT (Alade et al., 2018, p. 4).

Jakarta

In 2019, it was reported that less than 10% of residents travelled by private car. During the COVID-19 pandemic, there

was significant growth in cycling worldwide (Institute for Transportation & Development Policy [ITDP], 2021, pp. 6-8). Fortunately for Jakarta, the city had already been planning a 500-km network of cycle lanes, and the foundations were already laid. A study conducted in the city centre when lockdown restrictions were eased showed that cycling (see Figure 5) had increased by an impressive 1 000% from the previous year; other parts of the city experienced increases of 500% and more. This smooth transition is attributed to the efforts of the ITDP, which had worked for years to promote cycling prior to the pandemic (ITDP, 2021, pp. 6-8).

Figure 5: Cyclists in Jakarta. Source: ITDP (2021)

Through its involvement with the ITDP, the Transjakarta BRT system was able to reach one million riders per day in 2019 (ITDP, 2021, pp. 6-8). This achievement was due to the integration of multi-modal transport, service improvements, and enforcement. Other measures taken to enhance user utilisation of Transjakarta included ensuring that buses were on time and reliable by paying bus drivers based on the distance travelled instead of per passenger. The BRT also has 200 km of dedicated lanes across 13 corridors, which the police ensure remain clear of any vehicles other than the BRT. By promoting an increase in cycling (NMT), there was a corresponding rise in

dependency on public transport (BRT), which led to a reduction in the use of private motorised vehicles (ITDP, 2021, pp. 6-8).

Cape Town

The National Department of Transport released the Public Transport Strategy and Action Plan in 2007. This led to the City of Cape Town implementing the Integrated Rapid Public Transport System (Barendse, 2016, p. 35). The City of Cape Town Integrated Rapid Transit System Operational Plan Phase 1 Report identified the need to integrate different modes of transport to maximise customer utilisation, particularly the integration of NMT (Barendse, 2016, pp. 42-45). The NMT was provided to assist with the integration of the MyCiTi BRT service (see Figure 6). A 3-m-wide shared bicycle and pedestrian facility was implemented along the entire 16 km of the R27 corridor. Along the trunk route, 500 m of secondary network paths were provided for pedestrians and cyclists. However, the classification of NMT was based on the existing road reserve, where there was no demarcation of cycle lanes or a painted cycle lane on the existing road. No road widening provisions were made for cyclists, which creates the impression that cycling was not given much importance (Barendse, 2016, pp. 42-45).

Figure 6: MyCiTi BRT in Cape Town. Source: eNCA (2016)

To calm traffic, speed limits were implemented. Other traffic-calming measures, such as speed humps and roundabouts, were not introduced, as they would negatively impact bus speeds and user comfort when buses had to go over or around them. At intersections where stations are located, pedestrian priority was established, which resulted in blocked crossings. Tactile paving has also been installed to alert cyclists that priority should be given to pedestrians, which further suggests that cyclists are being neglected (Barendse, 2016, pp. 42-45).

Johannesburg

The NMT provided along the Soweto–Johannesburg central business district and Line 1B aims to facilitate access to Rea Vaya stations in both Soweto and the Johannesburg central business district, as well as the routes to the University of Johannesburg and the University of the Witwatersrand. A feasibility study on NMT infrastructure was conducted between 2012 and 2013, which analysed using seven indicators (Okoro & Lawani, 2022, pp. 71-74):

- **Level of usage:** The demand for the provided NMT is high as many pedestrians utilise it; however, cyclists barely use the NMT. The BRT (Rea Vaya) is in low demand as users have issues of accessibility, with their homes being too far away from stops and them rather using taxis or Uber.
- **Traffic congestion:** Traffic is very much evident during peak hours as Rea Vaya buses have to stop alongside the road because there is no dedicated parking for the buses. Other forms of private transport usually take up the space that should be reserved for the Rea Vaya buses.
- **Quality and condition of infrastructure:** The overall infrastructure of the roads, walkways, and cycle lanes were good. However, some users reported that maintenance was required in terms of vegetation, trash, and the paving being loose on walkways, as well as the road markings not being clear enough.
- **Maintenance:** Streets and NMT facilities are well maintained. The community contributes to the upkeep of the street and NMT.

- **Safety and security:** There are no security measures in place and users who walk or cycle do not feel safe in terms of crime and road congestion. Users also reported that the police are unhelpful and the public transport should be more directly linked to the NMT.
- **User satisfaction:** Users of the NMT are satisfied but expressed that many of them have to take one or more taxis just to reach the Rea Vaya. Costs were lessoned through using the NMT.
- **New business ventures:** There have been new business ventures along the NMT such as secure parking of bicycles, lockers, places selling refreshments, Wi-Fi, bicycle repairs/maintenance, and so forth (Okoro & Lawani, 2022, pp. 71-74).

Figure 7: Rea Vaya Buses. Source: Business Insider SA (2014)

Lessons Learned

All the case studies have both shortfalls and successes. Table 1 lists the lessons learned from each case study, which other cities looking to implement NMT within a public transport realm can take into account.

Table 1: Lessons Learned

City	Lessons learned
Singapore	• Smartphone apps with a scanning QR code assists with faster payment. • GPS sensors installed on dockless bikes not only assist with bike management but also provide valuable data. • The introduction of new bikes lowers the amount of trips. • Better infrastructure and support services increase the amount of trips; however, when there is a lack of shelter, weather conditions such as rainfall and hot weather decrease the number of trips. • An integrated payment system is required to increase both NMT and public transport trips.
Shanghai	• Private companies not controlled by government regulations led to an oversupply of bikes, which created overcrowding and the shutdown of bike companies. • Government policy and regulation of bike use: The registration of bikes with the police, e-payments and insurance, and the creation of the Shanghai Master Plan (2017-2035) to connect NMT and public transport all improved the problem of an oversupply of dockless bikes. • Real-time mapping and a georeferencing mobile app of where and where not to park bikes reduced illegal parking by 30%.
Lagos	• Poor demarcation planning of BRT lanes created accessibility issues for buses and users. • Poor to no NMT planning for users is not only unsafe but also hinders efficient public transport planning and use.
Jakarta	• A large cycle network throughout the city combined with the COVID-19 pandemic boosted cycling dramatically. • The increase in NMT use increased the dependency of public transport use. • Increased usage of public transport due to multi-modal transport integration, service improvements, and enforcement.

City	Lessons learned
Cape Town	• An integrated rapid transit system that plans for both public transport and NMT increases the usage of both. • Using the existing road reserve to demarcate cycle lanes, or not creating cycle lanes at all, indicates that cycling is not given priority. Cyclists are also warned to give pedestrians priority on NMT lanes. • No traffic-calming tools are used around the BRT to ensure that buses remain on time and users are comfortable. • Intersections near BRT stations have block crossings for pedestrian safety and accessibility.
Johannes burg	• BRT is not very accessible to users, which creates low demand of NMT by cyclists but the demand, surprisingly, remains high for pedestrians. • NMT creates an opportunity for new businesses along the route such as bicycle repairs/ maintenance and the sale of refreshments.

It is evident that each case study has distinct lessons that cities around the world can learn from. One main point that clearly stands out is that improvements in NMT increase the usage of public transport and vice versa.

Conclusions and Recommendations

The evidence suggests that NMT has a positive impact on all cities. However, when left to private companies, there can be an oversupply of equipment required for NMT. For example, Shanghai experienced an oversupply of bikes that not only overcrowded sidewalks but also led to the closure of many bike companies. When governments intervene and implement policies, they assist in regulating and ensuring the smooth operation of bike use.

Singapore focuses on trip integration; NMT leads to public transport and other important nodes. The city aims to strengthen the integration of NMT and public transport through the use of smart payments to make the process seamless. Lagos has implemented various plans concerning the BRT, but when it comes to NMT planning, it falls short, with pedestrians and

cyclists having to share road space with motor vehicles, which is not only unsafe but inefficient as well.

Jakarta successfully transitioned to cycle transport as infrastructure and plans supporting NMT were implemented just as the COVID-19 pandemic struck, which made it easier and safer for people to travel via NMT. The NMT in Jakarta also increased the use of the BRT system.

Cape Town introduced NMT along BRT routes to improve transport integration for users; however, no traffic-calming measures were implemented to reduce speed and enhance user comfort on the BRT.

In Johannesburg, while NMT is helpful for accessing the BRT, users require additional modes of transport from their homes to the NMT. Many users do not feel safe using the NMT, but the community is involved in its maintenance and upkeep, and users believe that they save money by using it. More projects integrating NMT and public transport systems need to be carried out in cities worldwide; however, future initiatives must take into account the lessons learned from various case studies.

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Resilience, Spatiality, and the Planning of Tourism

A Literature Review

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Abstract

This paper seeks to unravel the effects of tourism across the world, with specific reference to spatial planning. The tourism sector and spatial planning are two distinct entities, with spatial planning being a major aspect of urban planning and tourism functioning as an industry under its governing ministry. However, these discrete sectors often collide, as tourism is directly and indirectly affected by spatial planning. The synergy between tourism and spatial planning cannot be denied. Tourism is inherently a spatial issue, yet its disconnection from urban planning is increasingly becoming problematic. For years, spatial planning and tourism have been treated as two separate disciplines, despite their significant interrelation. Tourism activities occur in specific spaces or localities, which indicates their spatial character. There is an untapped gap in understanding the nexus that exists between tourism and spatial planning. The focus of this paper is therefore to clearly articulate that tourism is a spatial issue that needs to be integrated with urban planning. Data were obtained from document reviews and analyses of secondary data. The paper reveals that there is little to no substantial literature that indicates that tourism is a spatial issue. Case study areas were selected randomly. The significance of the spatiality of tourism, particularly its relationship to places and their meanings for people, has been

recognised in the past decade. Due to this relationship, there are overlaps of interest between tourism development and policy and spatial planning, which led to the emergence of systematic literature. As a result, it is imperative to examine tourism resilience through a planning lens. The study determines how spatial planning and tourism can be integrated and fused to promote sustainable tourism development. It recommends the best ways to adopt technologies to achieve sustainable and resilient smart cities that attract both local and foreign tourists.

Keywords: Tourism development, resilience, spatial planning, sustainable tourism, economy.

Introduction

It has become evident that the increase and expansion of the tourism industry highlight the importance of spatiality in tourism. The growth of tourism worldwide has had significant effects on the economy, including impacts on cultural identity and the physical environment. Managing tourism growth is a pressing issue that must be prioritised in the coming years. This can be achieved by recognising tourism as a spatial entity. On a global level, it is essential to manage the spatiality and resilience of tourism by establishing a relationship between tourism and urban planning. The aim of this paper is to present the importance of spatiality in tourism planning. There is a need to consider tourism spatial planning, as it is becoming increasingly prominent in discussions and strategies to expand tourism at both regional and international levels (Lugonja et al., 2017). The role of spatial planning is to promote territorial cohesion through more balanced economic and social development of tourism regions.

Spatial relations are vital as tourism locations are a subject of spatial planning. Spatial planning is a tool for organising tourism activities to facilitate the integration of this sector with other sectors and areas in a locality or region (United Nations [UN], 2008, 2014; Dear & Scott, 2018). The processes of regionalisation and globalisation beyond national boundaries have also influenced the role of spatial planning. Mukoroverwa

and Chiutsi (2018) state that spatial planning achieves its environmental, social, and economic aims by securing community benefits from development through promoting the prudent use of land and natural resources. The methods employed are largely public initiatives that aim to influence the future distribution of activities in space. The role of spatial planning is therefore to promote sustainable development and to improve the quality of life (Dede & Ayten, 2012; Chigudu & Chavunduka, 2021). In terms of tourism planning, spatial planning involves the organisation of land use and spatial relations to achieve balanced development and environmental protection in order to meet socio-economic objectives.

Globally, there are specific planning systems, and spatial planning is divided into national and transnational planning, urban planning, and regional planning (UN, 2008). Spatial planning plays an important role in the development of the tourism sector and other sectors. It is therefore vital to understand the significance of planning to tourism growth. In the absence of planning efforts, adverse impacts related to tourism may arise, as it is a complex activity that encompasses various sectors of the economy and dynamic social interaction processes. The literature suggests that tourism is heavily based on private sector entrepreneurship, which means that spatial planning serves as an intervention mechanism for the evolution and development of tourism for environmental and public benefit (Dunets, 2007; Zhou, 2018). This paper provides an overview and background on the spatiality and planning of tourism and presents a conceptual framework on the related issues that underpin spatial planning and tourism.

Methodology

Data were obtained from secondary sources through a literature and document review. Journals, books, papers, and government publications constituted the literature reviewed for this study. Regarding the document review, reference is made to publications, reports, Internet resources, and policy documents. The obtained data were analysed using content analysis. The literature was reviewed, and the results are presented based

on the findings. The article also presents conclusions and recommendations on how best to integrate tourism planning into spatial and urban planning.

Background to Spatial Planning and Tourism

Globally, tourism has become a significant industry with high potential, and the trend seems to continue (Polyakova et al., 2018). It has increased cultural interaction between countries and cities while making substantial contributions to their respective economies. Rogerson (2015) points out that there has been widespread growth in informal markets, traffic volume, and small businesses, which altered the traditionally mono-functionally zoned urban form. This change has manifested through a myriad of factors, including denser space utilisation, mixed-use patterns, and the encroachment of traffic into public spaces. Historically, most Southern African cities were established by European colonialists, and their development was guided by "modernist town planning" principles, which emphasised functionality, efficiency, and the representation of public interest by the state (Putra, 2019).

Chirisa and Dumba (2012) argue that the planning framework in precolonial Zimbabwe was primarily designed to serve the selfish and capitalist interests of the settler community, maximising the productive capacity of space utilisation at the expense of local communities, which did not necessarily represent the public interest. This gap is still felt today, as the planning system struggles to cope with the manifestations of rapid urbanisation. According to the United Nations Human Settlements Programme (UN-Habitat, 2009), there is growing international and local concern that planning practices and frameworks that are reactive, strategic, and communicative may fail to address rapid change and might also fail to meet the universally accepted development goals for cities, which are guided by principles of sustainability, inclusivity, productivity, and good governance (Berrisford, 2013; Boraine et al., 2006). Furthermore, criticisms have been directed at the planning system in Zimbabwe, which highlight that the use of outdated data-collection and -analysis techniques, as

well as outdated maps, rendered the planning process time-consuming. Urban developments are occurring unabated during the lengthy period of plan preparation, which defeats the purpose of the entire exercise.

Spatial planning should introduce new planning perspectives and practices to address developments. Global challenges such as energy supply, climate change, demographic changes, and globalisation increasingly impact societal development. The effects of globalisation processes are often seen as producing disjointed communities that are detached from space and place, while global capital movements typically intensify local place-making activities (Mukoroverwa & Chiutsi, 2018; Zhou, 2018). Spatial planning must therefore implement new practices to address regional development. This approach is effective for area-based policies, where spatial planning must enhance governance strategies to reconcile diverse and evolving demands for space. It requires integration and coordination across scales, sectors, timeframes, and administrative levels that lead to changes in land use practices. All these adjustments depend on the resilience of the spatial planning system, which encompasses the planning framework.

Resilience is rapidly gaining traction in the urban sustainability literature. The frequency of recent incidents, including natural disasters such as tsunamis, earthquakes, and hurricanes, as well as challenges posed by economic downturns, has underscored the vulnerability of human settlements. This makes the careful consideration of resilience in planning for the future of urban areas vitally significance (Lew, 2013). Given the current developments in cities, an assessment framework for evaluating the resilience of urban areas can effectively incorporate resilience-related issues into the urban planning process, where spatial planning for tourism cannot be isolated.

Theoretical Framework

Resilience planning has emerged in recent years as an alternative to the sustainable development paradigm, offering a new perspective on community development and socio-

ecological adjustments in a rapidly changing world. The literature has been somewhat slow to adopt recent conceptual ideas related to community resilience. Most research on resilience focuses on major disasters and crises (Mehmood, 2016). The new frameworks that encompass slow-changing variables provide a more comprehensive view of resilience. The theoretical perspective surrounding social resilience is centred on the evolution of the concept in biological disciplines. However, there has been a shift from a purely biological perspective to other theoretical frameworks, such as social, economic, and environmental resilience. Mehmood (2016) argues that the resilience of a place is not only associated with its level of vulnerability to security or environmental factors, but also involves understanding the capacity of society to adapt to change.

Resilience has been associated with the formulation of immediate responses and reactions to crisis incidents such as floods, earthquakes, and other disasters; however, it should also consider long-term adaptation and mitigation strategies that address economic, environmental, and social challenges (Mehmood, 2016). The changes taking place in cities can be attributed to economic, social, political, and environmental shifts, as well as technological advancements. Various theories and models help to explain the concept of resilience, including postmodern theory, the resilient city transition model, and the panarchy model of adaptive cycle and scale. This section focuses on these theoretical perspectives of resilience and spatial planning for tourism. These theories all examine unpredictable outcomes and allow for a departure from conventional planning methods that rely solely on existing systems.

Postmodern Theory

Postmodern theory, proposed by Beauregard and Haila in 2000, emerged from the need to define a societal system in terms of its structure, which fulfils various societal needs. According to Beauregard and Haila (2000), contemporary cities increasingly face the emergence of new spatial forms and urban structures. The postmodern theory depicts a city as fragmented, precarious,

and partitioned, shaped by patterns and global forces. These forces significantly influence spatial form, and their outcomes are not easily predictable. One reason for this unpredictability is that new processes occur simultaneously, which affect urban spaces when the design and planning cannot adapt to these global forces. Another reason is that stakeholders and actors operate on various scales, which makes it difficult to integrate their roles. The spatial form is connected to several social, political, and economic structures in society, with influences on cities evident at both higher and local spatial levels (Beauregard & Haila, 2000).

The spatial form of cities appears to change at a slower rate compared to social changes, such as economic practices, social relations, and political aims. Beauregard and Haila (2000) argue that the relationship between spatial investment and the identification of urban spaces is often difficult to alter. The underlying idea of postmodern theory is that it is essential to incorporate multiple time dimensions when regenerating and developing urban space. Consequently, the experiences, present challenges, and future goals, along with social commitments, investments, and past trends, affect the pace of spatial change, which makes it increasingly important to address the challenges of spatial planning. When a disturbance occurs, society is affected in various ways. Humans are often attached to tourist developments. Individuals generally have a sense of belonging, whether the space is permanent or temporary (Lefebvre, 2008). They claim ownership of spaces and establish relationships with both the space and its components. If tourism regions are not vigilant, they may miss out on important opportunities. Over time, this theory has been linked to sustainability, which the UN (2015) defines as a development process capable of meeting the needs of the present without compromising the ability of future generations to meet their own needs. There are various principles of sustainability, and one of these, resilience, relates to the integration, action, and understanding of the existing interconnections between the economy, environment, and society. If the economy is affected, the environment and society

are also impacted. Tourism is a significant aspect that has implications for all areas, including various sectors.

Resilient City Transition Model

The resilient city transition model was developed by Jabareen in 2013 to explain how outdated urban planning has been and how it is high time that it responded to changing conditions. It proposes that urban planning should move beyond traditional and established approaches, becoming uncertainty-oriented and adaptive. The challenges that cities are facing undermine current planning practices, which tend to focus more on known problems and past trends rather than addressing uncertainties. Jabareen (2013) argues that resilience planning must adapt contemporary methods and broaden its dimensions beyond physical planning (Chelleri, 2012; Jabareen, 2013). This is particularly relevant for spatial planning and tourism; as cities evolve, tourism development should be able to withstand potential changes and effectively manage shocks and stresses.

The model includes three significant aspects, namely spatial planning, sustainable urban form, and adaptation. It posits that there are two types of adaptation management that planners can utilise, namely ex-ante management and ex-post management. Ex-post management focuses on recovery following a disturbance, disaster, or disruption, while ex-ante management centres on risk reduction and prevention (Chelleri, 2012; Jabareen, 2013). In the context of urban uncertainty planning, both types of management are essential for preparing for change. The model assumes that urban planning is viewed as the provision for an uncertain future, with the aim to enhance resilience in physical security approaches, the built environment, and socio-spatial and environmental policymaking.

Panarchy Model of Adaptative Cycle

To further the study of resilience in cities, Gunderson and Holling (2002) explain the concept in four phases. These phases represent changes in the function and structure of a system in a city. The evolution of resilience, in this context, is illustrated

by an allegory of the adaptive cycle. The phases are growth and conservation, creative destruction, and reorganisation (Gunderson & Holling, 2002; Davoudi et al., 2012). According to Davoudi et al. (2012, p. 303), "the first loop of the cycle relates to the emergence, development, and stabilisation of systems' structure and functions, while the second loop relates to their eventual rigidification and decline, and at the same time the opening up of new and unpredictable possibilities". It is assumed that as systems mature, their resilience diminishes, which leads to eventualities that occur as accidents, and when the system collapses, new opportunities for alternative solutions to disturbances are discovered (Gunderson & Holling, 2002). The creative destruction phase is denoted by the "omega" symbol to represent the end phase, which is followed by the alpha phase of reorganisation and renewal. The omega phase is a period of high resilience, which is characterised by significant uncertainty, transformation, and innovation, during which a shock can be turned into an opportunity. Turning a crisis into an opportunity requires preparedness, which is determined by the capacity to forecast. Consequently, spatial planning must embrace innovation to navigate the uncertainty that arises in cities.

Conceptual Framework

Spatial planning helps to avoid the duplication of efforts by actors such as government departments, commercial developers, communities, and individuals. It is a public sector activity at all levels; a clear distribution of responsibilities is therefore needed between the different levels of administration. Nationally, the government is responsible for the development of a framework of policies that guide and initiate the decision-making process by setting the conditions for the operation of effective planning at local and regional levels (Dede & Ayten, 2012; Chigudu, 2021). Issues related to the establishment of effective frameworks, legislation, and coordination with other sectors and between cities in the country, as well as the monitoring of the implementation of guidelines and principles at regional and

local levels, and the identification of bottlenecks in planning and implementation, are significant in spatial planning.

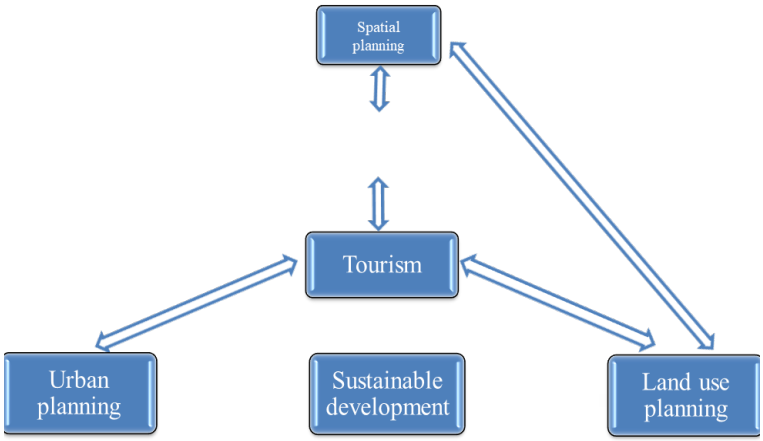

Figure 1: Conceptual Framework. Source: Dede and Ayten (2012)

Local-level spatial planning takes into account policies formulated at both the national and regional levels. Local plans are particularly important because they involve and affect the end users. The impacts associated with tourism planning mainly affect local users. Local governments should prepare regulatory planning instruments, establish priorities for action, facilitate the development of local spatial plans, coordinate planning with neighbourhood authorities, engage with the community using participatory planning techniques, take proactive measures to encourage development, and monitor the implementation of policies and proposals (Rezaee & Charrahi, 2020). This can be achieved by adhering to specific planning legislation. Participation is vital in the development of areas, especially when planning for tourism. Tourist attractions have significant implications for the local area, which can be both positive and negative. Risteski et al. (2012) postulate that when development is embraced by the users, it receives their blessing, and the support from the community contributes to the project's success.

Of late, a number of countries have made fundamental reforms to their planning laws to enable changes in the operation of their planning systems. However, not every country has managed to cope with the pace of spatial development. While legislation may exist, it is often no longer relevant. It is therefore not usually a lack of legislation that is the issue, but rather that reform in planning has not been given high priority. Rezaee and Charrahi (2020) argue that effective spatial development may not have been implemented at all levels, resulting in a lack of a legal basis to facilitate the planning process. Sectoral interests are significant in ensuring consistency in the decision-making process in spatial planning. In cases where planning reform has taken place, it generally aims to shift the focus from physical land use regulation to an integrative spatial planning approach. The COVID-19 pandemic exposed several loopholes in spatial planning, especially in the tourism sector. Tourism operators were trying to adapt to the "new normal", and what was observed was the increased use of sanitisers and thermometers for temperature checks. The future of tourism during this pandemic was at risk, as places designed and planned to accommodate large numbers were being discouraged. This raises questions about the role of spatial planning in tourism during disaster risk occurrences.

In addition, clear legislation, funding policies, and improved organisational infrastructure are critical, as experience has shown that these issues are often more complex to resolve than technical challenges. Developing these plans requires high-level support to ensure the effectiveness of the policies when implemented and regulated at the local level. The engagement and participation of stakeholders are essential. For the planning process to be more socially inclusive, it is often necessary to redress the balance of public involvement to hear the views of groups and individuals that have been traditionally under-represented.

Sustainable Development and Resilience Planning

Resilience planning has emerged in recent years as an alternative to the sustainable development paradigm. It offers

new perspectives on community development and socio-ecological adjustments to a rapidly changing world. The difference between sustainability and resilience is noted by the fact that sustainability prevents or mitigates change by maintaining resources above a normative safe level, while resilience adapts to changes by building capacity to return to a desired state following both anticipated and unanticipated disruptions. The field of tourism has been somewhat slow to adopt recent conceptual ideas related to community resilience. Furthermore, in tourism, the concept of resilience has largely focused on economic resilience, rather than on cultural, institutional, or infrastructure resilience. Most tourism-related resilience research has concentrated on case studies rather than advancing theoretical constructs.

In addition, due to the seeming irrevocability of environmental and social change, resilience planning has recently emerged as a more effective approach to community planning and development than the sustainability paradigm. The tourism sector cannot function without considering the aspects of sustainability and resilience. Spatial planning should yield sustainable developments, and these should be resilient. Adaptation and adoption define the responses that occur when changes take place in cities. Some cities are prone to disasters, and when such events occur, they often destroy infrastructure. This results in an uneven distribution of development across tourism sectors. The ability to devise strategies to address this uneven distribution reflects the level of resilience that an area possesses. Laws, regulations, and policies should not be rigid; they should respond to the changes that occur in cities. The developments taking place in cities should align with the policies and standards in place; updating these policies is therefore critical.

Attempts at Tourism Planning in South Africa

South Africa is one of the African countries with an active tourism sector; however, it is characterised by uneven development. Tourism is identified as one of the key industries that is driving change on the African continent, including

South Africa (Economic Development Department, 2011). The expansion of recreational and tourism activities has had positive impacts on local economies by generating social and economic development in some marginal regions and rural areas of South Africa. Several researchers have highlighted the spatial imbalances of the tourism sector in the country (McKelly et al., 2017). It has been described as highly concentrated spatially in terms of its distribution and its potential local impacts across the country. Some of the gaps and shortcomings are attributed to municipalities. There is a lack of comparative sector data at the municipal level, which may have hindered the widespread use of geographically comparative analysis of the various dimensions of tourism in municipalities across South Africa.

Attempts at Tourism Planning in Botswana

In an attempt to promote tourism planning and development, Botswana developed the National Ecotourism Strategy that views ecotourism as an enhanced travel package to Botswana's historical, cultural, and natural environments, with the aim of enjoyment and learning (Leechor, 2017; Mbaiwa et al., 2007). This strategy seeks to promote the financial development of local host communities while sustaining the natural environment and developing the tourist industry. As such, the Department of Tourism perceives ecotourism as a means of minimising the risks and disagreements caused by the complex interactions between the tourism industry, the environment, visitors, and local communities. One of the objectives of the strategy is to ensure that the planning, development, and management of tourism in Botswana are consistent with the concept of sustainability and the equitable spatial distribution of tourism as a land use. The strategy is supported by the Tourism Act of 1992 and other related legislation, including planning laws. The tourism development framework in Botswana addresses a range of issues and includes innovative, long-term proposals to expand tourism in the country's most underdeveloped areas.

Results

The resilience and development of tourism are influenced by spatial planning, even though tourism is a standalone industry and spatial planning falls within the rural and urban planning frameworks. Conflicts often arise when the planning frameworks and policies clash with the tourism sector. For instance, there has been a proposed planning framework between Zimbabwe and Zambia, which seeks to build infrastructure (a golf course, lodges, and a hydroelectric dam) along the mighty Victoria Falls. As noble as this endeavour may sound, the World Heritage Outlook, in its online publication dated 1 December 2020, states that the UN, through the United Nations Educational, Scientific and Cultural Organization (UNESCO), which awarded Victoria Falls its World Heritage status, advises that this title could be revoked due to excessive human interference if the project were to commence (Chigudu, 2021).

The tourism sector is primarily governed by the Tourism Act, but there is no national spatial planning legislation to regulate the spatial aspects of the tourism industry. Tanzania has made strides in creating a clearer pathway for a land use policy that facilitates spatial planning. This has enabled the expansion of tourism along its rich coasts while also allowing people to live in coastal areas and generate income through farming (Tanzania Coastal Management Partnerships). In developing nations such as Zambia, the planning system is still influenced by the former colonial era. The continued renewal of planning systems, in consultation with the tourism sector, is therefore vital in order to foster resilience in tourism. It is essential to identify, analyse, and consider factors in tourism planning, as this is the most important task for ensuring sustainable tourism development. For instance, Zambia inherited a dual spatial structure known as the two-tier system, created by the British. Many of the challenges the country faces have their origins in a century of British domination. According to Chirisa and Dumba (2012), Zimbabwe was under British colonial rule for many years. The spatial planning policies that were implemented were suitable for the British environment. Since Zimbabwe gained its independence, little has been done to

revise and update the old master plans that continue to govern planning practices, which has led to various spatial challenges in urban planning.

Tourism development is influenced by many factors. The identification, analysis, and consideration of these factors in tourism planning is the most important task in ensuring sustainable tourism development. It has been noted that there is a lack of comparative data at the municipal level, which may have inhibited the widespread use of geographically comparative analyses of the contribution of various dimensions of tourism in municipalities across the country. Shaw and Williams (2004) note that the process of spatial development is complex due to the influence of physical and socio-economic factors. The elements of tourist infrastructure therefore require constant creation and updating. To develop tourism in a region, an optimal combination of two groups of factors is necessary: the basic factors (natural, socio-cultural, economic, and political) and additional factors (such as entrepreneurship and the information factor, without which tourism cannot develop effectively) (Shaw & Williams, 2004; Dunets, 2007). Since the spatial development of tourism involves the creation of a model and concept for the territorial planning structure of tourism planning and development, it is essential to understand the generic and environmental differentiation of tourist flows. Environmental differentiation refers to the situational location in relation to the tourist infrastructure, while the generic aspect relates to the development of the model of territorial tourism (Polyakova et al., 2018). A number of challenges for spatial planning have been identified in Zimbabwe that affect all sectors, including tourism planning. These challenges include globalisation, demographic changes, sustainable development, and integration and market economy reforms. These factors pose significant challenges to spatial planning and the development of new spatial planning systems.

Globalisation

Of late, the outlook for economic, political, and social development has been changed by a number of trends

in globalisation. These include the liberalisation of trade and international capital flows, as well as the increasingly widespread acceptance of democratic institutions and market-based economic systems (Marinakos, 2019). These trends can profoundly affect community structures. Their contribution can increase the internationalisation of metropolitan regions in the form of capital and labour, alter the distribution of responsibilities between the private and public sectors, strengthen the roles of major cities in countries, and reduce the polarisation of economic and social standards in cities. For example, in Europe, large cities are attracting labour resources and reorganising economic activities. Those that respond to changes, particularly technological changes, are thus favoured as centres of service and serve as gateways to international markets. This can provide valuable lessons for the African context in terms of tourism planning.

Demographic Change

Urbanisation is growing and is expected to continue increasing. Cities are expanding and facing rising demands in terms of existing infrastructure and land use. In rural areas, local public services are being withdrawn due to a low population that cannot support the increased costs of provision. The increase in population results in high demand for services. However, most tourist attractions are located either in peri-urban or rural areas. These areas are not highly populated; rather, people travel to them. The development or establishment of, for example, a resort area influences the development of the surrounding region. Over time, the population increases due to agglomeration economies. However, demographics not only refer to an increase in population but also to changes in age. Young people tend to travel more than older individuals. The spatial location of services should therefore be designed to ensure easy access for both age groups.

Minimal Support From the State

Most African nations receive minimal support from their government treasuries to develop tourism infrastructure.

The private sector typically assumes the role of financing development in this sector. With a focus on profit maximisation and less stringent enforcement of laws and regulations, the private sector may treat it as merely a business venture. In other countries, any development in an area is expected to benefit the community (Leechor, 2017). Therefore, when developing an area, particularly for business, it is essential to either employ local residents or physically develop the entire area. This approach ensures that both parties benefit from the activities taking place in their respective locales. Governments should also take part financially and establish more of their own tourism destinations, where the returns benefit the state rather than the private sector. Overall, in terms of spatial development, it is important to recognise that tourism can provide an economic base for a region whose only development options are its cultural and natural resources (Putra, 2019). The government's primary role in tourism should be to develop a strategy for the sustainable growth of the sector, formulate policy, create conditions for public investment, and provide an enabling business environment to complement private sector activity.

Lack of Financial Support

Ministries in tourism are often underfunded, and initiating tourism requires a significant commitment of resources. Investments needed to launch tourism or expand it to the next development stage include tourism master plans; training for hotels, restaurants, and tourism services; technical assistance for institutional strengthening and strategy formulation; the provision of water and sewage treatment plants; improved healthcare and sanitation training, particularly in local communities serving tourism; and upgraded transport access to tourism destinations. An example of this is in Tunisia, where the government identified several sites for tourism development and invited the World Bank to support the development of infrastructure and site planning. Securing financial support facilitates effective spatial planning for tourism.

Sustainable Development

It is the wish of every city or country to promote sustainable development. The conservation of natural and built tourist resources for future generations against environmental damage leads to long-term tourism development. The spatial planning of tourism should be linked to other sectors of the economy to stimulate production in industry and agriculture, thus fostering a more balanced economy. The disintegration of these aspects results in isolated sectors that operate as monopolies. Abuharris and Ruddock (2005) point out that proper land development is essential for the sustainable expansion of tourism, which involves the participation of local communities in the planning process. Sustainable development in tourism planning can only be achieved when communities recognise the economic benefits of tourism development and can perceive positive changes in their surroundings. These aspects should encompass improvements in living standards, recreational facilities, and the preservation of public amenities.

In addressing issues related to tourism and tourism planning, Zimbabwe developed the National Tourism Master Plan (NTMP) in 2016. The vision for implementing the NTMP is to create an inclusive, robust, and vibrant tourism economy in Zimbabwe. The country is ranked among the top five direct competitors in the Southern African Development Community. The general objective of the NTMP is to establish an overarching guide for the development of tourism in Zimbabwe, focusing on direct product development and diversification, culture and heritage, community participation, nature preservation, and infrastructure development. Zimbabwe's approach aims to achieve holistic and integrated developmental aspirations, particularly for poor and marginalised communities, while harmonising and balancing environmental, social, and economic aspects. According to the NTMP (2016), the development strategy outlined is spatially transcribed into a structure based on interrelated elements: gateways, which serve as points of access to the country; corridors, which are sections of national transport systems strategically designated for the in-country circulation of tourists; and Tourism Development Zones,

which are strategically identified in various areas across the country. The identification of potential product development opportunities is therefore essential for generating small to medium investments, as well as larger, more ambitious projects aimed at diversifying the product and spreading the benefits more equitably. Additionally, the spatial aspects and planning of tourism have been influenced not only by spatial and urban planning guidelines, policies, and laws, but also by significant national roles. The planning of tourism has been shaped by the publication and circulation of several key strategic government documents that highlight the need for direction, supported by broader private sector industry participation and a well-planned "road map" for implementation.

Developing Sustainable Tourism

In the past, tourism development insufficiently considered the limitations of natural resources, the impact on wildlife, and the threat to various cultures. Consequently, environmental and social development received little attention. If there is a desire to achieve sustainable development, it is therefore essential to improve the local lifestyle to provide a better future. A number of factors influence tourism planning, and the identification, analysis, and consideration of these factors are the most significant tasks in ensuring sustainable development. The following groups of factors should be identified: ethno-social factors, the history of tourism development, government actions, geopolitical factors, economic factors, administrative boundaries, special education and human resources, and domestic and international tourism infrastructure demand. McKelly et al. (2017) argue that authorities and planners often consider tourism and recreation in general in spatial planning documents while neglecting the opinions of residents, who are a crucial aspect of recreational activity and a condition for the functioning of tourism. According to Risteski et al. (2012), public engagement enhances sustainable development in tourism. The conservation of resources begins at the local level, and if the public is distanced from any development, there is a high risk of negligence.

Discussion

There has been a shift in the primary use of land over the years. The evolution of tourism can be traced back to the Grand Tour that took place in the 17th century. Since then, tourism has become a significant standalone industry that primarily depends on land as its major resource. Postmodern theory draws attention to the built environment, as well as the theory and practice of planning. Following the focus of postmodern theory, there is a need to include tourism in the spatial planning sector to eradicate conflicts that arise due to unclear planning frameworks and policies regarding the tourism sector. It is essential to establish a clear land use policy that allows spatial planning strategies to cater to the resilience and expansion of the tourism sector. A land use policy must promote the modern expansion of tourism. For instance, there has been a high demand for artificial beaches across the globe. Initially, tourism focused on buildings and recreational places such as parks, rather than on new emerging tourism strategies. This indicates that tourism is an ever-changing sector and therefore requires extensive planning for it to be sustainable.

The conjoining of the tourism and planning sectors is vital, as it allows for proper planning that can foster resilience and growth in tourism. Conflicts between the industries have negative impacts on the tourism sector, compromising its potential for expansion. Having clear policies that cater to tourism in the planning sector facilitates its propagation and growth. While these may seem like small changes, the scale, change, and resilience in tourism theory suggests that the rate at which changes occur influences how people manage and perceive slow changes in the environment, society, and culture, compared to sudden major shocks to the system. Moreover, if there is a desire to achieve sustainable tourism, it must primarily focus on improving local lifestyles, protecting the environment and public health, and offering a better future. From the literature reviewed, it can be noted that tourism development is occurring across all regions and cities, although some are more active than others. According to the NTMP, some areas are more developed than others, and as the capital city, Harare should

be leading in this regard. Tourism opens opportunities and strengthens the capabilities of local communities, which means that tourism development should be spatially distributed.

Planning for tourism should be futuristic in nature; sustainability aspects thus come into play. The conservation of natural and built tourist resources for future generations against any environmental damage leads to long-term tourism development. The development and planning of tourism must be linked to other sectors of the economy to stimulate production in industry and agriculture, thereby contributing to a more balanced economy. Sustainable expansion of tourism requires proper land development. It is important to note that to establish sustainable development, people should be involved in the planning process. The sustainability of land uses, especially people-oriented uses, is somewhat promoted by the public. According to Abuharris and Ruddock (2005), it is up to individual communities to determine how they want to balance the status quo with the benefits of growth, and how effective they will be in mitigating the negative effects they wish to avoid.

The study highlighted key aspects such as the spatiality of tourism, public participation, and sustainable tourism planning and development. Although some progress has been made across the country, the tourism sector has been adversely affected over the past few years due to the COVID-19 pandemic. The pandemic can be defined as a disaster. The effects of the COVID-19 pandemic are not confined to geographic boundaries or the characteristics of specific areas. This implies that the planning system needs to adapt to these changes and develop strategies that are sensitive and resilient to such disasters. Globally, not much has been done, which means there is little or nothing to adopt or replicate. This indicates that planning authorities worldwide have a duty to formulate plans or strategies that are both responsive and resilient.

The demographic changes that occur globally influence tourism planning. However, the pace of these changes is rapid, particularly in the case of urbanisation. People are moving

from one place to another, which has spatial implications for planning. A good example of this is densification, where planning authorities are encouraging vertical growth to address the issues caused by urbanisation. On the other hand, rapid urbanisation has stimulated tourism planning in urban areas due to increased demand. While this can be seen as a positive outcome, it has also led to an uneven distribution of land uses across the country. As a result, some urban areas are lagging behind in terms of development in all aspects.

Conclusion and Recommendations

The spatial development of tourism is associated with implementing initiatives across regions and local areas. The spatial distribution of tourism zones highlights the significance of the tourism space. The NTMP is inclusive, and comparative analyses of tourism spending in relation to population and the economic output of municipalities illustrate the significant role of tourism in areas that are not necessarily seen as prime tourist destinations. Therefore, identifying appropriate land use in an area is crucial. However, spatial planning has not significantly contributed to development; instead, areas identified during the pre-independence era remain the leading tourist attractions in selected African countries. Laws that govern resource conservation are limited to those that cannot manipulate regulations. Issues related to corruption and abuse of power have crippled the planning system in the country, as evidenced by developments being implemented in areas that are not zoned for recreational activities.

As such, it is recommended that tourism priorities be incorporated as a strategic input into the preparation of local master plans and sectoral master plans, such as the National Tourism Master Plan. This will facilitate planning at local levels by integrating with surrounding and existing land uses. It is also advisable to address the current constraints on tourism and consider examples from other countries that illustrate solutions to issues related to land availability, taxes on tourism investments, low levels of tourism skills, and fair distribution of resources.

Assessing the scale of development appropriate to the country's assets and management resources, as well as determining where and when development will occur, is also advisable. This reduces over-concentration on some land uses while neglecting other relevant, albeit vital, uses, thus enhancing sustainable development. It is important to note the four pillars of sustainability for tourism, namely financial, economic, social, and environmental, all of which are essential for sustained tourism growth.

The most significant aspect of tourism planning is land. Ensuring that both private and public land is available for tourism development is essential, but it often involves conflicting economic, political, legal, technical, and institutional interests. The existence of common land rights and common pool resources complicates the issue further. Serious opposition can arise from local people who have traditional rights to the land but lack legal titles. Questions regarding who owns the land, who owns the resources on it, and how rights are transferred are central to tourism development. The land must be available on a long-term basis, either through ownership or lease, and free of legal and other claims. Development control is therefore vital in tourism development. Red tape and bureaucracy have crippled planning systems in Africa. Planning for and regulating tourism development are crucial to sustainability; however, excessive regulation and unpredictable behaviour by governments and other stakeholders inhibit growth and ultimately make tourism less sustainable.

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Exploring the Possibilities of the 4IR for Revitalising a Declining Mining Town

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Abstract

The main contributing factor to the decline of mining towns is the depletion of natural minerals. The focus of this study was Kimberley, located in the Northern Cape province of South Africa. Kimberley was established in the 1860s following the discovery of diamonds in the country. Over the following decades, the town expanded considerably and was designated as the capital city of the Northern Cape province in 1994. However, as natural mineral resources were depleted, the mines in Kimberley ceased operations, which contributed to the town's decline.

This paper investigated the revitalisation required to give the mining town new life and explored the possibility of integrating Fourth Industrial Revolution (4IR) methods to reconstruct Kimberley. The 4IR is generally identified with artificial intelligence, robotics, the Internet of Things, genetic engineering, and quantum computing. However, this study also examined renewable energy, intelligent building techniques, and optimal development as aspects of the 4IR. It focused on the

potential of the 4IR to revitalise a declining mining town, with particular emphasis on gentrification. A mixed methodology was adopted, which included a review of relevant literature and the formulation of questionnaires (Internet surveys) for Kimberley residents, with the results and findings analysed constructively.

Based on the findings, the introduction of optimal building technology to support renewable energy and green infrastructure is discussed. This proposal aims to revitalise the declining mining town with the assistance of the 4IR.

Keywords: Fourth Industrial Revolution (4IR), revitalisation, declining mining town, green infrastructure.

Introduction

Mining activity significantly contributes to a town's economic growth. When a mine closes, the town can become a ghost town (Winde & Stoch, 2010). The primary purpose of this paper was to explore the potential of the Fourth Industrial Revolution (4IR) to revitalise declining mining towns, as these towns continue to shut down one by one, even if they have not yet reached the status of ghost towns. The mining town examined in this paper is Kimberley in the Northern Cape, which has been operational since the 1860s. Although the mines in Kimberley are closing, the town retains the advantage of being the capital of the Northern Cape province. Despite its status as a declining mining town, Kimberley has excellent potential for revitalisation through 4IR interventions.

Yusuf et al. (2020) indicate that the 4IR is generally characterised by artificial intelligence (AI), which encompasses robotics, the Internet of Things, genetic engineering, quantum computing, and the latest technological interventions that are designed to improve various industries, businesses, health, education, and livelihoods. With this in mind, this study analysed population responses to an Internet survey to determine opinions on Kimberley as a declining mining town and the potential of the 4IR to revitalise it. The data analysis revealed that Kimberley has a rich history and features many historical buildings. This paper aimed to demonstrate that the

4IR can introduce optimal building technology to contribute to renewable energy and green infrastructure as a means of revitalisation. A robust methodology was adopted to achieve the objectives of this paper.

A mixed research method was employed, and secondary data were analysed through a literature review of Kimberley's background during the Industrial Revolution (IR) eras. Internet surveys were distributed, and the results from the population's responses were analysed. The primary research question explored whether the 4IR can revitalise Kimberley as a declining mining town.

Literature Review

This section presents the theoretical and conceptual framework in which this study was positioned. It provides an overview of the factors that play a significant role in exploring the possibilities of the 4IR to revitalise a declining mining town. This review is divided into three sub-sections: Kimberley's background through the IR ages, declining mining towns, and revitalisation and gentrification. All these sections significantly contribute to formulating a comprehensive understanding of this paper's core features.

Background of Kimberley Through the Industrial Revolution (IR) Ages

Kimberley is an established town with a rich history that can be divided into four distinct IR ages. Koc and Teker (2019) define IRs as different eras of technological innovations that have significantly contributed to global economic development. Figure 1 illustrates the duration of these four IR ages. The following section outlines Kimberley's history in relation to each IR evolution.

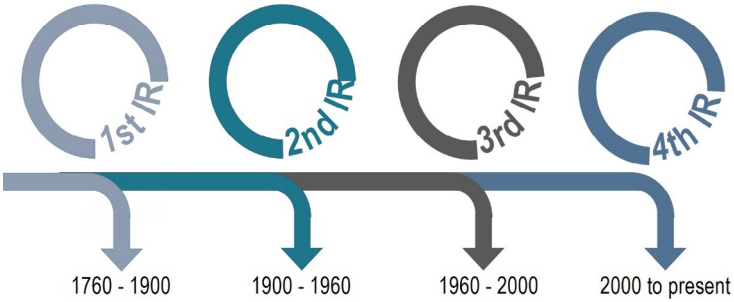

Figure 1: IR Evolution. Source: Based on Xu et al. (2018)

The First Industrial Revolution (1IR)

Mohajan (2019, p. 2) explains that the 1IR was identified in the 1760s as the transition from "human or animal labour technology to machinery, new chemical manufacturing and iron production processes, improved efficiency of water power, the increasing use of steam power, and the development of machine tools". However, the steam engine can be seen as the central aspect of the 1IR, which significantly contributed to economic development. Scholars further elaborate that the 1IR occurred from 1760 to 1900 and introduced the steam engine, which used coal to power these machines (Melnyk et al., 2019; Xu et al., 2018). Figure 2 demonstrates Kimberley's historical evolution from 1860 to 1899.

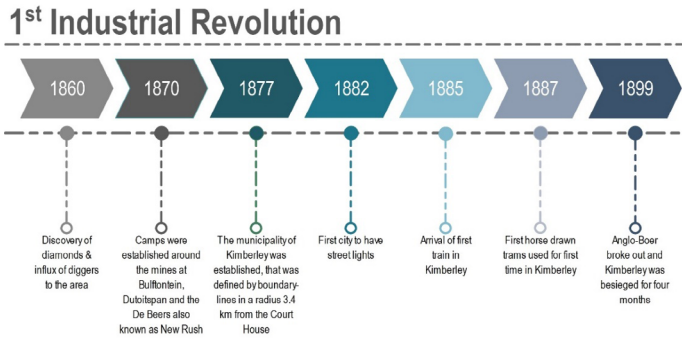

Figure 2: Kimberley's First IR Evolution. Source: Based on Sol Plaatje Municipality (2008)

Kimberley was established during the 1IR when the first diamond was found in 1860 by a young boy outside Hopetown (John, 2012). Figure 2 identifies three historical milestones from 1860 to 1877 that influenced Kimberley's mining sector. It illustrates that Kimberley was the first town to receive street lights, which is an excellent example of industrial progress. In 1885 and 1887, two significant improvements occurred with the arrival of the first train and the first horse-drawn trams as means of transport. The Anglo-Boer War, also known as the South African War, broke out in 1899 (see Figure 2) at the end of the 1IR, which drastically affected mining production in Kimberley, as the town was besieged for four months.

The Second Industrial Revolution (2IR)

The 2IR spanned from 1900 to 1960 and was marked by the invention of the internal combustion engine, which played a pivotal role in ushering in a new era of industrialisation. This era was characterised by mass production assembly lines that utilised oil and electrical power (Koc & Teker, 2019, p. 305; Xu et al., 2018, p. 90). The 2IR encompassed the development of the internal combustion engine and the mass manufacturing of products. Sharma and Singh (2020) noted that Henry Ford was the inventor of the first assembly line for vehicle production, a concept that was inspired by the assembly line used in slaughterhouses. Figure 3 illustrates Kimberley's historical evolution from 1900 to 1939.

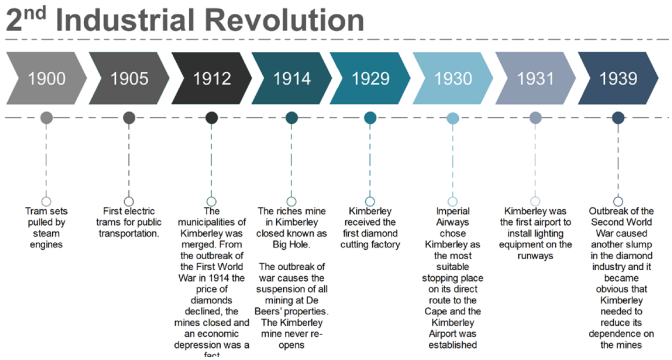

Figure 3: Kimberley's Second IR Evolution. Source: Based on Sol Plaatje Municipality (2008)

Figure 3 illustrates that from 1900 to 1905, Kimberley made significant contributions to the 2IR with the introduction of the first steam engine and the first electrically operated trams in the country. It also highlights the merging of municipalities after World War I to promote economic development. Three historical milestones greatly contributed to Kimberley's growth during the 2IR era from 1929 to 1931, including the establishment of the first diamond-cutting factory, Kimberley's status as a midway stop for airlines, and the opening of the first airport with runway lights. In 1939, the outbreak of World War II drastically affected the mining sector, which led Kimberley to become increasingly dependent on the mining industry.

The Third Industrial Revolution (3IR)

The 3IR occurred from 1960 to 2000, during which electronics and information technology were implemented to automate the production of goods (Sharma & Singh, 2020; Xu et al., 2018). The 3IR is characterised as the age of cutting-edge, speedy, intelligent, and highly effective systems used to optimise production in businesses (Peter & Mbohwa, 2018). With this in mind, Figure 4 does not identify various IR innovations that occurred during this period; rather, it focuses on the historical establishment of Kimberley.

Figure 4 highlights that, in 1968 and 1970, Kimberley received two key pieces of infrastructure: the Supreme Court and the Harry Oppenheimer House, the latter of which was erected as the first diamond-sorting house. According to Figure 4, the year 1977 marks the introduction of an IR approach when Kimberley acquired the first remote-controlled ore trains for underground operations. This clearly illustrates that the controlled, operated trains are a form of 3IR electronic technology. From 1983 to 1994, three significant historical milestones occurred: the establishment of Galeshewe, Galeshewe becoming part of the Kimberley municipality, and Kimberley being designated as the province's capital city.

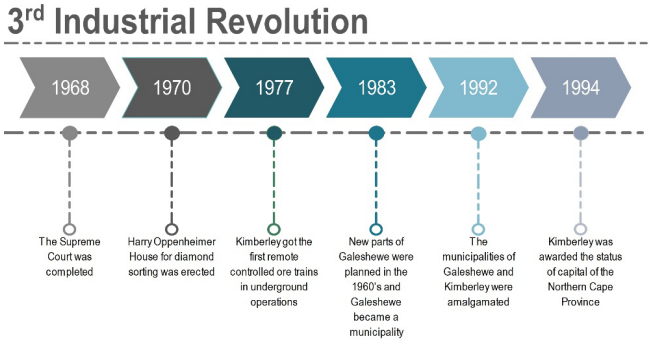

Figure 4: Kimberley's Third IR Evolution. Source: Based on Sol Plaatje Municipality (2008)

The Fourth Industrial Revolution (4IR)

The 4IR, defined as computer-generated production (Xu et al., 2018), began in 2000. Philbeck and Davis (2018, p. 17) identify that the 4IR is built on the achievements of the 3IR, which was "data-centric", as well as the creation of electricity and telecommunications during the 2IR. It is agreed that the 4IR would not have been possible without the technological advancements of the previous industrial eras. The 4IR is also referred to as the fusion technology era, which combines the physical, digital, and biological worlds to enhance various sectors and improve livelihoods (Mhlanga & Moloi, 2020). These

scholars indirectly confirm that the 4IR is a fusion of different technologies that emerged from earlier IRs. Figure 5 illustrates Kimberley's historical evolution from 2000 to the present as part of the 4IR.

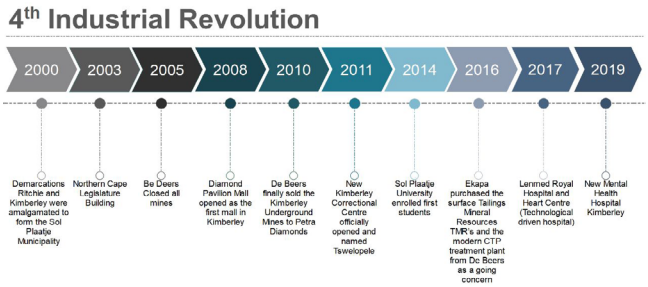

Figure 5: Kimberley's Fourth IR Evolution. Source: Based on Ekapa (2022); Jordaan (2022, July 29, personal communication with architect on Kimberley's history during the 4IR); Sol Plaatje Municipality (2008)

Figure 5 recognises that Kimberley and the surrounding small towns merged into Sol Plaatje Municipality at the start of the 4IR. Additionally, Figure 5 illustrates that from 2003 to 2019, several historical infrastructure projects were completed that significantly contributed to Kimberley's development. Some of these infrastructures are state-of-the-art facilities that enhance the education and health of the residents of Kimberley.

Declining Mining Towns

Mining towns were established during the 1IR, with mining defined as the means of extracting natural resources, and mining towns as the settlements surrounding these mining sites (Curriculum Visions, 2018). These settlements were typically temporary camping-style accommodations with limited access to essential resources (Scott et al., 2013). Kimberley is an excellent example of a mining town that evolved into a well-established town over the years; however, it also illustrates a

concerning trend, as mining towns can often be classified as declining towns.

Declining towns are also referred to as shrinking cities, a phenomenon that is not new in urban areas. Jakar and Dunn (2019, p. 2) state that declining cities are characterised by "empty downtowns, deteriorating neighbourhoods, and struggling families" that result from demographic and economic changes and the movement from urban centres to suburbs on the outskirts of urban areas. The economic decline of a town is a primary factor that contributes to population decline in urban areas. While economic factors and the movement of residents contribute to the decline of towns, declining towns in turn contribute to the decline of mining towns.

In conclusion, declining mining towns are small communities that were established to provide housing and basic necessities for mine workers and their families. As natural resources begin to deplete, these mines close, which leads to a significant decline in the towns. Knierzinger and Sopelle (2019) point out that deindustrialisation is one of the main contributing factors to the decline of mining towns. Weaver et al. (2016) indicate that deindustrialisation contributes to the rapid decline of factories and related employment opportunities, as jobs move to other regions or are affected by international factors.

Revitalisation

Revitalisation is an urban organisational approach aimed at streamlining the improvement of deprived, declining, and challenging urban spaces, with the focus on various aspects of the urban areas and their residents. It involves the act of giving new life, creating growth, and developing or reforming a space (Ramlee et al., 2015). However, revitalisation encompasses numerous related concepts, such as recovery, development, revival, rebuilding, protection, regeneration, and restoration; it is important to note that rehabilitation is not synonymous with revitalisation. Mwendera and Chilonda (2013) emphasise the need to distinguish between revitalisation and rehabilitation. Rehabilitation focuses more on the engineering methods used

to refurbish physical structures and is identified as prolonged maintenance aimed at recovering physical infrastructure, whereas revitalisation concerns the entire urban setting. Raszkowski (2018) explains that revitalisation is an inclusive method of recognising degraded areas or declining towns and framing integrated processes to restore and safeguard these areas, and fostering a close, committed relationship between the community, their physical infrastructure, and the economy for sustainable development.

Gentrification

Gentrification emerged in the 1960s as a form of neighbourhood modification in urban spaces (Richardson et al., 2019). However, gentrification was not the first concept of urban transformation. For this paper to explore the potential of the 4IR for the revitalisation of Kimberley, a declining mining town, it is essential to consider the impact of gentrification on urban transformation. Moos (2016) explains that gentrification involves the categorisation of urban communities based on racial classifications. In the South African context, gentrification is associated with apartheid cities, where the government divided urban spaces into different racial classifications. These apartheid cities segregated urban areas according to various racial groups, which contributed to the apartheid of South African neighbourhoods due to the colonial state. Furthermore, gentrification also emerged in inner-city areas, with the aim to relocate racial groups to other neighbourhoods for higher economic values, which was a process that occurred gradually (Dewi & Ristianti, 2019).

Methodology

A mixed research methodology was adopted to achieve this study's primary objective of exploring the possibilities of the 4IR for revitalising a declining mining town. Bulsara (2015, p. 6) explains that mixed research methodology involves "collecting, analysing, and integrating quantitative and qualitative research in a single study or a longitudinal programme of inquiry".

Combining these two research methods in a single study provided an enhanced understanding of the research problem. The mixed research method employed both quantitative and qualitative descriptive approaches to achieve the study's primary objective.

Descriptive research is defined as research that focuses on present actions that arise (Salkind, 2018). The 4IR can be seen as a current phenomenon that is gaining momentum, while revitalising a declining mining town is also an ongoing endeavour. This indicates that the descriptive research method was the most feasible approach for this research to explore the possibilities of the 4IR in revitalising a declining mining town.

Descriptive quantitative and qualitative research can be defined as a method that is designed to recognise the specific nature of a problem and provide an overview of the current status of the issues at hand (Doyle et al., 2020; Stangor & Walinga, 2019). This paper aims to answer the question: Are there opportunities for the 4IR to revitalise declining mining towns, with a focus on Kimberley as the study area?

The descriptive research method of this study utilised multiple data sources. Creswell (2009) explains that using multiple methods involves employing several different sources for data collection, rather than relying on a single data source. These data sources are classified as primary and secondary data. Figures 6 and 7 discuss the descriptive quantitative and descriptive qualitative research methods individually, focusing on the data-collection and data-analysis approaches that were adopted.

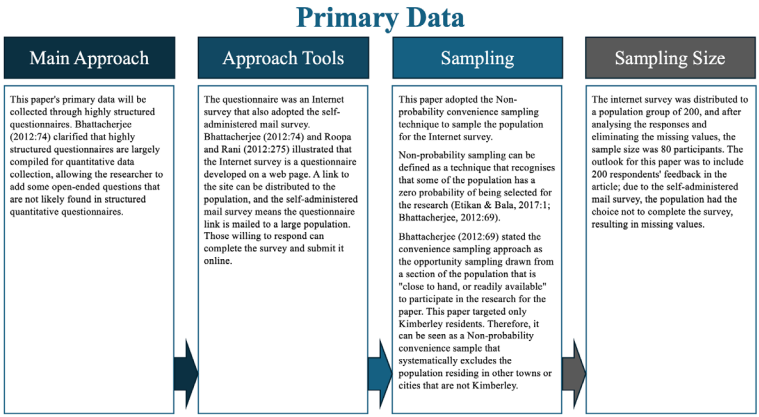

Figure 6: Research Methods: Descriptive Quantitative Research Part 1. Source: Researchers (2022)

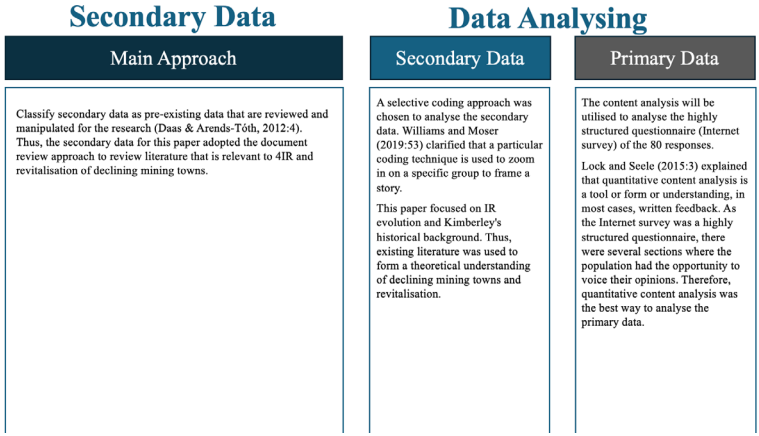

Figure 7: Research Methods: Descriptive Quantitative Research. Source: Researchers (2022)

Findings and Results

The findings and results section analysed the primary data collected to determine whether the study's main objective, namely exploring the possibilities of the 4IR for revitalising a declining mining town, specifically Kimberley, is achievable.

This section examines the responses to the Internet surveys to understand the Kimberley mining situation and to identify potential opportunities for 4IR interventions. The section is divided into three sections: a brief overview of demographics, Kimberley as a declining mining town, and the possibilities of the 4IR for revitalisation.

Brief Demographics

The Internet survey divided Kimberley into five sections to determine where the population resided. Figure 8 indicates the population's demographic profile results.

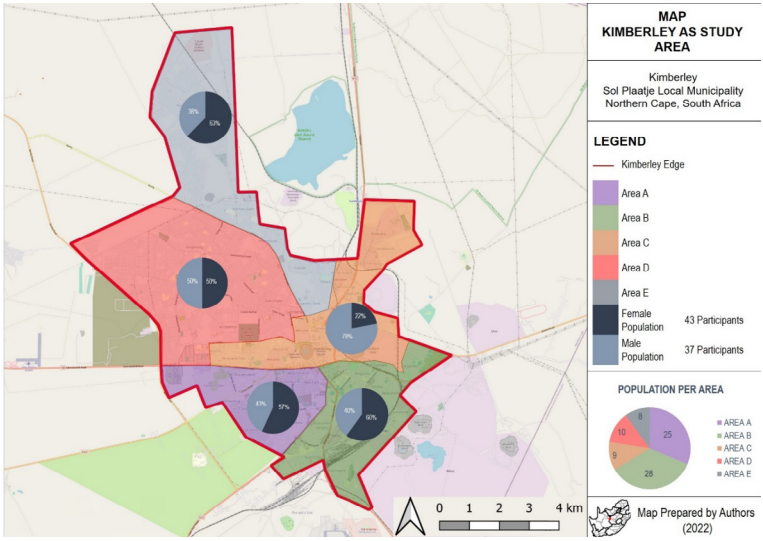

Figure 8: Map of Kimberley Divided Into Five Areas and Population Gender. Source: Researchers (2022)

Referring to Figure 2, Kimberley was established in 1860, located in Area C (as shown in Figure 8). Currently, most of the central business district (CBD) is situated in Area C, which may explain why participants from that area comprised only nine. Figure 4 indicated that the Galeshewe area was established in 1983, classified as Area D in Figure 8. In 1992, all five areas in Figure 8 merged to form Kimberley. The majority of the population

resides in Areas A and B, primarily within Kimberley's residential zones.

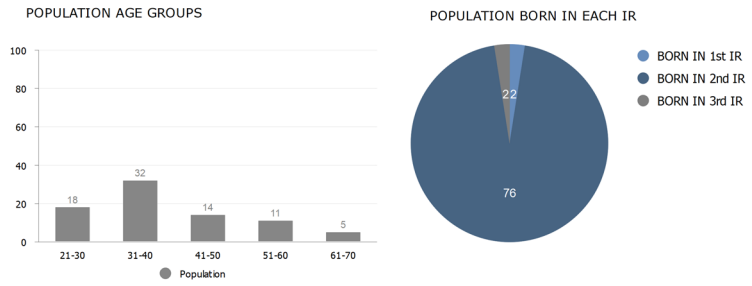

Figure 9: Population Age Groups. Source: Researchers (2022)

Figure 9 recognises that most of the population was born during the 3IR and could have seen the shift to the 4IR in 2000, which was critical in analysing if the 4IR can promote revitalisation.

Kimberley as a Declining Mining Town

The second section of the Internet survey was based on Kimberley and mining towns. The questions started with the population's understanding of the term "declining cities". Figure 10 illustrates the feedback.

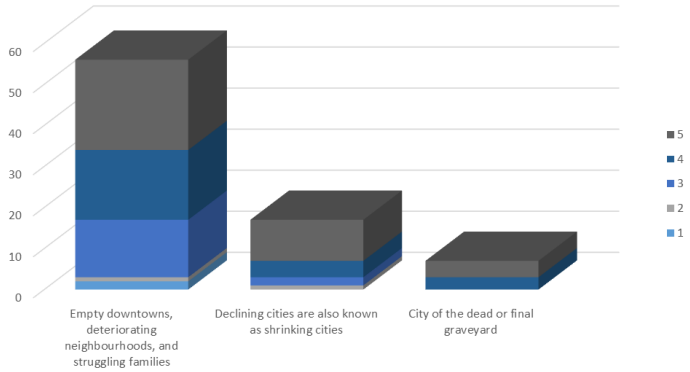

Figure 10: Defined and Rated Kimberley as a Declining Town. Source: Researchers (2022)

The three options for defining declining cities were sourced from numerous pieces of literature. The population indicated that 70% agreed with Jakar and Dunn's (2019, p. 2) definition of declining cities as "empty downtowns, deteriorating neighbourhoods, and struggling families". Figure 10 shows that 21% of the population perceived it as a shrinking city, while 9% concurred with Fol and Cunningham-Sabot's (2010, p. 4) definition of a "city of the dead or final graveyard". A conclusion drawn from the population's responses is that the most commonly used definition of declining cities is empty CBDs, worsening neighbourhoods, and struggling low-income families. This is an accurate term for declining cities, as they remain functional but are in decline. The population provided their understanding of declining cities by scoring whether they believed Kimberley is a declining town on a scale from one to five, where five indicated the highest likelihood. Figure 10 demonstrates that most (75%) of the population agreed that Kimberley is a declining town.

The literature identified deindustrialisation as the primary contributing factor to the decline of mining towns. Figure 11 shows that 54% of the population in Kimberley agreed that deindustrialisation was the main factor, followed by suburbanisation at 26%. However, 20% of the population indicated that demographic changes were a contributing factor, which could also be a possible reason for the decline.

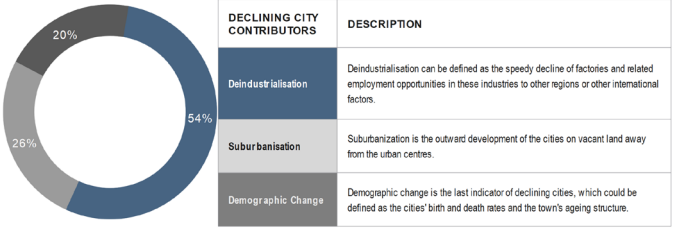

Figure 11: Reasons for Kimberley Being a Declining Town. Source: Based on Weaver et al. (2016)

Figure 12 indicates that 93% of the population agreed that Kimberley is or was a mining town. This aligns with the

literature that states Kimberley was established as a mining town in the 1860s.

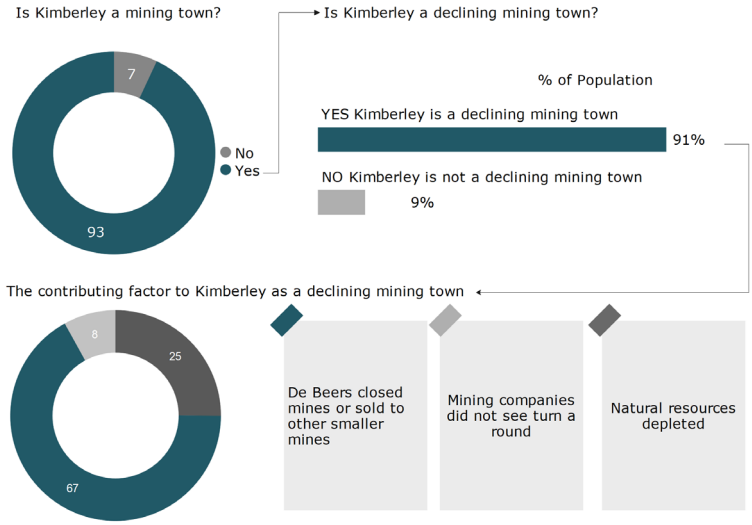

Figure 12: Kimberley as a Mining Town. Source: Researchers (2022)

Figure 12 demonstrates data relevant to the population that stated "yes" to Kimberley being a mining town. It identifies that 91% of the respondents agreed that Kimberley is a declining mining town, with contributing factors cited as reasons for this decline. Furthermore, 67% of the population indicated that the main reason was De Beers closing the majority of their mines or selling them off, as De Beers has been the first and primary mining company in Kimberley since 1870 (see Figure 2). Depleted natural resources were identified as a contributing factor by 25% of the population, as De Beers closed its mines primarily due to the depletion of these resources. Figure 5 showed that in 2005, De Beers closed all its mines in Kimberley, and in 2010, sold the viable mines to other companies.

Figure 13 presents a map of Kimberley's closed mines, various dumping sites, and the three mines that are still in operation.

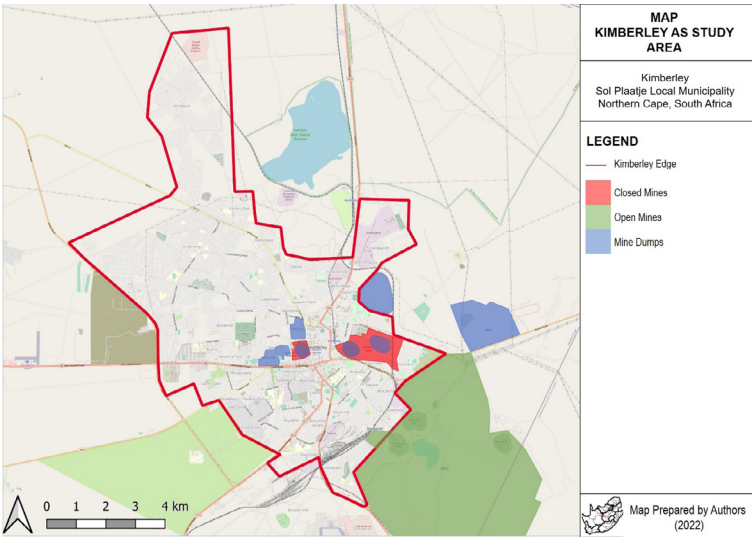

Figure 13: Map Illustrating Kimberley's Closed Mines, Mines, and Dump Sites. Source: Researchers (2022)

Figure 5 supports the formulation of this map, and the mining dump site was identified through personal observation. Figure 13 indicates that while some mines in Kimberley have closed, there are still operating mines in the area, which contributes to its status as a declining mining town.

4IR Possibilities for Revitalisation

The last section of the Internet survey focused on the 4IR and its potential to promote revitalisation in Kimberley. Figure 14 shows that only 54% of the population were aware of the term 4IR, which is surprising given that we live in the 4IR.

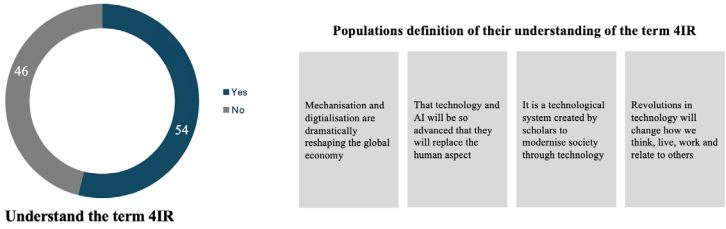

Figure 14: Understanding of the Term "4IR". Source: Researchers (2022)

The population was asked to define their understanding of the term "4IR", and most stated that they were unfamiliar with it. Others primarily described it as modern technology and innovations. Figure 14 illustrates some of the population's responses.

The Internet survey then shifted focus to revitalisation. First, the population was provided with a literature review section and asked whether they believed Kimberley could be revitalised. Eighty-six percent agreed that Kimberley could be renewed. Table 1 indicates the feedback from the population on how Kimberley can be revitalised.

Table 1: Population Responses to Revitalising Kimberley. Source: Researchers (2022)

Overall interest field	Portion of the population's responses	%
Change of leadership	The town requires better management and more optimal state resources to revitalise Kimberley.	40%
Investment Opportunities	By receiving an influx of investments and talent, Kimberley can grow and expand its businesses and use the extensive empty lands at its disposal (for new companies, houses, factories, etc.).	15%
	More investment in infrastructure development by the government and private sector. Expansion of the town and the re-establishment of factories such as clothing and bakeries to create employment opportunities.	
	With proper planning and private investment, it will be possible to revitalise Kimberley; if implemented correctly, many opportunities will positively impact the town, work opportunities, tourism, etc.	
Job creation	We need people who are capable of revitalising the city.	15%
	All the revitalisation projects can provide employment opportunities for the local communities.	
Planning	If Kimberley gets new attractions and restores old buildings, streets, and gardens, it will attract more people.	20%
	Residents, businesses, local government, and other stakeholders must work together to ensure a revitalised Kimberley. More integrated planning is needed.	
Technological	Technology is the future of society; through it, our systems can be more modernised for effective and efficient functioning.	10%
	With the 4IR implemented, Kimberley would be reconstructed and recover from deterioration. Kimberley will become a developing city that is revitalised.	

Two proposals were drafted to understand if they would work to revitalise Kimberley using the 4IR.

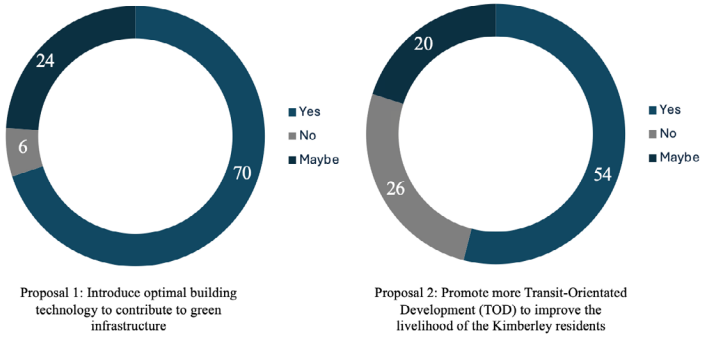

Figure 15: Population Opinion of Proposals 1 and 2. Source: Researchers (2022)

The first proposal was to introduce optimal building technology to contribute to renewable energy and green infrastructure. Figure 15 shows that 70% of the population agreed that this proposal will revitalise Kimberley.

The second proposal focused on the promotion of more transit-oriented development in Kimberley. Figure 15 illustrates that only 54% of the population believed that this proposal was feasible in Kimberley.

The following are some of the population's proposals for revitalising Kimberley through the 4IR:

- Entertainment and tourism for youths: People are social beings who like to be engaged. Kimberley currently offers no recreation or tourism-oriented opportunities focused on the social development of people aged 14 to 35. Younger generations leave because there is nothing to do in Kimberley, and salaries are low.
- Kimberley can be a smart city with all the necessary technology.
- Implement more green and recycling possibilities. Use the poor community for this and create work opportunities.

- Make Kimberley a distribution hub for several different industries due to its location.
- The old mine dumps in town can be removed or reused and become prime areas for property development.
- The revitalisation of the CBD to attract businesses will revive the inner city.

Three of the population's proposals are closely related to the first proposal regarding renewable energy, intelligent building techniques, and optimal development as aspects of the 4IR. The proposal to make Kimberley a logistical hub will significantly revitalise the area, but it remains a theoretical suggestion that requires substantial investigation.

In conclusion, the population confirmed that Kimberley is a declining mining town, with deindustrialisation and the depletion of natural resources contributing to its current state. They supported the idea that Kimberley could be revitalised and provided several suggestions on how this could be achieved. The population was presented with two 4IR revitalisation proposals, which significantly bolstered this notion. The findings also indicated that the population proposed utilising the 4IR to rejuvenate Kimberley.

Discussion

This research primarily relates to existing knowledge on declining towns (specifically declining mining towns), revitalising these towns, and the 4IR as a means to promote revitalisation. It examined the impact of revitalisation on gentrification. The findings indicate that 70% of the population agreed with the literature regarding the characteristics of a declining town, which include empty downtown areas, deteriorating neighbourhoods, and struggling families. Consequently, the research investigated the factors that contribute to Kimberley's decline, with 54% of the population identifying deindustrialisation as the main factor. The literature also acknowledges that deindustrialisation is one of the contributing factors to the decline of towns. Furthermore, it notes that during the apartheid era, gentrification occurred

as urban spaces were divided into racially segregated neighbourhoods, and explores how the 4IR may facilitate the integration of these groups. Ultimately, this research aimed to assess the potential of the 4IR to revitalise Kimberley as a declining mining town, while also focusing on the implications for gentrification.

The research aimed to introduce optimal building technology to contribute to Kimberley's renewable energy and green infrastructure and to explore how these interventions may facilitate gentrification. The findings indicated that Kimberley has experienced significant innovations throughout the various IR phases, alongside the closure of mines, including those owned by the De Beers Company, which has sold off these sites. Furthermore, 91% of the population believed that Kimberley is a declining mining town, although they also saw potential for revitalisation. Forty percent of respondents identified the need for new municipal leadership, while 20% emphasised the necessity of more integrated planning. This research focused on the new leadership of the municipality and the planning aspects highlighted by the population's responses to revitalise Kimberley. The most pertinent findings related to the municipality's need for new leadership to effectively plan and maintain the livelihoods of Kimberley's communities, as well as to restore old buildings, streets, and gardens, and incorporating more modernised systems and technology to promote renewable and green infrastructure.

Figure 16 illustrates a historical building in Kimberley that has the potential to be revitalised through 4IR interventions.

Figure 16: Historical Building in Kimberley. Source: Researchers' (2022) own photograph

The following section on interventions for buildings first focuses on the established older buildings and the newly constructed infrastructure that have the potential to contribute to renewable energy through 4IR interventions. It also discusses how these measures can combat gentrification in Kimberley that stem from the apartheid era.

Interventions for Buildings

Figure 16 indicates that there is limited scope for change to the front of the building. Nevertheless, this building faces south-west, which means that the west side receives afternoon sunlight. A proposed intervention is to install modern solar panel window covers on the front of the building, which can generate renewable energy. The architect appointed for this project will integrate these solar panels into the building's façade. Additionally, the roof can be covered with solar panels, and modifications can be made to the back of the building to allow northern sunlight to enter to provide natural light and heat. The interior can be transformed into a state-of-the-art

space with the latest 4IR innovations. Personal observations reveal that Kimberley's CBD has several old, vacant buildings that are deteriorating each year. These buildings can be revitalised through 4IR innovations to provide accommodation in the CBD for previously disadvantaged citizens. As Kimberley has limited space to construct new residential areas, revitalising old buildings into residential blocks will alleviate the pressure on the municipality to find new land parcels.

How will these old buildings be revitalised into residential blocks? Firstly, most of these buildings in the CBD are offices; a complete redesign will therefore be required to convert the interiors into residential units. Incorporating 4IR building technologies will ensure that the buildings are revitalised to be self-sustainable. Given the limited space, the roofs can be converted into eco-friendly recreation areas for families. This will address the revitalisation of existing buildings. The second part of the discussion focuses on newly constructed infrastructure that incorporates the 4IR.

Figure 17: Sol Plaatje University Buildings. Source: Researchers' (2022) own photographs

Figure 17 demonstrates the buildings of Sol Plaatje University in Kimberley, which began enrolling students in 2014, which means that these are all newly constructed buildings. Both photographs, taken from the western side, suggest that the developers missed an opportunity to incorporate renewable energy and green infrastructure into the design.

Firstly, regarding the western side of the building, although the windows are covered to mitigate the harsh western afternoon sun, the developers could have incorporated solar panels and covered the walls with them. This panel-covered design would have enhanced the university's modern infrastructure. Secondly, the photographs indicate that the roofs are utilised for renewable energy; however, they could have been covered with solar panels to enable the university to function off-grid. It is evident that the newly constructed infrastructure lacks the green infrastructure element.

Conclusion

This paper investigated the potential for revitalising the declining mining town of Kimberley through 4IR interventions. The findings concluded that while Kimberley remains a declining mining town with some operating mines, overall operations have diminished, especially following the closure of all De Beers mines in 2005, which have not reopened again. The research employed both primary data (an Internet survey of the Kimberley population) and secondary data (a literature review)

to explore the possibilities for revitalising Kimberley. Kimberley was classified as the capital of the Northern Cape province in 1994, which reinforces its status as a declining town rather than a ghost town.

The paper primarily focused on the revitalisation of buildings in Kimberley, encompassing both established and newly constructed structures. It aimed to introduce optimal building technology to enhance renewable energy and green infrastructure while combatting gentrification. The research identified one structure in Kimberley that can be revitalised using 4IR interventions, which can serve as an example for other established buildings that could benefit from the same approach. Additionally, the paper examined the newly established university in Kimberley, which opened in 2014 and has almost no renewable energy interventions. The proposal highlighted that the university, along with other newly established infrastructure, has significant potential to incorporate green infrastructure.

There are further research opportunities, as the population identified that the main idea behind revitalising Kimberley is to change the management structure, which could be explored from a political perspective.

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Exploring the Presence of Urban Informality in Botswana

Case of Backyard Renting in Mogoditshane, Greater Gaborone

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Abstract

This research reflects on the contribution of urban planning legislative and regulatory frameworks to the emergence and growth of informal backyard rental housing in Mogoditshane, Botswana. The existence of supportive planning legislation is central to the realisation of inclusive settlements and spatial justice. It has been concluded that Botswana's settlement planning legislation is elitist and exclusionary in nature and thus plays an important role in the creation of informal housing. Planning control measures, such as standards, procedures, and regulations, have been identified as contributing factors

that hinder the urban poor from affording decent housing or meeting planning requirements. The literature demonstrates that policies are not customised for local people, as they do not take into consideration their social, environmental, cultural, and economic needs. The investigation into the inclusiveness of Botswana's planning policy regarding adequate housing provision for the urban poor was conducted through a desktop analysis of planning policy and documents. Structured and semi-structured interviews were administered to Mogoditshane residents and planning experts to gain perspectives and in-depth information on the topic. The analysis demonstrated that informal backyard renting is prevalent in Mogoditshane and that the backrooms were not built according to planning standards and regulations. The results indicate that housing informality is present in Mogoditshane, mainly in the form of informal backyard rental rooms. The main recommendation is that planning policies should be customised to meet the housing needs of the local people.

Keywords: Housing informality, low-income, urban planning policy, regulatory framework.

Introduction

Urban planning has the potential to promote harmony and bridge the socio-economic divide through an equitable distribution of amenities. Supportive planning legislation and regulatory frameworks are integral to the realisation of inclusive settlements and spatial justice (Kalabamu, 2018, p. 55). However, Malope and Batisani (2008, p. 383) concluded that Botswana's settlement planning legislation is elitist and exclusionary in nature. Molebatsi and Morobolo (2019, p. 34) reiterate that the resulting urban landscapes tend to be elitist, consequently generating evictions and the displacement of city dwellers, especially the poor, as is the case in Botswana. There is currently significant growth in backyard informal rental housing in African cities (Turok, 2020, p. 112). Botswana has also experienced this unusual growth of backyard informal rental housing, particularly in established peri-urban villages such as Mogoditshane, rather than in free-standing shacks in

dispersed squatter settlements (Crankshaw et al., 2000, p. 841; Lemanski, 2009, p. 472). This phenomenon has long been an integral part of South African housing stock, especially for the low-income urban population (Turok, 2020, p. 4; Turok & Borel-Saladin, 2016, p. 1). Furthermore, the existence and popularity of informal backyard living contribute to inequality in various aspects of urban life. This research aimed to explore the contribution of planning legislation to the emergence of the backyard renting phenomenon in Mogoditshane, Botswana, and to determine if the conditions of backyard rooms meet the United Nations' (UN) requirements for decent housing. The study reviews literature on urban informality and the contribution of planning regulatory frameworks to urban informal housing before discussing the methods, study area, conclusion, and recommendations.

Informal backyard rentals are a common occurrence in Botswana's capital city of Gaborone, and the trend is rapidly gaining popularity in peripheral villages such as Mogoditshane. If this phenomenon is left unchecked, it could lead to overburdened infrastructure services (electricity, Internet, water supply, and sewerage), overcrowded neighbourhoods with squalid environments, and the breeding of social ills associated with informal neighbourhoods. It will also result in visible patterns of spatial injustice and social disparities that will create unpalatable and divided communities. Nonetheless, despite the popularity of room rentals and their growing contribution to housing supply, there are significant gaps in the understanding of backyard rental housing (Brueckner et al., 2019, p. 6). This emerging housing trend has not been thoroughly researched within the policy and regulatory framework, particularly in developing countries, including Botswana. Furthermore, there has been minimal investigation into the underlying socio-economic and neighbourhood dynamics, such as the importance of backyard renting in the lives of impoverished households and its role in the urban housing market (Turok, 2020, p. 1).

As a result, there is a need for further investigation into the subject to enhance the knowledge and accuracy of conclusions regarding this matter. Given the lack of extensive

literature on planning legislation and its contribution to the emergence of informal housing, particularly in Botswana, this study conducted a thorough investigation into the link between informal housing and planning regulatory frameworks. This research provides greater insight into the impact of urban planning policy and regulatory frameworks on the adequate provision of housing for low-income urban populations. Understanding the impact and contribution of planning regulations to the proliferation of informal housing will assist decision makers in making choices that simultaneously improve both the housing sector and quality of life . Additionally, it will help to close the spatial gap between city inhabitants and make cities more attractive and visually appealing by enhancing their landscapes.

Furthermore, it can serve as a source for further research into planning and its contribution to the emergence of informal backyard housing in Mogoditshane by providing context for interested scholars. The study reveals that the backyard rooms in Mogoditshane are informal, as they are not built according to the UN's requirements for decent housing, nor in accordance with Botswana's planning standards. This is due to the fact that Botswana's settlement planning regulatory frameworks are not inclusive. The general inclination is that the planning regulations do not accommodate all income groups, particularly the urban poor, since the regulations adopt a blanket approach. If a well-thought-out and effectively supportive planning regulatory framework is established, it will lead to the realisation of inclusive housing and spatial justice. The researchers accept and confirm this hypothesis based on the study's findings, which indicate that an inclusive and supportive framework will significantly help to alleviate the informal housing phenomenon and facilitate adequate housing provision.

Literature Review

Even though the housing rental market is prevalent in African cities, it is generally ignored by governments' spatial planning legislative frameworks, and information on rental housing is sparse.

The Informal Backyard Room Renting Sector

Backyard room renting refers to a situation in which formal homeowners build additional roomed outbuildings, either by formal or informal means, in their yards and rent them out to people or allow tenants to erect makeshift structures, such as shacks, and pay rent to the landlord. These backyard rentals can lead to slum-like conditions, where the building materials, density, location, legality, and/or access to services are inadequate (Brueckner et al., 2019, p. 1). This type of accommodation arrangement is mainly popular in low-income urban communities. Although the informal housing rental market has grown substantially in the Global South, it is frequently disregarded by government legislative frameworks, and information on informal rental housing is sparse. Consequently, this situation has contributed to the marginalisation of individuals in this demographic group (Gunter & Massey, 2017, p. 28). Nonetheless, it is important to note that, apart from planning legislation, other factors also contribute to the existence and persistence of informal housing. These include changing socio-demographic, economic, and social factors (Uğurlar & Özelçi Eceral, 2022, p. 1), inadequate building requirements, costly or oppressive regulations, and tenants' inability to pay high rents (Peppercorn & Taffin, 2023).

The Significance of Backyard Room Renting

Informal backyard rental accommodation is the fastest-growing sector of the housing market (Turok & Borel-Saladin, 2016, p. 11). Gilbert (2016, p. 173) points out that in African cities, millions of people rely on the backyard rental housing sector due to its adaptability and cost-effectiveness. The popularity of this form of housing arises from the fact that it is one of the few viable alternatives for marginalised households and groups, such as informal labourers, migrants, young professionals, and female-headed families (Scheba & Turok, 2020, p. 109). It also serves as a stopgap for low-income families and young professionals in need of accommodation. Similarly, this study found that Mogoditshane has a significant number of backyard rental room tenants, primarily youths and migrants from

neighbouring Zimbabwe. Some of the room rental properties contain a ratio of up to 95% migrant tenants.

While governments offer other subsidised alternatives to address the proliferation of urban housing needs, Lemanski (2009, p. 472) believes that backyard renting is the most popular housing option amid the prevailing housing shortage. This backyard rental choice often provides easier access to employment sites and facilities than new standalone informal communities or formal government housing schemes. It is therefore a preferable alternative to homeownership for young individuals. However, it is essential to recognise the instability and imminent changes in informal rental markets. For example, backyard rental dwellings in Cape Town are densifying and commercialising, resulting in higher-quality but more costly dwellings (Scheba & Turok, 2020, p. 114).

Rubin and Gardner (2013, p. 6) reiterate that the backyard rental industry was developed and grew in different countries in response to a lack of adequate housing near economic or social opportunity nodes such as places of employment, residential areas, schools, and other social facilities. Nonetheless, despite its growing contribution to the housing supply, there are significant gaps in the understanding of backyard rental housing (Brueckner et al., 2019, pp. 5-6). Brueckner et al. (2019, p. 5) also point out that backyard rentals, both informal and formal, have not been thoroughly researched in terms of their economic aspects, particularly in developing countries. Furthermore, there has been minimal investigation into the underlying socio-economic and neighbourhood dynamics, such as the significance of backyard renting in the lives of low-income urban households and its role in the urban housing market (Turok, 2020 p. 1).

The backyard housing sector clearly constitutes a significant component of the housing market. However, it is concerning that, despite its contribution to housing stock provision, backyard rentals nearly always violate the law (Turok & Borel-Saladin, 2016, p. 1). It is therefore imperative that a backyard renting scheme be adopted, as these options are part of both the current and future housing provision market.

For this reason, alternative backyard housing options must be developed to provide better living conditions for individuals, particularly since some are destined to live in them permanently. By and large, the informal rental market, with a focus on backyard rooms and houses, warrants further research, rethinking, reception, and ultimately, a reset.

The Purpose of the Urban Planning Regulatory Framework

The legislative and regulatory framework typically comprises laws that encompass diverse policies and legal and pseudo-legal instruments, which may include policy papers, legislation, by-laws, rules (planning, building, environment, etc.), procedures and practices (procurement, design, public works, financial, audit, etc.), and standards (products and services) (Bourton-on-Dunsmore et al., 2002, p. 2). In essence, urban planning frameworks are a collection of efforts intended to guide the lives of urban dwellers (Abd Elrahman & Asaad, 2021, p. 1663). They represent basic social agreements about how cities and towns will continue to be created and developed, as well as how their residents will interact with one another. As a result, regulatory frameworks have a substantial impact on overall development, specifically on planning, zoning, mobility, land use and plot development, space requirements, infrastructural services and delivery, and land management and administration (Payne & Majale, 2012). Effective urban legislation is therefore a necessary foundation for long-term growth in all its aspects (economic, spatial, environmental, etc.).

In essence, the outcome of spatial developments in a city or town is heavily influenced by urban planning legislation and regulatory frameworks. Inefficient or impractical policy and regulatory schemes can constrain progress in socio-spatial justice (Irazabal, 2021, p. 151). Conversely, a functional regulatory and legislative system can yield positive effects in advancing socio-spatial justice. A high-quality urban planning legislative framework and policy combine official expertise with local relevance, culture, environment, and context to efficiently execute its specified duties (Xanthaki, 2013, p. 59). In contrast, incompatible, outdated, or ineffective urban planning rules and

regulations contribute to socio-spatial inequality. This is due to the fact that they may not be aligned and/or may impose limitations on connections between resources, abilities, and backgrounds that could provide opportunities for all social and economic classes. Consequently, these frameworks are unable to manage continuous urban transitions or anticipate present and future issues. They also maintain the socio-economic status quo and the power of self-perpetuating elites (Xanthaki, 2014, p. 3; 2013, p. 19). Furthermore, they deny millions of people the genuine enjoyment of their fundamental human rights, such as access to adequate housing and land rights (Xanthaki, 2013, p. 59).

The Significance of an Urban Planning Regulatory Framework in Urban Housing Informality

When discussing urban housing informality, it is imperative to include planning policies and their contribution to the prevalence of housing informality in African cities. The causes of urban planning dysfunction must be addressed to enable effective planning development, especially in the Global South. Sustainable urban planning and design are thus required to mitigate causes of segregation and exclusion, such as a lack of a sustainable spatial environment and suitable housing for the urban poor (Kalabamu, 2018, p. 56). Nevertheless, developing-world governments have established various paradigms, policies, programmes, and projects intended to combat the proliferation of informal housing and settlements while alleviating the urban housing crisis, which is a major breeding ground for informal housing (Nassar & Elsayed, 2018). These strategies include a variety of initiatives, such as low-cost housing, sites and services, redevelopment, and slum improvement. However, none of these approaches have been able to resolve environmental quality and housing demands on a larger and more sustainable scale (Wakely, 2014, p. 1). Meanwhile, in response to this unsustainable and inadequate land transformation system, individuals have formed self-planned settlements or informal housing.

According to Ikgopoleng and Cavric (2007, p. 35), Botswana's Self Help Housing Agency (SHHA), specifically designed for the urban low-income bracket, had a limited impact on the provision of housing for these groups. The low impact of the programme was attributed to a lack of serviced land, issues with cost recovery, and the failure of beneficiaries to repay the loans. Furthermore, this may indicate that the planning regulatory framework for self-help housing was not adequately aligned with the needs of the beneficiaries.

The programme may have been effective in its initial stages, as beneficiaries were able to retain their plots, secure funding, build homes, and subsequently repay their loans on a reasonable schedule. However, circumstances may have changed regarding spatial and domain trends. There is spatial evidence that SHHA plots are being sold to and owned by middle-class residents who are building larger houses. This could suggest that the planning legislative framework has not kept pace with changing circumstances, or that it was never suitable for the specific group it was intended to serve, which led to its decline over time.

There is thus a need to include housing provisions for the urban poor in policies, particularly for those who fall below the stipulated income threshold (Nkwae & Dumba, 2010, p. 372). This income group typically cannot access building loans from financial institutions (Kampamba et al., 2018, p. 361). Consequently, it is essential to explore other policy and regulatory options that may enhance accessibility and affordability for the urban poor, such as rental tenure and subsidies (Nkwae & Dumba, 2010, p. 372). This is where backyard rental options could be investigated and improved for adoption.

According to Debrunner and Hartmann (2020), minimal inquiry and emphasis have been directed towards the potential influence that planning regulatory frameworks have on urban housing markets, as well as on the capacity of low-income residents to access formal housing and the increase of informal housing. This is the gap that this research intended to bridge.

Due to the isolated link between informality and planning policy or regulation, informal housing has long been managed reactively through uniform housing policies and programmes (Nassar & Elsayed, 2018, p. 2368). This paradigm and approach have contributed little to the overall urban quality of life and failed to prevent the spread of informal housing.

Regulatory frameworks currently have a negative impact on low-income urban communities, which adversely affects their livelihoods for various reasons (Payne & Majale, 2012, p. 25; Schilderman & Lowe, 2002, p. 2). These include regulations that prohibit developments that meet the needs and budgets of the urban poor, as uniform regulations can be burdensome and may lead to more resistance than compliance (Payne, 2001). The regulations also impose strict and incompatible planning and building standards, such as large minimum plot sizes, house sizes, zoning compatibility, density restrictions, and height restrictions. This can result in the low-income urban population being unable to afford the development of formal housing that meets the stipulated criteria. Furthermore, regulations may prevent the poor from earning a living in residential areas, as the standards are seldom cost-related and often expensive for them. Additionally, procedures can be time-consuming and costly.

According to Kalabamu (2018, p. 76), Botswana's urban planning regulatory framework, in its current form, does not adequately address the provision of housing. Furthermore, Kalabamu (2018, p. 56) states that an analysis of Botswana's planning legislation remains centralised, with minimal opportunities for direct participation by urban inhabitants. Active participation is further compromised by the technocratic nature of the planning system. It is noted that planning documents are written not only in technical language but also in English, which makes them less accessible to the general public (Kalabamu, 2018, p. 56). This issue of incomprehensible language and terminology was evident during data collection for this research with residents of Mogoditshane. When questions were posed to the residents using seemingly simple planning terminology, such as "planning regulations", "building

regulations", and "building permission", there was a clear lack of understanding of their meanings. Consequently, there was a need to switch to Setswana for better comprehension.

Furthermore, the existing planning regulatory framework excludes indigenous/non-capitalistic and informal sectors, which results in adverse regulations. This exclusion has significant consequences for the physical, economic, social, and technical conditions of underprivileged groups. Domaradzka (2018, p. 609) reiterates that to achieve inclusivity and related rights and benefits in the city, the participation of urban inhabitants in all decisions that affect the production of urban space is critical. Additionally, there is a pressing need for mutual understanding and interpretation of the regulatory frameworks among inhabitants, so that their participation and input can be meaningful and serve as tools for the improvement of their lives.

Research Objectives and Questions

Main Objective

This research was conducted to explore the extent to which Botswana's settlement planning legislative and regulatory framework is inclusive, and to determine whether it contributes to the emergence of informal housing and backyard room renting in Greater Gaborone (Mogoditshane), Botswana.

Sub-Research Objectives

- Explore the contribution of the planning legislative and regulatory framework to the emergence of informal housing/backyard renting in Mogoditshane, Botswana.
- Assess whether Botswana's planning landscape has been localised to cater to its population's needs with regard to the provision of adequate housing.
- Identify the specific issues that could be attributed to planning systems concerning inadequate housing provision for the urban poor and the emergence of informal housing.

- Propose recommendations in planning policy towards the provision of adequate housing for the urban poor and reduce the emergence of informal backyard housing in Mogoditshane, Botswana.

Methods

Given the nature of the research, qualitative methods were adopted to collect primary data for this study. Information was gathered from participants, including planning academics, government officials, and private planning professionals, through semi-structured interviews. Structured interviews were also conducted with residents of Mogoditshane. The concept of saturation was used to determine the number of interviews required. Additionally, document analysis and observation were employed to gather further information for the study.

Study Area (Mogoditshane)

A case study approach was adopted to assess the contribution of planning to the emergence of informal housing in urban areas. Mogoditshane, located on the periphery of Gaborone, was chosen as the study area. Before Botswana's independence in 1966, Mogoditshane was a small village with a population of less than 4 000 (Kalabamu, 2014, p. 18). However, this population more than doubled to 14 246 in 2001 and reached 58 079 in the 2011 National Census Report (Republic of Botswana, 2011, p. 12). The village continues to grow rapidly, having been identified as the highest populated village in Botswana in the preliminary results of the Population and Housing Census (Republic of Botswana, 2022, p. 8), with a current population of 88 098 inhabitants and a growth rate of 4.0%. Mogoditshane is now an extension of the capital city, Gaborone, which has a current population of 244 107 (Republic of Botswana, 2022, p. 8). The two settlements have physically merged into one continuous urbanised area referred to by the Botswana National Spatial Plan 2036 (Republic of Botswana, 2018, p. 109) as the Gaborone/Mogoditshane/Tlokweng Built-Up Area. While the merging of these three entities provides a platform for a common planning

process and strategy, the settlements will retain their distinct identities and administrative governance (Republic of Botswana, 2018, p. 109).

In the case of Mogoditshane, informal housing should not be equated with slums, which are defined by the Oxford English Dictionary (2025) as a "squalid and congested urban street or neighbourhood populated by very poor people". According to Kalabamu (2006, p. 227), within the informal housing of Mogoditshane, some individuals are ranked among the highest income brackets in society; a mix of affluent and poor people therefore live side by side. Furthermore, the majority of Mogoditshane's urban poor, particularly the youth, meet their housing needs through room renting, which involves multiple households renting one or two rooms in a single house or the backyard (Kalabamu, 2006, p. 226).

Data Analysis

The data collection was divided into two main parts. Firstly, secondary data were collected from literature reviews and documents from the Department of Town and Country Planning, as well as the Department of Housing. This included urban planning legislation and policies such as the revised Development Control Code 2013; the Mogoditshane, Gabane, Metsimotlhabe, and Mmopane Development Plan (2001–2025); and the Town and Country Planning Act of 2013. Secondly, primary data were collected via interviews with key informants. Semi-structured interviews were conducted with planning experts from different sectors, alongside structured interviews with residents of Mogoditshane. Observations made during this process were also valuable. To understand the participants' experiences and to address the main research question, both semi-structured and structured interview data were interpreted using a coding or framework analysis approach. This form of thematic analysis provides researchers with a systematic structure for managing and analysing information, which allows for the deduction and organisation of codes into categories (Goldsmith, 2021, p. 2061). Other facets of the research topic were also analysed; discussions thus include data from the

interviews and descriptions that drew inferences based on document analysis, informant information, and images obtained during the observation sessions. The rationale for conducting both semi-structured and structured interviews was grounded in a purposive sampling technique, which involved a total of 27 participants. Research findings were obtained from structured interviews administered to 18 residents of Mogoditshane and semi-structured interviews administered to nine urban planning professionals from different organisations.

Discussion and Analysis

The study aimed to identify the specific issues related to planning systems that contribute to inadequate housing provision for the urban poor and the emergence of informal housing in Botswana. Extracts from the interviews indicate that urban policies are not entirely inclusive. One reason for the lack of policy inclusivity is that Botswana's planning standards and regulations adopt a blanket approach. Furthermore, there are no standards that are designed to facilitate access for the poor, which makes it difficult for them to meet the often expensive requirements.

The research confirmed that some of the backrooms in Mogoditshane are not constructed according to planning standards and regulations. Several factors contribute to the contravention of these standards, including residents claiming ignorance of the planning requirements. There is also a perception that planning processes are costly as they involve expenses for designs, architectural services, and related consultancies. Furthermore, planning requirements restrict them from fully densifying the plot without changing the use to multi-residential (with only one outbuilding allowed), which poses a limitation for landlords. As a result, they often choose to build outside the established regulations to maximise their profits.

The results of the literature review, along with interviews with experts and residents, reveal that informal backyard renting is popular in Mogoditshane. The majority of tenants

in Mogoditshane are aged between 19 and 35 years, with an average of three people per household. This trend is largely due to the affordability of rooms for low-income urban groups, particularly for those engaged in small businesses and working in and around the capital city of Gaborone. Another reason for the prevalence of rental rooms is that they provide a significant source of income for landlords. Specifically, backyard renting has become a means for plot owners in Mogoditshane to maximise their space by constructing rooms for rent to earn a living.

However, while renting serves as a source of shelter for various individuals, there are downsides; landlords may exploit poor and vulnerable tenants by charging high rents for crowded and substandard housing.

The results above raise concern, as rental informality in Mogoditshane is common, yet the informal housing sector in Botswana is not openly embraced. This study therefore aimed to stimulate discussion around the informal backyard renting sector and encourage further research on the phenomenon.

Recommendations

Based on the conclusions drawn from the findings of the study, this research makes several recommendations for the future improvement of decent housing provision in Mogoditshane through inclusive planning policies by the responsible institutions.

Government Urban/Town Planners

The relevant government authorities, i.e., local councils, should emphasise the need for stronger enforcement of regulations so that residents do not feel that non-compliance bears no immediate penalties. Designated members from the local community could be trained and employed to monitor building activities and to report non-conforming practices to the Land Board and the City Council.

As it stands, backyard renting needs to be integrated into the official housing system for African governments, including Botswana's Mogoditshane. According to Lategan and Cilliers (2013), the backyard rental industry delivers significant advantages by providing shelter to hundreds of thousands, if not millions, of South Africans who would otherwise be forced to live in shanty townships while waiting for local government-subsidised housing. However, even though informal backyard rentals encourage compact development, which combats urban sprawl and affords low-income urban individuals some shelter, the sector is not sustainable in its current form (Lategan & Cilliers, 2013). Backyard renting therefore needs to be regulated, protected, serviced, and managed if social, economic, environmental, and spatial sustainability is to be established.

For existing backyard renting, especially in densely populated areas, rehabilitation should be prioritised over demolition. A working example can be drawn from South Africa, where strategies to address the issue of Cape Town's backyard renters can be traced back to 2010. At that time, the city's Department of Housing Policy and Research was tasked with conducting further research into the sector and identifying potential reform measures (Fieuw & Mitlin, 2018, pp. 215-217; Grady et al., 2019, pp. 6-9). The services provided include an additional enclosed flush toilet, running water, a prepaid electricity meter for up to three backyard families, and one additional refuse bin (Grady et al., 2019, pp. 6-9).

The ministry responsible for housing (i.e., the Ministry of Lands and Water Affairs and the Department of Housing) should formulate a recognised formal policy for backyard renting in Mogoditshane. This will serve to legitimise the role of backyard renting in the housing supply system and also dedicate funding instruments to support the sector. Three major aspects could be included in the policy to improve housing affordability in Mogoditshane, namely reforming land use regulations to allow smaller plot sizes and more compact housing; expanding housing subsidies for the lowest-income households; and relaxing some of the building requirements, specifically adapting them for lower-income earners, as regulatory frameworks

impact various groups differently (Payne & Majale, 2012). As noted by Payne and Majale (2012) and Payne (2001), significant costs, both monetary and non-monetary, are associated with complying with regulatory frameworks. Uniform regulatory charges impose an unjustified burden on the poor, which results in more resistance than compliance with regulations.

The Department of Town and Country Planning can develop local plans that recognise the specific needs and aspirations of the low-income urban population in Mogoditshane. Efforts should be made to relax, simplify, and streamline laws and regulatory procedures to reduce their complexity, costs, and restrictive conditions associated with formalisation.

Furthermore, local government authorities, i.e., city/town councils, should set out to educate the people in Mogoditshane regarding building regulations and the planning process to create awareness and emphasise their importance. Guidelines, templates, and handbooks about better building practices could be developed in both local and official languages and provided at no cost to landowners in the community. These could be accompanied by information sheets about the process of submitting building plans and the benefits of obtaining land use approval.

The above will help to formalise and eliminate some of the socio-economic and environmental issues related to inadequate housing. According to Duminy (2011), modern planning is preoccupied with the unrealistic image of an officially organised and regulated city or town, which leads to despair for those who are living in condemned informal settlements. Backyard rental policy should therefore primarily recognise and embrace the backyard phenomenon. Furthermore, it should ensure that rental housing in designated areas remains affordable for low-income earners over the long term, with Mogoditshane being one such place where backyard renting is already prevalent.

Residents and Landlords

The residents and landlords of Mogoditshane should be fully involved in the process of formulating regulations to enhance inclusivity through consultations with policymakers. This practice will enable the inhabitants of Mogoditshane to express their local needs, which will enable the responsible entities to understand issues as they exist on the ground. In turn, this will assist officials in developing effective solutions based on accurate real-time data and concerns. This notion is supported by Kalabamu (2018, p. 56) and Douglas (2013), who explain that inclusivity and the related calls for the right to the city are predicated on the direct participation of urban inhabitants in all decisions that affect the production of urban space.

Conclusion

This research aimed to explore the extent to which Botswana's settlement planning policies are inclusive and to determine whether urban planning legislation and the regulatory framework contribute to the emergence of informal settlements and backyard room renting in Mogoditshane, Greater Gaborone, Botswana. The research findings revealed numerous factors that drive backyard room renting in Mogoditshane. Based on the qualitative analysis adopted in this study during data collection, it can be concluded that there is indeed housing informality manifesting in the form of backyard rentals, also known as rooming, in Mogoditshane.

There is a general assertion among built environment experts, including urban and town planners, that Botswana's planning legislation and regulatory framework are elitist and exclusionary. This suggests that the planning policies primarily cater to and favour the upper working class in terms of their requirements while excluding low-income earners. The study established that meeting the building and planning requirements is cumbersome, time-consuming, and very expensive. Consequently, low-income earners cannot afford to build or own houses; instead, they opt for low-income rentals on the outskirts of Gaborone. The high demand for

rented rooms in peri-urban areas such as Mogoditshane has also had a ripple effect on the quality of housing available to the needy population. The standards for these rooms are low, and the majority are constructed without permission from the relevant authorities.

There is also a general lack of enforcement of regulations, which leads residents to feel that non-compliance bears no immediate penalties. It is apparent that the backyard rental phenomenon has become a very lucrative cash-generating business for plot owners in Mogoditshane. Without proper measures to control the situation, Mogoditshane may soon become an informal settlement.

In conclusion, having taken into consideration different factors, it is clear that housing informality exists in Mogoditshane in the form of backyard rentals. The research revealed a need to closely monitor the backyard renting market in Mogoditshane and to develop specific strict management measures before the village transforms into an informal settlement. This can be achieved by addressing the loopholes in the legislation and regulatory framework. Moreover, to achieve this, policymakers need to understand and acknowledge the impact and contribution of planning policies to the proliferation of this informal housing.

This research makes a significant contribution through its in-depth analytical techniques to understanding the extent to which Botswana's urban planning legislation and regulatory framework influence the emergence of informal rented housing in Mogoditshane, Botswana. Although it presents several important arguments, they are not exhaustive, which highlights a crucial gap that necessitates further investigation. The foundation established by this study creates an enabling environment for additional inquiries into other aspects that may have been overlooked. Furthermore, it was noted during the data-collection period that there is a lack of studies on this topic, specifically regarding Botswana and Mogoditshane. This suggests that in order to better understand the implications of

these findings, future research should be conducted to validate this study's results and expand on its conclusions.

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State Demolition and Forced Eviction as Flood Vulnerability Management in Accra, Ghana

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Abstract

Accra, Ghana, has experienced devastating floods over the last two decades. Between 2001 and 2015, floods resulted in the deaths of over 250 people, displaced 178 750 individuals, and destroyed more than $50 million worth of informal livelihoods. The most affected residents are those who live in slums and informal communities. The urban authorities have restricted their approach to demolishing affected buildings, evicting flood victims, and distributing relief items. This study explores the rather hostile strategies adopted by city authorities in addressing flood vulnerability among residents of informal communities. Using qualitative methods, including community focus group discussions and interviews with flood victims, key informants, community leaders, and officials from relevant metropolitan institutions, the study reveals the diverse socio-economic implications of demolition and forced eviction as the state's flood management strategy. Humanitarian and socio-culturally acceptable flood management approaches are proposed.

Keywords: Urban informality, flood vulnerabilities, urban governance, flood management approaches, forced eviction, demolition.

Introduction

Urban flooding is a major challenge in growing cities in the developing world (Jha et al., 2012). Its devastation, in terms of the displacement of households and destruction of livelihoods, infrastructure, and human life, has been extensively studied (Lamond et al., 2011). In African cities, flood events are often associated with informal communities (Douglas et al., 2008; Amoako, 2016; Amoako & Inkoom, 2017; Amoako & Frimpong Boamah, 2020). Low-income areas significantly impact their residents, who typically live in precarious conditions without tenure security, lack access to flood insurance schemes, and have inadequate basic household facilities. Consequently, scholarship on urban informality and flood vulnerability in African cities has treated the two themes as directly related. In Ghana, there is a relationship between flooding vulnerability and urban informality. Urban flooding and informality appear to have led city authorities to resort to hostilities and the brutal forced eviction of residents from flood-affected informal communities, premised on the belief that they are occupying waterways (Poku-Boansi et al., 2020).

Using selected cases of flood events in Accra's informal communities, the main objective of this study was to explore the state's adoption of forced removals and the demolition of houses and structures in informal settlements and slums as the primary flood management approach. This study is situated upon three main conceptual pillars: informality, flood vulnerability, and urban governance. The interactions of these conceptual pillars produce various outcomes that can explain flood management in informal communities in Africa, particularly in Ghana.

The paper is structured into four sections. The first section sets the context for the study, followed by a framework that describes informality, flood vulnerability, and urban governance. This section also outlines the methodology adopted

for the study. The third section presents the findings and discussion of the study. The final section concludes the paper and proposes recommendations based on the study.

Informality, Flood Vulnerability, and Urban Governance

City authorities and the urban land use planning process in the Global South view urban informality as a nuisance (Watson, 2009; Roy, 2011). In African cities, urban informality was first explored by Keith Hart in the early 1970s when he distinguished between the informal and formal sectors, along with their "legitimacies" and "illegitimacies" in the postcolonial emergent urban economy of Accra, Ghana (Hart, 1973). Since then, urban research across cities in the Global South has employed the concept of informality and its associated terminologies. For instance, Porter (2011) and Roy (2011) view informality as a manifestation of "illegal" and "unrecognised" urban spaces where residents live and work outside urban laws, with no or ambiguous property rights and no tenure security. Consequently, most of their daily transactions are unregulated, expensive, and perceived as corrupt.

Due to its negative connotation, informality has been described using derogatory terms such as "subaltern urbanism", "peripheries", "unplannable", "zones of exception", and "grey spaces" (Alsayyad & Roy, 2004; Roy, 2005; 2011). These terms are employed to denote urban poverty, inequality, lack of infrastructure, and legality of tenure in urban spaces (De Soto, 1989; 2000). For instance, Dovey and King (2011, p. 11) refer to terms such as "squatter", "slum", or "informal" housing or settlements to illustrate the problematic and negative connotations associated with urban informality in developing countries. Although these terminologies may not represent the same manifestations, they all carry negative implications for urban life. For example, while "squatter" settlements lack security of tenure, "slums" imply a lack of space, household utilities, and services, and "informal" refers to settlements and activities outside the urban planning and regulatory framework

(Dovey & King, 2011, p. 11). By their definitions, informality and informal settlements in developing countries are linked to physical and socio-economic vulnerabilities (Satterthwaite et al., 2007; Gencer, 2013).

The apparent relationship between the occurrence of flood hazards and their impacts on poor urban households in slums was investigated by Amoako and Inkoom (2017). Much earlier, the Intergovernmental Panel on Climate Change (2001, p. 13) stated that "squatter and other informal settlements with high population densities, poor shelter, little or no access to safe water, sanitation and public health services, and low adaptive capacity are highly vulnerable" to environmental hazards, including flooding.

According to Few (2003) and Jha et al. (2013), there are three levels of connection between urban informality and flood vulnerability hazards in cities of developing countries. Firstly, urban poor slum dwellers tend to occupy more flood-prone environments with unclear tenure systems. Sites such as low-lying marginal lands and riverbanks, which are avoided by high- and middle-class urban dwellers, are settled by rural-urban migrants due to the availability and proximity to their sources of livelihood. Secondly, because of city authorities' disapproval of their locations, such informal settlements are rarely provided with the necessary infrastructure and services. Coupled with their poor housing conditions and environments, these settlements are vulnerable to flood hazards. The first two points expose and increase the vulnerability of residents in urban informal settlements to flood hazards, which makes them more susceptible than wealthy urban residents. Urban floods affect cities in both developed and developing countries; however, their impacts are disproportionately greater on the urban poor, the marginalised, and socially disadvantaged communities (Action Aid, 2006). Poor housing structures and a lack of municipal infrastructure and urban services create new hazards for residents of informal settlements, while also reducing their capacity to respond during flood disasters (Gencer, 2013, pp. 17-18). For example, where there are inadequate waste disposal facilities, residents dispose of their solid waste in riverbeds

and other wetlands, which leads to the outbreak of waterborne diseases after flood events.

Ironically, current urban governance practices in cities of the developing world often treat urban residents in informal communities with hostility, neglect, or patronage (Amoako, 2016; Poku-Boansi et al., 2020). These residents are subject to forced evictions, involuntary relocation, and the demolition of their properties (Mohindra & Schrecker, 2012; Poku-Boansi et al., 2020). Amoako (2016) argues that these brutal approaches to urban governance arise from the perception that informal settlements and communities are generally illegal and should therefore be removed from the urban fabric to ensure order, beauty, and proper functionality (Poku-Boansi et al., 2020). This harsh stance of city authorities in the developing world shapes emerging urban governance and the management of floods and other hazards in low-income and informal communities (Amoako, 2016).

The framework of urban governance presented above highlights two key points of connection with informality and vulnerability. Firstly, the urban state's neglect of informal communities, without the provision of necessary infrastructure, proper land use plans, and zoning guidelines, gradually deepens informality and makes it a central part of the city (Amoako & Inkoom, 2017). Many proposed state lands, such as open spaces, Ramsar sites, and wetlands, remain undeveloped and unmanaged, allowing for the gradual occupation by residents and the eventual development of informal and flood-vulnerable communities (Douglas et al., 2008; Gencer, 2013). Secondly, the state's hostile treatment of residents in informal communities through forced eviction and involuntary relocation makes them more vulnerable to illegal land occupation. Typically, three main reasons are cited for the state's forced evictions: city beautification programmes; the perception of slums as centres of crime, hazards, and health problems; and redevelopment for public projects. In most cases, these projects are either not initiated after the evictions or, if started, are abandoned along the way. Such failures in forced eviction and redevelopment programmes often lead to increased deprivation

or marginalisation, and transfer the problems of poverty and informality to other locations without the provision of municipal infrastructure and disrupting kinship ties.

From the conceptual inter-relationships among informality, flood vulnerability, and urban governance presented in the foregoing review, this study employed a conceptual framework that connects the three pillars to explain flood management in Accra, Ghana (see Figure 1). In Figure 1, we argue that urban land use planning is driven by urban governance, and that both must address informality and flooding issues (Amoako, 2016; Amoako & Inkoom, 2017; Poku-Boansi et al., 2020). This study adopted Figure 1 as its conceptual framework. In doing so, it posits that the processes of informal urbanisation in flood-prone communities in Accra give rise to various forms of vulnerability. Over the last four decades, residents have engaged with state and urban governments in three main ways: through attempts at forced evictions, a lack of infrastructure provision, and the politics of convenience during electoral campaigns. These residents have responded according to the approach adopted by the state. For instance, when faced with forced evictions, they resist by leveraging experiences, socio-political alliances (both internal and external), and various forms of confrontation (Cobbinah & Darkwah, 2017).

If neglected, they rely on cheap infrastructure and household facilities suitable for their conditions. The preceding framework explains the political economy of flood vulnerability. Accra's informal communities have faced state demolition and forced eviction, which have shaped their circumstances over the past four decades. In this context, Figure 1 illustrates the dynamics of these informal communities in terms of building their resilience against forced evictions and flooding within a broader framework of informal urbanisation.

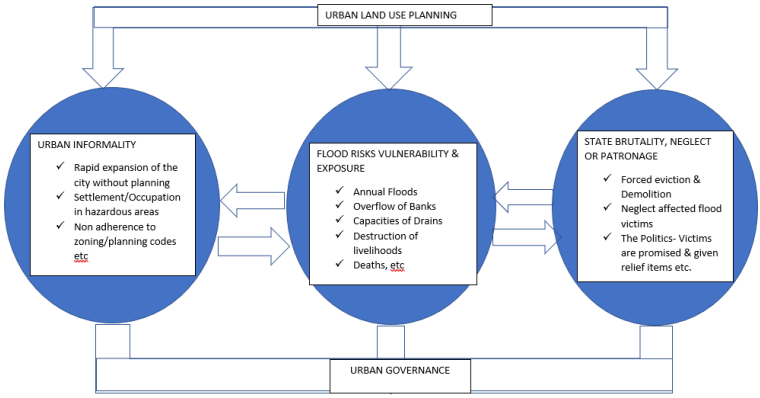

Figure 1: Production of Informality, Flood Vulnerability, and Urban State Interventions. Source: Authors' own construct (2022)

Study Context, Approach, and Methods

The study adopted a case study design, with the Greater Accra Metropolitan Area (GAMA) as the primary case (see Figure 2). Figure 2 illustrates the GAMA and the study communities. To gain an in-depth understanding of the state's flood interventions in the city, seven informal communities and slums were purposively selected, namely Ashaiman, Sakumono, Kpeshie, Mensah Guinea, Old Fadama, Agbogbloshie, and Weija. Figure 2 indicates that the GAMA is larger than Accra, which is Ghana's capital. The area encompasses adjoining municipalities around Tema to the east and Kasoa to the west (see Figure 2). It is low-lying along the coastline of Ghana and is described by Dasgupta et al. (2021) as vulnerable to local and flash floods, coastal inundation, and storm surges due to sea level rise. The metropolis is also noted for the displacement of families, neighbourhoods, and communities resulting from flood events. For example, the displacement of 43 000 persons on 26 October 2011 was unprecedented in the history of Ghana at that time (United Nations Environment Programme & Office for the Coordination of Humanitarian Affairs, 2011).

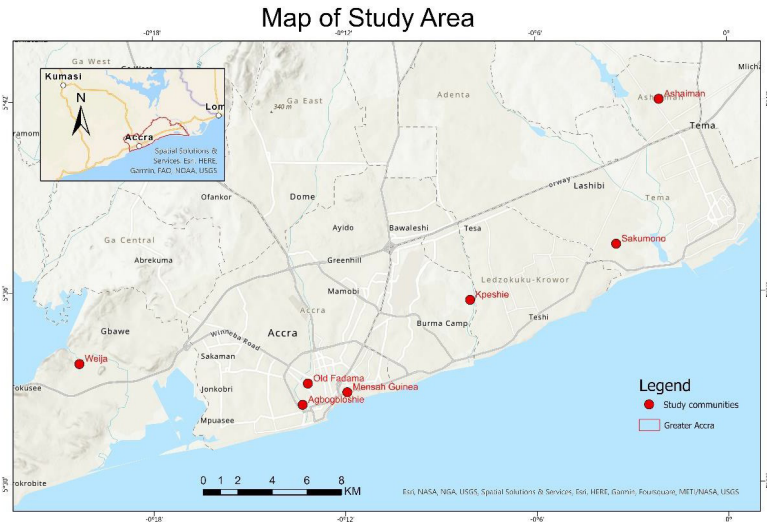

Figure 2: Greater Accra Metropolitan Area (GAMA) With Study Communities. Source: Authors (2022)

The Accra plains and its surrounding communities have been experiencing flooding since 1939 (Karley, 2009). The most recent flood devastation occurred in June 2015, which resulted in the deaths of over 150 people and injuring 60 (United Nations Country Team Ghana, 2015). Over the last 15 years, the metropolis has faced some of the worst flood events. For instance, between 2001 and 2015, flood hazards killed over 250 individuals and displaced approximately 178 750 people. During the same period, more than 75 000 informal livelihoods were destroyed, amounting to approximately US$50 million (Amoako & Frimpong Boamah, 2015). Karley (2009) estimates that the annual value of assets destroyed in Accra due to flood events exceeds US$6 million. For a city in a developing country, these figures are alarming.

In line with exploratory research, a case study design was adopted for the study, and multiple qualitative methods were used to gather and analyse evidence from different sources (Yin, 2018). These methods included the review of relevant documents, institutional consultations, interviews with

officials, interviews with key informants, informal interactions with purposively selected households affected by floods and forced eviction, focus group discussions, and physical field observations. Ten documents on urban flooding were reviewed to identify and understand the concepts, contexts, and existing works on urban flooding and state intervention options. A total of 251 respondents were engaged using various data-collection methods, as shown in Table 1.

Table 1: Data-Collection Methods and Selected Respondents

Institutional consultation	Twenty-five officials from 10 institutions: Land Use and Spatial Planning Authority; Meteorological Authority; Environmental Protection Agency; Hydrological Services Department; Metropolitan Spatial Planning Offices; National Disaster Management Organisation (NADMO), etc.
Key informants	Sixteen households: landowners, community leaders, and leaders of local churches and community groups.
Households	Seventy households affected by floods; 10 households each from the seven communities.
Focus group discussions	Fourteen focus groups: two in each community, with an average of five participants per section. Total of 140 people.

The multiple data collected through the methods presented above were analysed using a network of analytical frameworks, including content analysis, thematic discussions, and narrative presentation.

Evolution, Context of Vulnerability, and Posture of the State

In setting the context for the discussion, this section first describes the evolution of selected slum communities. The intricate interactions that establish the settings of vulnerability in these study communities, due to their unchecked growth in flood-prone zones, have substantially impacted and influenced their emergence and development. Three distinct scenarios regarding informality and flood susceptibility can be offered based on their historical developments, politics of space, settings of informal urbanisation, and locations in hazardous

zones. The first section outlines the contextual profile of the selected communities. Thereafter, the contribution and ongoing role of the state in creating and sustaining these communities are presented.

Mensah Guinea: Mensah Guinea, an indigenous Ga town from the late 18th century, is located between the old township of Ga Mashie and the beach area, as well as the township of Osu. This in-between location was undeveloped but attractive due to its good fishing waters. The area is unplanned, with haphazard buildings and poor drains, and is described as a slummy place (Fält, 2016). It is often associated with various vulnerabilities; ranging from poor sanitation conditions to high crime rates and social vices such as stealing, rape, and prostitution. The close proximity to the sea also exposes the community to frequent flooding. Since independence, the local government of Accra has issued building permits for several houses used for residential and fishing activities in the area. Despite being granted building permits, residents face the constant threat of eviction by the Accra Municipal Assembly (AMA). There is also an assemblyman who represents the community at the local government level. In September 2014, the Mensah Guinea slum was demolished on the pretext of being a hub for cholera outbreaks, after residents were given three days' notice of eviction. The availability of a Guinea permit provided by the AMA could not prevent the demolition of the slum.

Sakumono: The Sakumono Ramsar site is a wetland acquired by the government in 1991 to protect neighbouring towns, such as Tema and its environs, from pollution and flooding. It covers an area of approximately 3 500 acres along the coastal road between Accra and Tema. The land was acquired by the government, and following its failure to use it for the intended purpose, it has experienced encroachment. The traditional leaders' quest to have the land handed over to them has not been successful, although people who have no rights to these areas are using it for recreational and residential purposes. The area consists of wooden shacks with few concrete houses, and there are no drainage or sanitation facilities for residents. Since the encroachment of the site, neither the

Municipal Assembly, the Council for Scientific and Industrial Research, nor the Wildlife/Forestry Commission has made any effort to stop it. Some residents claim to have purchased the land and have documents to that effect, while the municipal chief executive of Tema West also claims that over 4 000 houses do not have permits. The area was inspected on 7 July 2022, and on 8 July 2022, the mayor of Accra announced that houses along the stretch would be demolished.

Kpeshie: La, a peri-urban township in Accra, Ghana, is where Kpeshie is located. It contains sand hills, open lagoons, marshy lands, and scrublands, with a catchment area of around 110 km's that periodically flows into the Atlantic Ocean. The lagoon is situated on a low-lying plain, which creates a marshy zone between the Teshie Rasta Road corridor to the east and the Ghana International Trade Fair corridor to the west. The lagoon has four wetlands with different inlets; three of these inlets have been encroached upon and polluted. Residents have filled the area with concrete and constructed their houses there. There are no proper drains in the catchment area. Like other encroached areas, it is denied basic facilities, which results in an unhygienic environment. The pollution of the inlets has created breeding grounds for mosquitoes, which led to malaria and other illnesses among residents. At the local government level, there is an elected Assembly member for the area, and building permits have been issued by the Assembly. The Assembly published a notice requesting permission from a developer to develop the already encroached area instead of maintaining it as an ecologically sensitive zone.

Ashaiman: The development of Ghana's port and industrial metropolis in the 1950s served as the catalyst for the expansion of Ashaiman, which is approximately 5 km away from Tema. Old residents of Tema were relocated to Ashaiman as part of a compensation package from the government. However, non-natives (migrants) who were already residing on the property were not included in this resettlement. Instead, in Ashaiman (then a tiny fishing community), they were given small plots of land to construct their own homes. As Tema grew and attracted many urban migrants, it suffered from a housing

shortage. As a result, many recent immigrants decided to settle in Ashaiman. The availability of more affordable rental housing, the lack of building regulations that eased construction, and proximity to Tema made Ashaiman an attractive alternative. Parts of the community experience annual floods, which renders residents vulnerable. Flood-prone areas have faced a constant threat of eviction and demolition.

Weija: A dam constructed 40 years ago supplies water to many parts of the GAMA. To mitigate the impacts of potential dam failure due to seismic activities, as well as accidental and planned water spillages, approximately 100 m of land around the dam and 30 m of riparian land along the River Densu were reserved. Despite these planning prohibitions, these reservations have largely been encroached upon by homebuilders and business operators. The 30-m riparian lands have been heavily encroached upon by concrete buildings. This area is ecologically sensitive, which means that it is illegal for residents to occupy. The annual opening of the dam exposes residents to flood hazards, causing them to lose millions of cedis each year due to property destruction. The management of the dam announces annually that residents must vacate before the opening. Flood victims are typically supported by NADMO with relief items to alleviate their vulnerability.

Old Fadama: Old Fadama, a site of 31.3 hectares located near Agbogbloshie, was a refuge during the 1983 famine in Ethiopia and the Konkomba-Nanumba conflict in 1994. The government allocated the land due to the pressing need for housing. With the intention of it being temporary, no facilities or amenities were provided for the residents; however, they constructed wooden structures with zinc roofing sheets. Disrespectfully nicknamed "Sodom and Gomorrah", the area is often associated with negative activities such as rape, theft, teenage pregnancy, murder, and drug use. Since 2002, the community has also received threats and warnings of eviction. Residents have frequently refused to move, arguing that the government has not yet provided them with alternative land for housing (Afenah, 2009). Furthermore, the AMA has been

pressing for their eviction since the early 2010s, targeting an estimated population of over 80 000 residents.

Agbogbloshie: The Agbogbloshie community is situated along the Korle Lagoon in the Greater Accra Region. Before its conversion into a slum, Agbogbloshie was a wetland with a wildlife population. The first settlers were returnees from Nigeria in 1983. Based on the situation of these returnees, the government at the time designated Agbogbloshie as the first point of arrival to allow for medical screening. Those who needed assistance to start life anew were to stay there while government markets were prepared for them. Some were relocated, which resulted in many people living in the area.

During the Non-Alliance Conference in 1991, the government again relocated hawkers, beggars, and all individuals considered socially unfit to Agbogbloshie. The idea was for them to remain out of the city until the conference was over, at which point they could return to their daily activities. During the Konkonba-Nanumba War, popularly known as the Guinea Fowl War, in 1994, internal refugees from the north settled in Agbogbloshie, again with the intention of returning when the war was over. Each of the three groups erected temporary structures as they waited for the government to resettle them, which never happened. Several generations from these groups have come to see this place as their only home.

Case Study 1: Production of Informality

The cases above draw attention to the formation of slums or informal settlements and the role the state has played in their existence. These cases highlight the state's contributions in three forms. Firstly, the state is a major contributor to the formation of slums and vulnerability, as discussed in the context of urban governance. The state's acquisition of land and the management of these lands have always been questioned. For instance, in 1961, the then government of Ghana acquired over 360 acres of Agbogbloshie land along the Odaw River and Korle Lagoon for what it claimed was the "Korle Lagoon Development" project. In 1991, the Sakumono Ramsar site was

acquired by the government of Ghana from the Nungua Stool lands, and the Weija Dam, constructed over 40 years ago, supplies water to many parts of the GAMA. Around the dam, approximately 100 m of land and 30 m of riparian land along the Densu River were reserved to mitigate the impacts of potential dam failure. These and other areas have been demarcated as reserved zones not intended for human habitation. The state's failure to use the lands for their intended purpose has resulted in encroachment. These communities became home to the less privileged, as city authorities pretended not to be aware of their existence. Consequently, these areas developed into squatter settlements with no planning or infrastructure, such as drains and electricity, and no security of tenure. During an interview, an opinion leader in his 70s at Agbogbloshie lamented:

> "We were asked to stay here when we return from Agege, the government will give us another place so we move. It was a planned land, we built it up. Because we can't sleep outside, we need a roof over our heads. That has not been done and we also don't have anywhere to call home apart from here. They should give us a place and we will move."

During a focus group discussion at Old Fadama, a resident also indicated that it was his hometown:

> "I have never seen my parents travel anywhere like home. This is where I was born, and I grew up here. This place is just not planned but is just like any other place. It is just the presence of the river that makes us vulnerable, but we live just like all the others in the other towns. If something needs to be done, they should work on the river, not us."

Secondly, following the acquisition of land that was not used for its intended purposes, the state created suitable areas for the development of informal settlements. The cases of Old Fadama and the Sakumono Ramsar sites, which were acquired primarily for ecological development, have not been utilised for that purpose. Old Fadama became a site for temporary settlement for returnees from Nigeria. Most of the returnees were weak and sick; the government therefore settled them

there to provide treatment and a location for resettlement afterward. Furthermore, during the Non-Aligned Movement Summit held in Accra, the state decided to relocate all informal activities (hawkers and beggars) to Old Fadama. This decision further increased the resident population in Old Fadama, and brought them closer to the lagoon. The situation escalated when migrants fleeing the Nanumba-Konkomba War were also housed as refugees on the same piece of land. The people who were relocated began constructing wooden structures for trade and housing, treating it as a temporary arrangement. The state's failure to protect the riparian lands has also exposed the community to flood vulnerability – a situation created by the state. The acquisition and non-use of sensitive ecological zones, such as the Sakumono Ramsar site and the Odaw, Korle, and Kpeshie lagoons, along with the inadequate protection of riparian lands, have not only resulted in the establishment of unapproved settlement areas but also increased the residents' vulnerability to flooding hazards in that area.

The state's position on the development of slums in urban areas can be described as one of neglect. This negligence can be understood as a lack of awareness regarding the growth of settlements and a pretence of their non-existence. There is a persistent belief that these structures are temporary and will be removed at the appropriate time. This mindset emboldens certain private individuals and traditional authorities to sell state lands to developers. For instance, the Sakumono Ramsar site was developed impulsively as a recreational area and later evolved into settlements. The Traditional Authority has, on several occasions, requested that the state hand over the land to them, as private individuals are selling it to developers.

An opinion leader from the Stool lands remarked:

> "We were warned by the CEO [chief executive officer] of the forestry commission in 2018 not to sell any part of these places to anyone. He asked anyone who bought from us to come for their money when we knew nothing about it. Where were they when strangers started selling our lands? Did they see them build?"

Beyond the emergence and growth of these communities, the state neglects these communities through the non-provision of infrastructure and utility services. The officials interviewed from the various Metropolitan, Municipal, and District Assemblies concurrently reiterated that those areas are not under their jurisdiction; hence they are not responsible for them. The place they occupy is illegal, and they cannot provide utility at an illegal residence. However, some of these people claim to have legal documents from the Assembly approving their site. For instance, a woman at Kpeshie indicated:

> "I bought this land with my husband, and we have documents from the Assembly. I am sure about this because I went to do it myself and sent the documents to him. I would have shown it to you."

A member of the Mensah Guinea also stated:

> "We have documents for our lands, we didn't just register, our ancestors were here long before, and we registered the lands when we were asked to. We still have our documents."

The non-provision of infrastructure presents residents with vulnerability.

Case 2: Flood Vulnerability

The study areas are primarily located near water bodies, which makes them vulnerable to flood hazards from perennial heavy rainfall, lagoon overflows, and high tides. The Weija community is particularly at risk due to spillage from the dam, as well as overflow from the Kpeshie, Old Fadama, and Agbogbloshie lagoons. Flooding has affected most of these communities

annually since the 19th century, with devastating impacts. In Ashaiman, floods in 2010 destroyed residents' properties, caused 17 deaths, and displaced approximately 9 000 people (NADMO, 2011). A NADMO official stated:

> "Some of the residents who drowned were due to rising water in their home too, they didn't even go out. There were children as young as three years."

In the case of Old Fadama and Agbogbloshie, the area is relatively low-lying, which makes it highly vulnerable to flood hazards. The land has been reclaimed using sawdust and materials such as plastic bags and other waste, which increases the communities' risk of flooding. Following continuous rains in 1997, around 200 houses were partially submerged, which forced residents to abandon their homes. In 2017, an overflow of the lagoon bank resulted in the entire area being flooded, including the main road. Workers and students were unable to reach their workplaces or take their Basic Education Certificate examinations. The presence of the dam in Weija makes its catchment area even more vulnerable, as it experiences flooding beyond the normal rainfall levels. Vulnerability in these communities extends from physical to socio-economic factors, described as human vulnerability by Cannon (2002). The context of vulnerability in Accra, as explained in the framework, can be understood as a production process that goes beyond physical damage and is shaped by complex interactions in the urban environment.

Situated in this socio-political framework of flood vulnerability, this study reveals that while flood events are linked to biophysical occurrences such as rainfall, river basin overflow, and high tides, flood vulnerability in informal communities in Accra is produced and shaped by complex socio-cultural and political processes and alliances that interact constantly in the urban environment. The study also demonstrates that these socio-political forces, factors, and actors, through their interactions and alliances, shape community responses and coping strategies to flood hazards.

Case 3: State Approach and Management of Informal Settlements

The state's approach to flood management in informal settlements has been characterised as either a brutal presence or a convenient absence (Amoako, 2016). As discussed above, the state has consistently played a role in the formation of informal settlements. In its efforts to address flood hazards in these communities, the state has adopted a hostile approach, often evicting flood victims in slum areas. Furthermore, the literature has frequently highlighted the plight of flood victims without acknowledging the state's role. The state has consistently employed a "Rambo" style of threat-warn-evict/demolish, which is a strategy that has been in use for more than two decades. For instance, residents of Agbogbloshie have reported that the AMA has threatened them since 2002:

> "They started coming way before 2002, they come and disturb us, threaten to evict us then they go and don't come back again. This is a normal thing we have been going through."

Agbogbloshie and Old Fadama's history of previous evictions include the following:

- 31 July 1993: People from 400 houses on public land are evicted.
- 28 May 2002: Eviction notices are served to the "entire population of Old Fadama" (Grant, 2006) by the AMA. Residents of Old Fadama respond with a court challenge but lose. Following the court ruling against the residents on 24 July 2002, they organise a grassroots effort to resist eviction. They eventually federate with the Shack/Slum Dwellers International network and begin working on resettlement plans. Threats of eviction continued until 2015, which culminated in the final demolition on 1 July 2021. The Mensah Guinea area was demolished in 2015 by the AMA, which cited the location as a hub for crime and, most critically, a cholera outbreak. The Sakumono Ramsar site has also faced various threats of eviction since 2021.

After the president's directive to Metropolitan, Municipal, and District Assemblies to demolish all structures in waterways, various municipalities within the GAMA have embarked on demolition exercises using security personnel. The La-Dade-Kotopon Municipal Assembly, Ayawaso North Municipal Assembly, and Ledzokuku Municipal Assembly issued an eviction warning to encroachers on the Kpeshie Lagoon catchment on 18 September 2021. The eviction was carried out on 30 September 2021. On 22 February 2022, the Traditional Authority encouraged the government to demolish illegal structures on the Ramsar site. The Security Council also issued a threat of eviction in July 2022. These structures were demolished two weeks after the eviction notice.

The use of forceful eviction also contributes to the vulnerability of the urban poor and the destruction of economic activities, which in turn affects national development. For instance, a food vendor at Kpeshie collapsed at the site of the destruction of their workplace. Residents of Agbogbloshie and Old Fadama also recount the significant amount of money they lost due to the demolitions, as they were unable to pack their items in time. One of the residents said:

> "I have stock I just bought which I had started sorting out, all that is gone. We tried to see if we could identify some of them and pick them out, but we ended up fighting among ourselves because everyone is worried about the money they are losing. These things we pick help keep the main city clean, now you will find them everywhere and the floods will happen there, not here. Imagine a spoiled fridge and TV in one car… you just imagine."

Another worker added:

> "Don't worry, the truth is most of us have places in town, but we do this here because this is commonplace, we will do it in our houses now. There is no alternative job, and we have to feed our families."

This means that the activities of the scrapyard are being transferred into communities very close to other settlements.

The rate of pollution will be more widespread, which will result in higher levels of contamination.

The cases presented above clearly demonstrate the connection between the conceptual framework in which informality is produced through governance and how state responses create informality and vulnerability.

Reflections on Demolishing and Forced Eviction as Flood Management Approaches

Drawing from various approaches to flood management, states have adapted demolishing and forced eviction as the main strategy for managing floods. In the case of Ghana, specifically Accra, this approach is employed for the "city beautification agenda", rather than for flood management. The use of this strategy seems harsh to an extent, as the question "Where should they go?" arises. This paper does not seek to endorse illegality but recommends that the state must find an alternative approach that is more sustainable. These encroachers often return to the same locations after the demolitions, which renders the approach unsuccessful. For instance, after the demolition of Mensah Guinea, some individuals simply moved closer to the sea (to the beach area) and constructed houses using cardboard and wood. This new settlement has been named Downtown. Old Fadama and Agbogbloshie are no exceptions, as the community always re-emerges after demolitions. There is therefore a need for the state to consider an alternative, sustainable way of managing the situation. Sustainable actions to ensure effective flood management are costly and more complex for these communities to handle. These actions include redesigning the entire area, constructing drains, and evacuating or relocating people. The concept of insurance could be adopted for flood-prone areas to ensure that residents have some form of coverage to cushion them during floods and minimise their impact.

Conclusion

This paper connects the state's role in the creation of urban informality and flood vulnerability in urban areas of developing

countries, using Accra as a case study. The state creates urban informality by acquiring land in state accounts and not using it for the intended purpose. These lands are left unused for long periods, and are then encroached upon by the urban poor. In other instances, the state changes the use of these lands, which may not be compatible with land use planning. The use of ecologically sensitive areas as temporary settlements for people places both the environment and the residents at risk of several hazards. These settlements hardly have legitimate tenancy agreements and the people there are often considered illegal occupants or encroachers. The nature of these places is mostly unplanned and lack infrastructure and amenities. The state's posture creates a situation of neglect towards these settlements. The refusal of the state or authorities to plan or provide infrastructure for these areas also exposes them to vulnerability. Sadly, the lack of access to roads, hospitals, fire or police stations, and disaster management institutions translates into reduced response capacities and difficulties in post-disaster evacuation and rehabilitation for these poor urban residents. Consequently, city authorities have adopted a method of not providing for these areas, hoping that the absence of facilities will deter residents from staying there. Additionally, the location of these slums makes them vulnerable to flooding, as they are often situated in reclaimed waterlogged areas and ecologically sensitive zones. The occupation of these lands exposes residents to flood hazards, including drowning, destruction of homes and properties, and outbreaks of disease that can result in death. Finally, the state's posture of demolishing and forcibly evicting residents worsens the situation. These individuals are temporarily displaced, as they often find their way back to the same location or a nearby area. The study proposes the use of alternative sustainable approaches to flood management, such as flood resilience structures and the introduction of flood insurance for those who intend to build or reside in flood-prone areas.

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Institutional Downward Raiding in Housing

Challenges for State-Subsidised Housing for Low-Income Groups in Developing Countries

The Case Study of Linakotseng, Maseru, Lesotho

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Abstract

Little has been said about downward raiding in housing in the planning literature. Various governments in developing countries have established subsidised housing projects with the hope of providing housing opportunities to low-income

groups. These government institutions offer housing subsidies and serviced sites to improve access to adequate housing for low-income groups. However, low-income areas are often raided by middle-income earners, which makes it difficult for low-income households to access housing that was originally intended for them. State institutions frequently appear ineffective as they fail to address this problem, which results in low-income households struggling to participate in the formal housing market. This paper therefore examines the role of state housing institutions in the perpetuation of downward raiding in housing, focusing on the Linakotseng housing project in Maseru, Lesotho. The methodology employed included a case study research design, key informant interviews, and a review of strategic documents. The study found that the government-led low-income housing project in Linakotseng was raided by middle-income earners, which rendered the houses unaffordable for low-income groups. It was identified that the community was not involved in the planning of this settlement, and market research was not conducted properly. The study recommends the adoption of a methodology in housing projects that encourages community participation and thorough market research, and that authorities must understand local realities.

Keywords: Downward raiding, low-income housing, case study, Linakotseng, Lesotho, community participation, market research.

Introduction

Various government institutions in the developing world have engaged in different housing subsidy projects for low-income groups. However, in some cases, these housing projects are raided by middle- and upper-income groups. Typically, downward raiding occurs as cities rapidly expand and middle- and upper-income groups, unable to afford the costs of housing and land, buy out low-income groups living in informal settlements (Lemanski, 2014 : 2946). Over the years, this has manifested in state-subsidised housing that is generally intended for low-income groups. Focusing on the issue of downward raiding in Linakotseng, we argue that housing

institutions play a role in perpetuating this phenomenon, especially in the cities of the Global South.

This paper provides a historical background of the low-income housing schemes in Maseru and examines how they ended up being raided by middle- and upper-income groups. It concentrates on these cases to provide evidence that the Lesotho Housing and Land Development Corporation (LHLDC) had opportunities to learn from these previous low-income housing schemes. The next section discusses downward raiding and how it manifests. The following section focuses on case experiences in Brazil to further demonstrate that downward raiding not only occurs in informal settlements but also in downtown areas and planned housing projects. Lastly, the paper positions itself within a case study design by discussing the evolution of low-income housing projects in Maseru to solidify the argument that downward raiding in Linakotseng is similar to many of the projects that occurred in Maseru.

Downward Raiding in Housing

Downward raiding in housing manifests as exclusion and displacement. This situation occurs when lower-income areas, such as subsidised housing and informal settlements, are raided by middle-income groups. During this process, middle-income groups may undertake infrastructural upgrades, while low-income groups are excluded. Payne (1996, p. 21) posits that low-income groups find it difficult to access housing in areas that were previously intended for them and argues that this situation is perpetuated by land titling in developed countries. Furthermore, after purchasing housing intended for low-income groups, middle-income buyers may improve these properties and resell them, thereby excluding the low-income beneficiaries who, in most cases, were identified as the original, direct recipients of state-subsidised housing (Lemanski, 2011).

It is important to note that downward raiding is, in some cases, perpetuated by the housing institutions that are responsible for these projects. Housing subsidy schemes are typically located at the urban periphery, which is often attractive

to middle- and high-income earners (Huchzermeyer, 2005, p. 215). Consequently, there are several reasons why low-income earners may choose to sell their houses to middle- and higher-income earners. Among other reasons, recipients of subsidised housing units often sell them to clear their debts (Boaden & Karam, 2000). This phenomenon has also been observed in South Africa, where high- and middle-income earners lure low-income residents from state-subsidised housing, which undermines the initial purpose of the housing project. Interestingly, Lemanski (2014, p. 2946) argues that downward raiding is largely driven by middle-income opportunists rather than the state.

Downward raiding in housing conflicts with government policies, particularly in meeting international human rights standards such as the right to adequate housing. If the housing needs of middle-income groups are not met, the housing projects intended for low-income earners will be down-raided (Karam, 2008). Another argument is that downward raiding in housing will continue due to the improved locations of low-income housing schemes. However, there is concern that in countries such as South Africa, which has a history of apartheid spatial planning, attempts to prevent downward raiding may lead to issues of segregation (Karam, 2008). Most importantly, state housing institutions do not directly contribute to downward raiding; however, they induce it by providing formal land titling, engaging in urban infrastructure upgrades, and offering state-subsidised housing (Croese & Pitcher, 2019).

Brazilian Case Experience

In Rio de Janeiro, the government has ventured into a low-income housing project in Elizete Cardoso, which is located in central Rio de Janeiro. In Elizete Cardoso, the phenomenon of downward raiding in housing occurs secretly. Garmany and Burdick (2021, p. 2804) discovered that, unlike in other cases where downward raiding occurs in the urban periphery and informal areas, this phenomenon takes place in central locations of Rio. The central location of Elizete Cardoso is appealing to all

income groups, particularly due to its proximity to employment opportunities, nightlife, and beaches.

Most importantly, Elizete Cardoso attracts people with money because it is different from the *favelas* and has formal housing as opposed to informal housing. Although this area is identified as being occupied by low-income families and is located along the edges of the *favelas*, it features formal housing, which helps to explain the phenomenon of downward raiding (Garmany & Burdick, 2021, p. 2807).

The main drivers of downward raiding in Elizete Cardoso are its formal housing and urban centrality. Notably, middle-income raiders seem to be attracted to state-subsidised housing in the city centre because they cannot afford housing in traditionally middle-class locations (Garmany & Burdick, 2021, p. 2805). Several reasons have been attributed to the occurrence of downward raiding and, in Elizete Cardoso, the high cost of bills, especially water, appears to be the major factor. The majority of the initial residents in this area left within the first year because they could not afford to pay the monthly bills. They sold their houses and returned to the *favelas*. In what Abreu (1994, p. 41) calls "the dance of the *favelas*", attempts to address informality by relocating and building new homes often produce more urban informality. This is especially true if poverty and inequality are not addressed. It is therefore important to note that if low-income groups are provided with newly built housing, they incur new expenses. Many of these families end up selling their houses and returning to their previous locations because the cost of living becomes unaffordable for them.

Surprisingly, in Elizete Cardoso, many people expect that the low-income residents would have a negative attitude towards the middle-income raiders. However, there were some indifferent feelings about the prospect of downward raiding, with some low-income residents expressing happiness that poor neighbours had left, as they saw them as a burden (Garmany & Burdick, 2021, p. 2809). They viewed the incoming middle-income neighbours as civilised and saw them as providing financial opportunities, as those who sold their houses made

a significant profit and experienced an upward trajectory from their poor backgrounds. Conversely, others believed that the estate administrators allowed downward raiding to occur because they benefitted financially from the residential fees and thus turned a blind eye (Garmany & Burdick, 2021, p. 2809).

Methodology

This study was qualitative as it adopted a case study research design and utilised key informant interviews and content analysis to situate downward raiding in the context of Linakotseng, Maseru. The case study design provided insight into downward raiding and its manifestations. The secondary data were analysed through content analysis, while thematic analysis was used to analyse the primary data from the Chief Housing Officer.

Evolution of Low-Income Housing Projects in Maseru

Globally, Maseru can be described as one of the smallest cities, both in size and population. This city is home to more than a quarter of the country's population. However, its rapid growth does not match the delivery of housing projects, particularly low-income housing schemes. Despite recent efforts by the LHLDC to engage in low-income housing projects, it must be noted that the first housing construction schemes in Maseru were initiated in the mid-1980s. It is therefore worth discussing these low-income housing projects. Devas (1989, p. 206) provides an account of the first housing schemes in Maseru, as discussed below.

Mohalalitoe

This housing project was established by the International Co-operative Housing Development Association between 1976 and 1978. At its inception, the project saw the creation of the Lesotho Housing and Land Development Company (LEHCo-op), which was tasked with servicing the project. The housing was located closer to town on 300-m plots, with provisions for

water and sewage connections. In the first phase, 270 houses were constructed, along with some community facilities. The three-room houses were built to high standards in Lesotho, which made this project a pioneering approach to housing in the country. However, despite providing high-quality housing for low-income households, challenges arose regarding repayment agreements.

Khubetsoana

This project was established after a hard lesson learned from the previous Mohalalitoe project. Located on the urban periphery of Maseru, the site allowed for reduced costs, which made the houses affordable for low-income households. Funded by both the World Bank and the Canadian International Development Agency, the project ensured that housing costs remained manageable. Plot sizes were reduced to 240m, and pit latrines were constructed instead of bathrooms. These were simple two-room houses, and a total of 865 housing units were built between 1981 and 1983. The construction of the houses was supervised by the LEHCo-op.

With this project, the selection of applicants was based on their level of income. The chosen applicants were those with incomes below M185, which was due to inflation and was later increased to M250. However, it was subsequently discovered that many of the applicants and beneficiaries in this scheme had incomes well above M250. This indicated a phenomenon known as downward raiding, where middle-income households occupied low-income housing units. Additionally, the scheme faced significant issues with non-payment, as many households were in arrears.

The Thamaes

After realising the weaknesses of the two schemes, the World Bank funded a project to upgrade the existing Thamaes. Funds were offered to low-income plot owners to construct pit latrines and houses. Additionally, new serviced plots were constructed on unoccupied land between 1984 and 1988. The main aim of

the project was to regularise land tenure rights by replacing traditional land tenure rights with new ones in the form of transferable leases.

Mabote

Here, a different approach to housing policy was implemented with the aim of guiding land development in the peri-urban areas, but it was not entirely successful. The governments of Lesotho and the United Kingdom funded this project, and a project team was assembled in 1985. A 630-hectare site was surveyed, and a development plan was established. However, it was later discovered that poor and low-income groups were excluded from the scheme. A survey conducted after the first occupation revealed that most of the occupants and plot holders fell above the low-income bracket and were within the middle and upper classes.

Thetsane

The last scheme was the Thetsane housing scheme, which employed an entirely different approach to cater for low-middle-, and upper-income groups. The project provided 1 500 serviced plots in a 150-hectare area, with those with low incomes expected to afford more than half of these units.

The general observation across all five schemes is that they never achieved their intended purpose of providing housing for low-income groups. Devas (1989, p. 212) notes that those whose income was below M100 were unable to meet the repayment conditions. Another reason is that these housing projects were accessed by middle- and upper-income groups. This can be attributed to the fact that these schemes were not inclusive of all income groups, thereby limiting their focus to low-income individuals only.

Perspective on Linakotseng

Figure 1: Location of Low-Income Housing in Linakotseng. Source: Google Earth (2022)

Linakotseng is a neighbourhood located within the boundaries of the Maseru Municipal Council in south-western Maseru. It consists of two parts that make up an old rural settlement. The settlement is bordered to the north by Ha Tsolo and is also adjacent to the Caledon River. Notably, in 2014, the Ministry of Local Government, Chieftainship and Parliamentary Affairs decided to embark on the construction of state-subsidised low-income housing in Linakotseng to provide affordable housing for all.

At its inception, the project constructed 17 three-room low-income dwellings, each measuring around 42 m. Interestingly, at the time of construction, it was predicted that these homes might not be affordable for many low-income households in Maseru. The photograph below shows a low-

income dwelling in Linakotseng. Although these three-room houses were intended for the low-income group, they ultimately attracted middle-income individuals, as they were too costly for the intended low-income households.

Figure 2: Low-Income House in Linakotseng. Source: United Nations Human Settlements Programme (2015)

However, this low-income housing project appeared to have attracted middle-income groups rather than low-income groups. At first glance, this can be attributed to several factors, one of which is the location of the housing project on the urban periphery, where low-income groups may not be able to afford transport to and from work. In an interview conducted in August 2021 with the Chief Housing Officer at the Ministry of Local Government, she was asked whether her office could carry out any housing development project from planning to implementation. She replied:

> "Yes, we do have the capacity to carry out a housing development project from its planning to implementation

> because we have a recent success story in Linakotseng where we constructed a low-income housing project."

Interestingly, the Chief Housing Officer outlined that although the houses were constructed, they later became aware that the intended recipients could not afford them because they were too expensive for low-income groups. Consequently, these houses were purchased by middle- and upper-income groups. This interview identified that there was institutionalised downward raiding, perpetuated by the Directorate for Housing. The Chief Housing Officer was aware of this situation but indicated that her office lacked the funds to carry out various types of projects that would otherwise accommodate all income groups. What this implies is that the ministry and its housing departments may not have learned from previous low-income housing schemes, which failed to fulfil their initial plans due to being taken over by middle- to upper-income groups.

Conclusion

Lemanski (2014, p. 2946) suggests that downward raiding has been present for some time, although few case studies on this phenomenon have been presented. Given this context, we believe it is important to study this process and address the gap in urban studies. We discovered that there is likely more downward raiding occurring than is visible. It is a situation that is further perpetuated by the housing institutions that are responsible for housing development in many countries. We therefore provided a review of how different scholars define this phenomenon and investigated Brazil's case experience of downward raiding. We employed a case study design to understand the extent and historical background of this phenomenon in Maseru and Linakotseng. An interview with the Chief Housing Officer helped us to realise that this phenomenon occurs visibly within housing institutions. Consequently, we conclude that institutions allow downward raiding to occur. In the case of Linakotseng, there have been precedents that could provide lessons to avoid downward raiding. This paper recommends that housing institutions conduct market research and engage in public participation before embarking on any

housing projects. Lastly, although low-income households need housing, prioritising them over other groups, such as middle- and upper-income groups, will encourage the latter groups to raid housing designated for low-income residents. This paper therefore recommends that housing institutions pursue mixed-income housing projects.

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Exploring the Relationship Between Urban Renewal and Sustainable Development in the City of Mbombela

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Abstract

Sustainable urban renewal is characterised by the actions, policies, and methods used to revitalise a city and address integrated technical, spatial, and socio-economic issues while minimising adverse environmental effects. This study's goal was to strengthen the relationship between urban renewal and sustainable development in the Barberton region (City of Mbombela) in order to preserve and improve infrastructure, promote ripple pond investment, support economic sectors, and enhance locals' ability to live sustainably. Barberton was established as a node to support gold mining in 1886 and is now recognised as one of the urbanised neighbourhoods in the City of Mbombela. However, the region's economy is declining because most of the mines have reached the end of their lifespan. As a result, many people are relocating to other regions, leaving vulnerable individuals behind and leading to an increase in crime (gender-based violence, property

hijacking, housebreaking, etc.). This study therefore prioritised a phenomenological research approach to assess the forces that drive urban decay in the City of Mbombela, as well as to examine and evaluate the legislative framework and strategies used to implement urban regeneration initiatives in the City of Mbombela. The study applied a secondary resource analysis of published works such as journal papers, books, and reports. Furthermore, primary data collection took place to further achieve the study's research aims and objectives. The primary finding of the study is that outdated policies influence urban space planning, which results in deterioration. Urbanisation is a major challenge in the 21st century that causes urban deterioration. The research contributes to the planning body in organising human activities in space, with a focus on guiding the nature of urban growth, including infrastructure, housing, transport, and economic activities in rural areas.

Keywords: Sustainable development, urban renewal, urban decay, socio-environmental, Barberton, City of Mbombela.

Introduction

South African towns and cities are expanding to cover more land, which contributes to a growing urban environment in which businesses relocate away from city centres, which ultimately leads to decayed urban areas (Govender & Reddy, 2020). According to Hendrix (2009), as the world's population increases and migrates to cities, these areas become cultural and racial melting pots. Anticipated urban growth will bring about significant changes in cities. Urban renewal is commonly employed to address these evolving urban landscapes (Chan & Lee, 2008). However, Hendrix (2009) suggests that current urban renewal practices should be re-evaluated, as the sustainability of some existing renewed centres is being questioned due to urban decay.

Urban renewal has been maximising the potential of cities worldwide by frequently developing and creating an excellent profile of urban space, while also strengthening urban planning, development, and policy. This approach, which includes

precincts and small-scale planning, has been a crucial method for reviving many South African cities (Mehdipanah et al., 2015). In response to the deteriorating challenges that were ignored since 1994, the year marking the beginning of South Africa's democracy, cities have aggressively pursued urban regeneration planning and practice. Urban renewal is a government-funded programme aimed at assisting communities in rehabilitating and redeveloping areas that have become physically damaged, dangerous, or poorly planned. Despite ongoing maintenance and township development efforts, urban decay remains a significant challenge in South African cities.

Furthermore, poor management and leadership skills, as well as limited resources, exacerbate the situation to an extreme level in cities (Hoogendoorn & Gregory, 2016). Given the significant resources and equity capital required for urban renewal programmes, their implementation is heavily focused on stimulating sustainable local economies (Knittel, 1963). Moreover, various policies underpin urban renewal, such as the urban integrated development framework, which aims to foster development in urban spaces through urbanisation management and the achievement of economic goals (Wilhelm-Solomon, 2016).

This study focused on the town of Barberton, situated in the Mpumalanga province of South Africa. It is located in the De Kaap Valley, surrounded on all sides by the Makhonjwa Mountains, and is 43 km south of Mbombela (Lewin & Goodman, 2013). The area became one of the growing towns in the 19th century, guided by the discovery of gold mines, which established it as a node in the City of Mbombela. However, in the 21st century the economy is deteriorating due to the closure of the mines, which have reached the end of their lifespan, leaving the unemployment rate high in the area (Barberton Revitalisation Plan, 2016). This has resulted in major challenges, as the mining industry is inherently disruptive and does not consider its effects on social and environmental systems. It has caused challenges that have led to urban decay (Barberton Revitalisation Plan, 2016). This is illustrated by the

characteristics observed in the area. Figure 1 illustrates the location of the study area.

Figure 1: Barberton Location Map. Source: Surveyor-General (2024)

The results can be used to introduce the relationship between sustainable development and urban renewal for better outcomes. This relationship has the potential to enhance the restoration and development of mixed-use, diverse, walkable, vibrant, and leisure-oriented neighbourhoods based on urban renewal principles (Visser, 2019). Sustainable development stems from concepts related to sustainable forest management. Given that the Barberton region is surrounded by mountainous and forested areas, the practice of sustainable development is essential. This study primarily focused on sustainable development in conjunction with urban renewal to promote economic development in the area. It also emphasises resource protection to address environmental challenges (Donaldson et al., 2014). The area also has agricultural and tourism potential

due to its proximity to the Makhonjwa Mountains, which can be leveraged to attract more visitors. Additionally, it has suitable soil for agricultural purposes. The region is also surrounded by gold mines, and the resources found there can be utilised to improve economic conditions (Lewin & Goodman, 2013).

Literature Review

The literature review encompassed a range of sources, including books, journal articles, legislation, official government publications, and online policy papers. This study focused on a critical examination of significant works in South African literature and law. Urban growth models have been developed and are frequently used to study urban growth and its effects on the environment. These models can be employed to evaluate potential development scenarios and formulate urban policies. Urban form models define and explain the spatial arrangements that pertain to the placement of people, structures, and activities across the topography of a city (Ferrer & Sanfeliu, 2014).

The spatial form or land use pattern of a city is this planned collection of spatial arrangements. Concentric zone, sector, and multiple nuclei are the three primary city form geometry models that ecological researchers have identified over time. Although the three models are conceptually distinct, in the actual development of most cities, various elements from each model are often combined into a spatial framework (Musa et al., 2017). Each of these three models was created to explain urban morphology in the industrial cities of the 20th century.

The concentric zone model was proposed by Ernest Burgess in 1925. Later, the multiple nuclei (Harris & Ullman, 1945) and sector (Hoyt, 1939) models supplanted the concentric zone model. Over the years, these three models have developed a strong intellectual bond and are regarded as "classic models of urban land use". They are considered "classics" because they revolutionised urban research in both developed and developing societies (Musa et al., 2017). Figure 2 illustrates three different types of urban growth modelling that are applied in cities around the world.

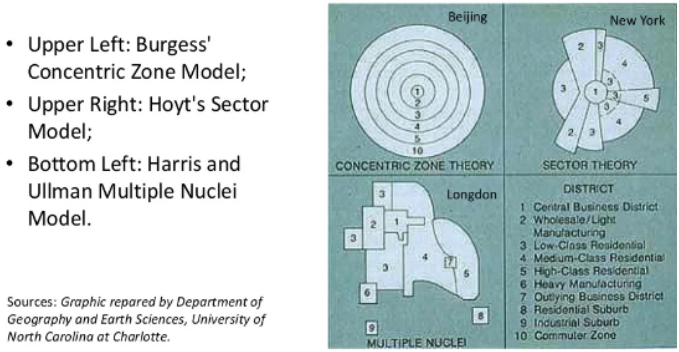

Figure 2: Three Generalisations of Urban Structure. Sources: Graphic prepared by the Department of Geography and Earth Sciences, University of North Carolina

In large cities around the world, urban growth is a significant challenge due to population migration. In the Barberton case study, the region was more urbanised in its early stages, when gold mines were emerging, which led to an increase in infrastructure and economic activities (Liu et al., 2014). Later, the area experienced economic decline and a loss of investors, which resulted in unmaintained infrastructure, increased crime, and overall deterioration. This was caused by the closure of several mines, which left many people unemployed and led to migrations as individuals moved in search of better opportunities (Barberton Revitalisation Plan, 2017).

Urban growth is one of the major concerns of the 21st century. If effectively managed, urban spaces and cities can be forces that encourage growth by improving residents' access to jobs, healthcare, housing, safety, and social development. Cities can also contribute to a country's growth by generating more revenue, ensuring political stability, and assisting in post-conflict peace-making. Conversely, cities that are poorly designed, managed, and controlled can become hotbeds of inequity, strife, and poverty. In many places, population growth has outpaced planners' ability to build homes and infrastructure, as well as local businesses' ability to provide jobs. As a result, there are numerous large informal settlements,

crime has increased, the informal economy has expanded, and social tensions have risen (Moretti, 2014).

Urban sprawl is a common example of an urban pattern. The term "urban sprawl" refers to the growth of urban expansions, such as houses and shopping centres, on undeveloped land adjacent to urban areas or cities. Urban sprawl has been defined as the unrestricted expansion of roads, businesses, and homes across large tracts of land in numerous urban areas, often with little regard for urban planning (Siedentop & Fina, 2012). This phenomenon highlights a specific type of urbanisation and the social and environmental consequences of that development. Longer travel times, higher transportation costs, pollution, and deforestation are some of the negative aspects of modern life. Property taxes rarely cover the urban infrastructure needed for new developments, which results in subsidies for developers and new residents (Artmann et al., 2019).

Urban sprawl is a major source of growth in many cities (Carruthers, 2002). Factors such as affordable open land outside of urban areas, advancements in transport, vehicle ownership, readily available capital for real estate purchases, mass production of homes, demand for single-family homes, and congestion in densely populated areas all contribute to urban sprawl (Hamidi & Ewing, 2014). Due to its numerous negative effects, urban sprawl has faced severe criticism for being ineffective, unfair, and environmentally irresponsible (Carruthers, 2002). In addition to driving up maintenance costs, increased exploitation of natural resources such as farms, forests, open spaces, and wildlife habitats encourages social stratification through the property market and leads to environmental challenges. Long commutes and expensive transport are further consequences.

Urban sprawl refers to the separation of commercial, residential, institutional, and industrial districts. As a result, large areas of land are designated for specific purposes and divided by physical barriers such as open spaces, buildings, or other obstructions. Residents who live far from their workplaces,

shopping centres, and recreational areas must rely on vehicles for these activities, as commuting by foot, public transport, or bicycle is not feasible (Ewing, 2008). In the research on this topic, a common method for measuring sprawl is to assess the degree to which various land uses are integrated. Both urban sprawl and communities where cars are the primary mode of transport exhibit characteristics of job sprawl. This term refers to low-density, widely dispersed employment patterns, with the majority of jobs located in the city centre.

Smart growth is described by the National Association of Counties et al. (2001) as "a series of strategies and initiatives designed to help communities plan for and accommodate growth in ways that help secure their economic prosperity and environmental safety, while preserving the unique aspects of their communities". According to Smart Growth BC (2001), it encompasses "land use and development methods that improve community well-being, protect the environment at large, and generate long-term financial savings". In conclusion, smart growth aims to promote development that benefits the local economy, community, and environment (Mehdipanah et al., 2013).

Mixed land uses attract more individuals to an area throughout the day, which benefits local businesses, improves safety, and increases a neighbourhood's vibrancy. The variety of land uses allows people to live closer to their workplaces or errand-related destinations, which reduces the need for car travel. This approach can raise and preserve property values, safeguarding both homeowners' investments and municipalities' tax revenue, as mixed-use areas are essential. The construction of high-quality homes for families at all stages of life and economic levels must be a part of any sensible growth strategy (Frumkin, 2016). Figure 3 illustrates mixed land use development.

Figure 3: Mixed Land Use Development. Source: Toolbox (2021)

In South Africa, urban renewal is the process of transforming urban spaces into more socially cohesive, economically profitable, and environmentally sustainable environments. Local factors such as settlement planning and legislation, the legacy of the apartheid regime, private sector investment decisions, financial constraints, government capacity, and social, economic, and political transitions have all hampered urban transformation (Sirayi, 2008). Furthermore, both urban renewal and urban decay are linked to international trends, as well as regional circumstances that may present challenges beyond the control of the government. Cities in South Africa are experiencing decay due to a variety of factors, including community activities, governance, and partnerships. The urban renewal programme in South Africa was fundamentally launched in early 1999 as a strategy to address the government's challenges across all spheres. Urban renewal originated from two distinct policy frameworks. Firstly, the White Paper and the Reconstruction and Development Plan, which prioritises economic development, social change, and the addressing of basic needs (Englebrecht, 2003). The theory posits that social development is a process that gradually raises a community's standard of living and aims to restore the damaged relationship between communities and the resources available to them.

Municipalities have made significant adjustments in the 21st century to meet the growing demands of their populations for service delivery (Marais, 2001).

Secondly, South Africa has initiated the National Development Plan 2030 as a vision for the country, which aims to improve the economy and employment in the nation. However, the policy also focuses on enhancing economic infrastructure, resulting in better access to gas, water, electricity, liquid fuel, and transport. The policy plays a vital role in integrating national development initiatives with local economic interventions. Moreover, it can significantly contribute to revitalising economic infrastructure and creating employment in the Barberton neighbourhood. The Department of Provincial and Local Government also developed the Implementation Framework for the Urban Renewal Programme. The objective of this framework was to transform the programme's vision into actionable implementation that would direct all participants towards achieving community development. The framework established a systematic foundation for the policy and outlined the aims and objectives of the urban renewal programme, as well as the institutional and financial arrangements made for it.

In essence, the new South African democratic system establishes the constitutionally guaranteed powers and duties of local government as a distinct sphere of government. In other words, it is not a crudely subordinate third level of government to the national and provincial governments; neither the provincial nor the national governments are in charge of it. However, it is also not entirely independent. It is linked to both provincial and national government as part of a larger system of cooperative governance. In this system, the more closely each sphere cooperates with the other two, the more powerful it can become (Fihla, 2009). Fundamentally, the new democratic system embodies the notion of local government development as outlined in the Constitution of 1996.

Research Methods

Three methodologies were used in this research: qualitative, quantitative, and descriptive. Qualitative research examines people's attitudes, behaviours, value systems, concerns, reasons, aspirations, cultures, and lifestyles. It aided in the formulation of policies, communication, and research. Qualitative research explores unstructured data, including reports, media clips, and customer feedback forms (Holliday, 2007). Research that crosses disciplines and topics is considered qualitative research (Benz, 1998). The goal of qualitative research is to better understand human behaviour and the variables that influence it. By focusing on the causes of different aspects of behaviour, qualitative research serves as a technique for comprehending and describing the world of human experience (Myers, 2000, p. 3).

The study focused on mixed research methods, which is a strategy that incorporates both qualitative and quantitative elements to answer research questions. This approach provides a more comprehensive picture than either method alone, as it combines the benefits of both qualitative and quantitative research. Mixed-methods research is often employed in the behavioural, health, and social sciences to conduct intricate situational or societal studies in multidisciplinary settings (Gunasekare, 2015). Additionally, it is advantageous as it contextualises insights from qualitative data while also leveraging the external validity of quantitative data.

The use of these methods was beneficial as it incorporated both quantitative and qualitative research types. Quantitative analysis was used to measure data gathered from the field. Qualitative data include pictures, sounds, and words, which are inherently unstructured. The qualitative approach also allows the researcher to provide a detailed understanding and description of a phenomenon, as the researcher engages with the object of the study (Hyett & Kenny, 2016). This study therefore utilised both quantitative and qualitative data in a complementary manner, as articulated by the research questions and objectives (Mujere, 2016). This means that secondary

data were collected using library materials, online resources, and official municipal resources, including the Integrated Development Plan and Spatial Development Framework.

Findings

On a global scale, urban renewal initiatives in city centres are part of a larger plan intended to advance the urban economy. However, urban revitalisation programmes typically operate under the premise that the decline of urban centres is related to economic malaise and market dysfunction brought on by a loss of faith in the private sector. This perception suggests that the main goals of urban redevelopment initiatives in metropolitan centres are to restore investor confidence in the private sector, improve environmental sustainability, support the real estate market, and diversify and restructure the local economy (Samara, 2005).

The findings from the literature review indicate that the Department of Provincial and Local Government has created a framework for urban renewal initiatives. The goal of this framework is to translate the vision of the urban renewal programme into actionable strategies that will help all stakeholders achieve the city's development goals. In addition, the framework aims to establish feasible goals for cities rather than impractical ones (Donaldson et al., 2014). It also provides a logical roadmap for the strategy, outlining the goal and purpose of the urban renewal project, as well as the institutional setup and funding necessary to support the programme and maintain the project at its strategic process culmination point.

Conclusion

Through the review of this paper, it is important to note the various indicators that collectively describe the profile of a decaying neighbourhood. In addition to the physical indicators of a dilapidated environment, such as decaying buildings and inadequate social infrastructure, there are numerous socio-economic indicators that are commonly found in deteriorating urban areas. The socio-economic indicators identified in

this paper include overcrowding, poverty, violence, social discrimination, and declining property values. Furthermore, the literature suggests that urban renewal is most effective when combined with new urbanism for city revitalisation. The paper also highlighted that South African policies primarily focus on infrastructure development without adequately considering social and environmental issues. As a result, some of the policies and legislation are not implemented effectively.

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Competitive Cities

An Exploration of Location and Human Capital in South African Cities

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Abstract

Cities drive the economic growth of any country. In a fast globalising and urbanising world, cities compete not only to attract investment and skilled labour but also to provide solutions to urban and social challenges and to create spaces that are liveable for their citizens. The Global South has experienced an exponential increase in the number of people living in cities, which makes it the fastest urbanising region in the world. This presents both challenges and opportunities for these cities. South African cities are not exempt from the current realities of urbanisation and globalisation; they must position themselves as global players while simultaneously addressing past spatial injustices. Cities are compelled to enhance and maintain their unique advantages to compete in the global arena. This paper investigates the factors that contribute to city competitiveness in Gqeberha, with the aim of positioning the city for global competitiveness. It examines geographical location, human capital, and urban planning as key contributors to this competitiveness to provide insight into the

city's strengths and challenges. A comprehensive competitive cities framework for developmental states was developed through this research, which Gqeberha and other developing cities can use to position their cities for global competition. The qualitative research approach was employed in this study, where primary data were gathered through semi-structured interviews with seven key informants who are professionals in land use management, spatial planning, and economic development. Furthermore, the study collected secondary data from sources such as documents, maps, and literature. A combination of qualitative data-analysis tools, including thematic analysis, exploratory spatial data analysis, document analysis, and triangulation analysis, was utilised to analyse the collected data. The key findings indicate that Gqeberha possesses strategic assets, such as two seaports and Special Economic Zones (SEZs); however, their influence is hampered by underutilisation and a disconnected location. The city also faces a human capital shortage, which results from a mismatch between industrial demands and educational attainment.

Deficits in urban planning, such as an outdated Municipal Spatial Development Framework and issues with internal collaboration, further hinder development. To address these challenges, this paper proposes a framework for enhancing competitiveness in Gqeberha and other developing cities. The framework emphasises that priority must be placed on infrastructure development, effective urban governance, strategic spatial planning, and human capital development. The implication of this study is that by implementing these recommendations, Gqeberha can position itself to be globally competitive. Additionally, future research should investigate examples of successful urban planning in other developing cities, assess how SEZs affect social and spatial inclusion, identify skills gaps that exist between industry demands and education, and explore best practices for port management in developing nations.

Keywords: City competitiveness, human capital, location, urban planning, urbanisation, globalisation.

Introduction

In the rapidly changing landscape of the 21st century, cities have emerged as pivotal drivers of the global economy. Economically agile and entrepreneurial individuals are drawn to the promises and opportunities that cities offer. Against this backdrop, many cities are experiencing rapid urbanisation and globalisation (South African Cities Network [SACN], 2016). It is estimated that the annual urbanisation rate in Africa, the fastest urbanising region, is 3.6%, with some cities growing at an average rate of 5% per annum, which is faster than in other global regions. This phenomenon has led to a substantial increase in demand for housing, infrastructure, and basic services (Korah et al., 2019). Due to rapid globalisation and urbanisation, cities face the challenge of competing for investment and attracting talent while addressing urban and social issues (Ghahremani et al., 2021). South African cities, including Gqeberha, are not immune to these trends; they must contend with the lingering effects of apartheid planning while also grappling with current realities brought about by urbanisation and globalisation.

The State of South African Cities Report highlights the following issues currently faced by South African cities and towns: demographic changes, the relative strength of metro economies, basic service provision, increasing inequality and exclusivity of cities, and understanding of and support for local government (SACN, 2016). In order for cities such as Gqeberha to navigate their way out of these challenges, the only solution is to shift their focus to competitiveness, wherein the city should exploit or create a competitive advantage that results in sustainable urban environments and economic growth relative to its competitors (Van Noorloos & Kloosterboer, 2018; Porter, 2015). The European Commission defines competitiveness as the "ability of a region to offer an attractive and sustainable environment for firms and residents to live and work" (cited in Rand, 2017). Factors that influence competition in cities are multifaceted and context-specific, which indicates that it is not a one-size-fits-all approach. This paper investigates the factors that contribute to city competitiveness in Gqeberha and explores geographical location, urban planning, and human capital.

These factors have yet to be fully explored in previous studies in Gqeberha to position the city for global competitiveness. The aim is to develop a framework to help Gqeberha and other developing cities, particularly in the Global South, enhance their global competitiveness.

Literature Review

Understanding City Competitiveness

Over the past three decades, cities and urban centres have increasingly focused on the competitiveness of their economies, firms, and labour. This shift has been driven by globalisation, which has integrated world economies and created mutual dependence (Jovović, 2017). For cities to be active participants in the global economy, they must adapt to technological advancements that enable interconnectivity and communication among all actors (Porter, 2000). Furthermore, cities need to reshape their urban spaces to accommodate a new labour force that is characterised by specialised skills, mobility needs, and demands for lifestyle and social amenities (Guaralda et al., 2020). The World Economic Forum's (2016) Global Competitiveness Report defines the competitiveness of cities as "the set of factors – policies, institutions, strategies, and processes – that determines the level of a city's sustainable productivity". Sustainability refers to a balance of economic, social, and environmental issues, while productivity involves utilising resources effectively to fuel economic development. According to Villamejor-Mendoza (2020), almost everything matters for competitiveness: schools, roads, financial markets, and citizens.

Furthermore, for all these factors to enhance competitiveness, there must be a change in mindset among people and in the culture, although improving competitiveness takes time. While competition is context-specific to a country or city, general factors influence competition across the spectrum (Momaya, 2016). According to Ferreira and Ratten (2017), the resource endowments of a city also influence

competitiveness. These resource endowments are both tangible and intangible, including proximity to major economic points such as transportation routes, human capital, and knowledge in a region. The argument is that even if a city is geographically disconnected from other major cities, it can still be attractive and competitive based on its intangible assets, such as sound urban planning strategies and policies, as well as skills and knowledge. Baker et al. (2017) state that some of these factors that influence city competitiveness are beyond the control of the city government and, by nature, fall under the mandate of the national government. However, a city's ability to be competitive may be hindered by urban policies that fail to address land management issues, a poor business environment, weak infrastructure, low labour skills, and inadequate governance.

Urban Planning as a Determinant of City Competitiveness

Urban planning and related spatial policies have become indispensable tools for cities to thrive in an increasingly competitive global landscape. The dynamic and transformative demands of the globalised economy have compelled cities to adopt strategic approaches to bolster their competitive edge. Consequently, urban planning and development have emerged as prominent frameworks for enhancing city competitiveness (Yigitcanlar & Bulu, 2015). Urban planning encompasses the strategic arrangement of land use, transport, infrastructure, and public spaces to achieve sustainable and equitable development in urban areas (Bibri et al., 2020). When coupled with spatial policies that guide the distribution of resources, investments, and economic activities across a region or city, urban planning can shape a city's physical and economic landscape, which will influence its competitiveness and liveability (Todes & Turok, 2018).

Effective urban planning can enhance a city's competitiveness by creating efficient and attractive urban environments. This includes fostering compact, mixed-use development that minimises commuting distances and promotes walkability, cycling, and public transport. By prioritising pedestrian-friendly streets, well-connected public spaces, and

diverse mixed-use neighbourhoods, cities can attract more residents, businesses, and visitors (Buck et al., 2017).

Infrastructure development plays a vital role in enhancing city competitiveness. Investing in modern transport networks, reliable energy systems, and robust telecommunications infrastructure can connect businesses, facilitate movement, and support digital connectivity. Additionally, cities can enhance their attractiveness by investing in quality public amenities such as parks, cultural facilities, and educational institutions (Arimah, 2017). Moreover, in an ever-changing urban development landscape, cities ought to employ spatial policy approaches that aim to improve conditions by strengthening the city's unique assets, knowledge, and human capital (Todes & Turok, 2018). However, for urban planning and spatial policies to be effective in enhancing competitiveness, they need to be supported by good urban governance. Good urban governance means "the sum of the many ways [that] individuals and institutions, public and private, plan and manage the common affairs of the city. It is a continuing process through which conflicting or diverse interests may be accommodated, and cooperative action can be taken" (Nissen, 2021). The convergence of all these urban governance actors can positively influence competitiveness (Parilla & Trujillo, 2018).

Location as a City Competitiveness Determinant

According to Ferreira and Ratten (2017), location is defined as a place or city with a distinct geographic space. However, the argument is that location determinants are not only geographic but are also related to infrastructure provision and service delivery. For example, in South Africa, Clover, one of the largest dairy product producers, had to close its biggest cheese factory in Lichtenburg, North West province. The reason for the closure was the municipality's failure to provide basic infrastructure such as roads, electricity, and water for the firm's production processes. The company stated in a media release that it incurred substantial financial losses due to constant disruptions in water and electricity supply, as well as poor road conditions, and would relocate to Durban, resulting in 300 job losses

(Ginindza, 2017). The competitiveness of a location is also influenced by its autonomy or independence (Ferreira & Ratten, 2017). Mbaye and Gueye (2018) support this by suggesting that cities must have diverse resources and competencies to provide enterprises with a competitive advantage.

However, the competitive advantage of cities and locations presents a paradox. One would expect that location would be less critical in an increasingly globalised world with open international markets and the exchange of ideas and knowledge. Therefore, when economic activity occurs in a specific location, it is for a good reason (Snowdon & Stonehouse, 2006). Some of these reasons may include soft location factors that a city has to offer, such as attractive landscapes, recreational and shopping facilities, universities, and libraries. Location factors are essential for firms and individuals who wish to move to and remain in a city (Gremm et al., 2018). Gugler (2019), referring to Porter's four interrelated components of competitiveness, states that location comprises both inherited and created factors. Inherited factors include natural resources specific to a place, while created factors encompass efficient infrastructure, such as communication, transport, and energy systems. Bam et al. (2020) note that location-related considerations also include natural advantages that involve geography and climate, as well as the cost of capital, which comprises physical capital, financial capital, and land costs.

Furthermore, the quality and reliability of infrastructure influence location decisions. Infrastructure affects competitiveness in two ways. Firstly, businesses rely on global access points such as airports, ports, and digital infrastructure to sell their goods and services in both domestic and international markets. Secondly, a city's competitiveness also depends on its capacity to efficiently connect its people and physical assets to their optimal use (Parilla & Trujillo, 2018). This means that industries conform to pre-existing patterns of people and resources in their area.

For cities to attract firms, they need a development and beneficiation policy framework that accurately evaluates and

addresses the location determinants that affect firms' location decisions (Bam et al., 2020). Moreover, a city or municipality can utilise its resources to improve its standard of living and boost local competitiveness (Villamejor-Mendoza, 2020).

Human Capital and City Competitiveness

High levels of human capital give cities a competitive advantage. Education levels include primary, secondary, college, and higher education. Universities and colleges are the quintessential reservoirs of human capital (Debrah et al., 2018). Human capital is based on the endogenous growth theory that Paul Romer first advocated in the 1980s; it is defined as human skill sets and abilities. The term can be expanded to include labour, skills, talents, and knowledge as forms of productive wealth. This expertise is partially acquired through formal and informal education (Osiobe, 2019). According to Antonenko (2021, p. 526), London, New York, Singapore, and San Francisco, which are the world's most competitive cities, achieved their success through clear municipal policies that emphasise human capital, strategic investments, and technological development. This focus has made them global economic, social, and cultural centres that attract residents and businesses.

In order to attract investments and provide a safe environment for all, cities seeking expansion should prioritise human capital. According to Albach et al. (2018), for a city to enhance its performance, it must be willing to change, improve, and utilise new technologies. Moreover, the accumulation of knowledge drives sustainable long-term growth in cities (Jones, 2019). This explains why cities in developed countries grow faster than their poorer counterparts; cities are typically the custodians of innovation and technology (Chirwa & Odhiambo, 2018).

Cities are transitioning from dependence on natural resources to a knowledge-based economy. To meet current and future industry demands and achieve competitiveness and socio-economic development, cities need to align education and skills and establish frameworks and resources to facilitate

knowledge creation (Gremm et al., 2018). The World Bank Institute's knowledge economy framework provides essential pillars for knowledge creation, including education and skills, an economic and institutional regime, information and communication technology infrastructure, and an innovation system. Essentially, there must be long-term investment in education, the modernisation of information infrastructure, a favourable economic climate that supports market transactions, and the growth of innovative capacity (Mohamed et al., 2022; Phale et al., 2021).

In addition to a city developing its human capital, it can also export skills from outside; this is achieved when a city offers a good quality of life and diversity to attract and retain the brightest individuals to work and live there (Tejedo, 2008). This notion is supported by Royuela (2014, p. 927), who underlines that a city's amenities and lifestyle options influence the location decisions of the highly skilled labour force.

Other scholars believe that for cities to harness human capital through innovation and knowledge, they must encourage cluster development. Clusters are vibrant ecosystems of interconnected businesses, universities, research institutions, and skilled individuals that act as engines for driving economic growth and societal progress. Nurturing and promoting these clusters are no longer optional; it has become a strategic imperative for cities seeking to thrive in today's dynamic and disruptive landscape (Florida et al., 2018). To promote cluster development, cities must ensure that their educational systems meet industry demands. This arrangement facilitates a labour force with the critical knowledge and abilities required for these industries to thrive (Porter, 1998). Cities can improve labour force readiness and foster innovation by enabling partnerships between industry and educational institutions (Bathelt & Henn, 2014). According to Katz and Wagner (2014), curriculum modifications that consider industry demands also attract talent and investments, which boost city competitiveness and growth.

Case Study: Gqeberha

Gqeberha is a port city located in the Nelson Mandela Bay Metropolitan Municipality. Previously known as Port Elizabeth, the city has an estimated population of 1.26 million and covers a land area of 1 959 km's. It is the largest metropolitan municipality in the Eastern Cape province (Department of Cooperative Governance and Traditional Affairs [CoGTA], 2020). Gqeberha has two ports that play a major economic role in the province: the Port of Gqeberha and the Port of Ngura (Nelson Mandela Bay Metropolitan Municipality, 2022). The city is currently South Africa's automobile manufacturing hub (SACN, 2021).

Figure 1: Gqeberha Locality Map. Source: Google Maps (2023)

The city is home to Volkswagen, Isuzu, FAW, and BAIC Automobile, which contribute significantly to its economic growth. Additionally, the city has identified the Coega Special Economic Zone (SEZ) as an area zoned for industrial development. Besides the two ports located in the SEZ, it houses a cluster of heavy, medium, and light industries (CoGTA, 2020; Nelson Mandela Bay Metropolitan Municipality, 2021a). The city therefore has a strong industrial cluster situated along the coast and major trade routes (see Figure 2). Furthermore,

the Automotive Industry Development Centre provides skills development and training programmes, as well as incubation programmes for the automotive industries. In 2018, Gqeberha contributed 2.63% to South Africa's gross domestic product (GDP) and was the largest contributor to the GDP of the Eastern Cape province, accounting for 34.07% of the province's GDP in the same year (CoGTA, 2020). The city's economy is dominated by four main economic drivers: manufacturing, community services, agriculture, and finance. The manufacturing industry primarily consists of automobile manufacturing, clothing and textiles, renewable energy, and chemicals (Nelson Mandela Bay Metropolitan Municipality, 2021a). Most of the city's population is employed in this sector.

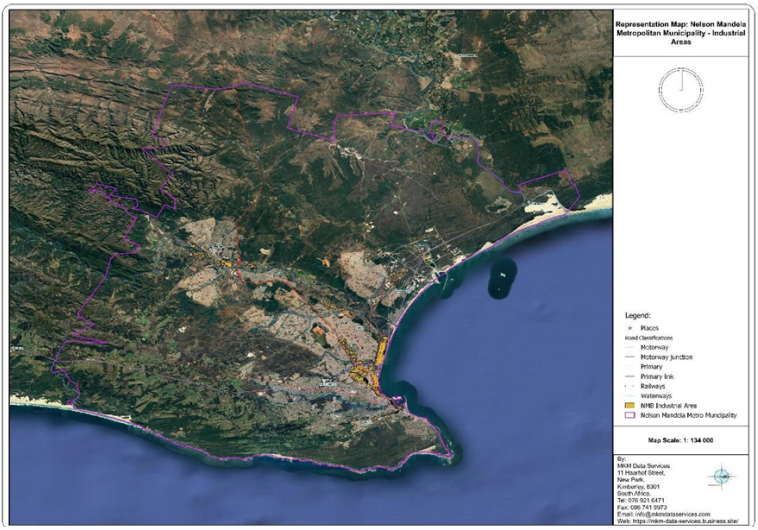

Figure 2: Gqeberha Industry Cluster. Source: Compiled by the authors in collaboration with MKM Data Services

Research Methodology

A qualitative research approach was adopted in this study to investigate the factors that contribute to city competitiveness in Gqeberha and to provide a framework that will help to achieve this competitiveness. Both primary and secondary data were

utilised as data sources. Primary data were gathered through semi-structured interviews with nine key informants, including professionals in land use management, spatial planning, and economic development. These interviews provided valuable insight into the city's strengths, challenges, and opportunities. The secondary data were collected from relevant documents, maps, and literature. Qualitative data-analysis tools were employed to analyse the data, including thematic analysis, document analysis, exploratory spatial data analysis, and triangulation. The purpose of using this range of analytical tools was to obtain credible and valid results.

Research Findings and Discussion

Gqeberha Urban Competitiveness Factors

This paper aimed to examine and explore the elements that affect competitiveness in Gqeberha. It found that numerous factors play a role in competitiveness, and that the unique circumstances of each city shape its offerings. However, despite this diversity, common elements emerged that are evident in many cities around the globe. One such element is the strategic clustering of large enterprises and institutions in a designated geographic area, along with the concentration of economic activities, land utilisation, and population densities. This clustering promotes innovation, research and development, productivity, and economic advancement.

The research indicated that Gqeberha has a substantial development of clusters in the form of SEZs, which attract multinational corporations and foreign direct investment. These clusters are primarily manufacturing-oriented, and the city has yet to fully explore innovation-based clusters. Despite these investments, the socio-economic conditions of residents in Gqeberha remain poor, which highlights a gap between the advantages gained by companies and the welfare of the city's citizens.

The geographical separation of SEZs from the rest of the metropolitan area, combined with insufficient integration of

municipal services, job opportunities, and transport, intensifies this inequality. While corporations enjoy tax benefits and low labour costs, these advantages do not reach ordinary citizens, who remain trapped in poverty. Economic and social benefits are concentrated in the city centre, which leaves the surrounding areas underdeveloped and marginalised. This assessment underscores the need for increased efforts to transform Gqeberha into a more inclusive city. A city may have resources, but if those resources only serve a privileged few rather than the broader population, it cannot be considered genuinely prosperous. Gqeberha still faces significant challenges in reshaping its urban environment.

To tackle these challenges and encourage inclusive prosperity, Gqeberha requires urban transformation. This means that the city should become a central hub for addressing current urban issues. Initiatives must focus on incorporating the urban poor into the economic and social framework of the city to ensure that all residents benefit from its prosperity.

It was discovered that Gqeberha offers attractive tax incentives to lure investors, particularly in the SEZs. The city also has an efficient one-stop shop where investors can engage with various departments. However, Gqeberha is sluggish in granting land use applications, with the exception of building plans, which only take seven days. This suggests that Gqeberha should explore ways to accelerate the approval of land use applications to avoid losing potential investors and to accelerate development.

Strategic Location and Underutilisation of Assets

In assessing a city's economic vitality, connectivity, and liveability, geographic and locational factors are essential. Leveraging unique geographic characteristics is vital for sustainable success and inclusive growth as cities compete for global recognition. Interviews and theoretical studies highlight that one of Gqeberha's standout features is its status as the only metropolitan area in South Africa with two seaports: the Port of Gqeberha and the Port of Ngqura. These ports

significantly enhance trade between South Africa and the rest of the world; however, they fail to reach their full potential due to infrastructure, operational, and management deficiencies. This poor utilisation of resources hampers the city's urban development, which raises concerns given Gqeberha's advantageous location and natural resources. In terms of international connectivity, the city is served by an airport. While this airport provides crucial links, substantial upgrades are necessary to align with international standards, which are essential for competitiveness.

Gqeberha offers various social amenities that enhance its competitive advantage, such as schools, recreational activities, shopping centres, and tourist sites. Nevertheless, ongoing challenges such as high crime rates and insufficient urban space diminish the city's liveability. Economically disadvantaged individuals remain confined to informal settlements on the outskirts of the city. Addressing these issues, including housing backlogs and informal settlements, is vital for fostering inclusive and sustainable urban growth.

As the largest city in the Eastern Cape, Gqeberha experiences the impacts of rapid urban growth, which strains its physical infrastructure. The participants pointed out the urgent need to enhance the city's outdated infrastructure, including power supply, water, roads, and sanitation systems. Furthermore, political instability has obstructed decision-making processes, which undermines the city's sustainability and urban development initiatives. Achieving a stable environment would enable the city to operate at its best and enhance its overall potential. Although the city has inherent strengths, it is crucial to tackle challenges such as underutilised port facilities, insufficient infrastructure, and political instability to realise its full potential. By introducing targeted strategies and promoting political stability, Gqeberha can establish itself as a competitive and sustainable city on the global stage.

Human Capital Deficiencies

The main goal of this study was to explore the essential components of human capital that are vital for Gqeberha's development as a competitive city. The research highlighted the crucial importance of investing in individuals for a city's success. It specifically pointed out the link between education and urban advancement, suggesting that cities that emphasise education are better prepared to deal with the challenges of intense global competition. The findings revealed the significance of both tangible and intangible resources in boosting Gqeberha's competitiveness. It was discovered that the proportion of individuals with higher education in the city is quite low, at only 8%. Meanwhile, 69% of the population has completed only some primary education, while 25% have finished secondary education (see Figure 3) (SACN, 2021). The city includes one public university alongside several further education and training colleges and private educational institutions (CoGTA, 2020). To address the skills gap, the city launched several workforce development initiatives, including internships, job shadowing, apprenticeships, graduate programmes, and community training initiatives (Mativenga et al., 2021).

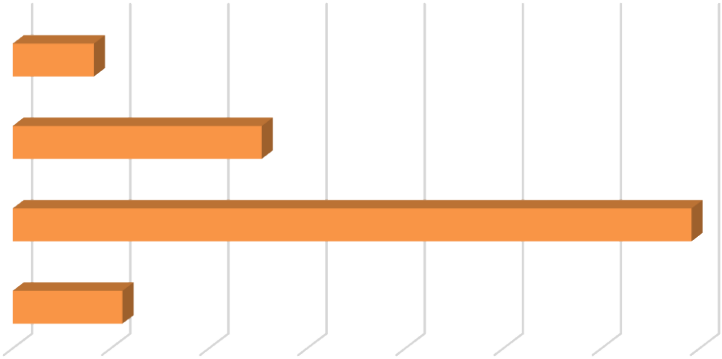

Figure 3: Education Levels. Source: CoGTA (2020)

Furthermore, it has been discovered that Gqeberha, although it has a rich heritage exemplified by figures such as Nelson Mandela and a favourable quality of life relative to other urban

areas, encounters difficulties in effective marketing. While it possesses noteworthy characteristics, including its connection to Mandela and a relatively high standard of living, the city faces challenges such as insufficient branding and global visibility. As a result, there is an urgent need for Gqeberha to strengthen its marketing strategies and enhance its visibility on the global stage.

The study also highlighted the cooperative relationship between the city and its university, where the institution engages in research to tackle urban issues and participates in discussions alongside private partners to address skill development requirements. Despite this partnership, the level of the university's impact on city research remains unclear. Nonetheless, the interdependent relationship between Gqeberha and the university is commendable, as universities play a crucial role in boosting urban competitiveness through the sharing and acquisition of knowledge.

However, despite collaborative efforts involving the university, Gqeberha falls short in developing a knowledge-driven economy. This gap is particularly concerning given the city's designation as Africa's automotive hub, which hosts international car manufacturers. Research indicates a lack of education programmes tailored to specific industries and a dependency on importing skills, and highlights a low-skilled workforce due to poor education levels in the city. This discrepancy underscores the importance of higher education institutions aligning their programmes with industry needs to promote local skill advancement.

Additionally, the research revealed a deficiency in vocational and practical training programmes, as illustrated by a boat manufacturing company that had to rely on importing skills from Cape Town during busy production periods. This situation underscores a missed opportunity for Gqeberha to develop its workforce and facilitate knowledge sharing from prominent local enterprises. Clearly, the city's initiatives to enhance the skills of its population are inadequate, which

indicates the need for a reassessment of training strategies and closer collaboration with industry partners.

Investments in human capital are essential for a city such as Gqeberha to remain competitive. In addition to physical assets, intangible elements such as education, partnerships, and vocational training are crucial for influencing urban development paths. By addressing shortcomings in education, skill enhancement, and knowledge exchange, Gqeberha can strengthen its resilience against global competition and create a foundation for sustainable growth and success.

Urban Planning Challenges

Urban planning, which lays out guidelines for the development of cities and business operations, plays a crucial role in shaping urban environments. This research highlights urban planning as a comprehensive process that integrates governance, social well-being, economic growth, and environmental sustainability. A significant discovery is the lack of internal collaboration in Gqeberha's urban governance framework. This indicates a failure to cohesively institutionalise development initiatives in the municipal administration. As a result, different departments do not share common goals and visions for their collaborative efforts on joint projects.

Considering these findings, it is apparent that successful urban planning extends beyond creating regulations; it involves promoting synergy among various administrative entities to achieve shared objectives. In Gqeberha's situation, the lack of such collaboration limits the city's capacity to enhance its competitive advantages and comprehensively tackle urgent urban issues. There is a distinct need for united efforts to improve collaboration and coordination in Gqeberha's urban governance system. By nurturing a culture of cooperation and aligning objectives, the city can leverage its potential for sustainable development and competitiveness.

The research also uncovered an increasing demand for densification in Gqeberha, as evidenced by the high volume of rezoning applications the city receives. This reflects a trend

towards transforming urban areas and intensifying land use. Nevertheless, the city struggles to address the challenges associated with densification due to insufficient physical infrastructure. Additionally, it was noted that Gqeberha relies on an outdated Municipal Spatial Development Framework (MSDF) that contains obsolete strategies.

These findings raise concerns since the MSDF is a critical instrument for guiding the city's developmental direction and determining priority investment areas. It is essential for the city to update its MSDF to reflect current and future demands and aspirations. The findings indicate rising momentum towards densification in Gqeberha, yet several obstacles impede its effective realisation. By enhancing its physical infrastructure and revising its MSDF, the city can more effectively meet the demands for densification and guide its development in a sustainable and inclusive manner. This requires proactive initiatives to adapt to evolving urban dynamics and ensure that Gqeberha becomes a thriving and resilient urban hub.

The findings present both opportunities and challenges for Gqeberha's growth and underscore the necessity for upgraded infrastructure and strategic planning. It is evident that proactive approaches are vital for navigating urban complexities and promoting sustainable development. By confronting these challenges directly and fostering a cooperative environment, Gqeberha can forge a path towards enhanced competitiveness.

A Framework for Enhancing Competitiveness

Based on the findings, this study proposes a comprehensive framework for enhancing the competitiveness of Gqeberha and other developing cities. The framework focuses on seven key areas: improving hard infrastructure, establishing consistent planning policies and strategic spatial planning, enhancing human capital and the knowledge-based economy, identifying suitable locations for SEZ development, adopting an entrepreneurial city approach to urban governance, ensuring safe environments, and maintaining political stability.

Figure 4: Competitive Cities Framework for Developmental Cities

Hard Infrastructure Improvement

According to Eide's (2014) report for the World Economic Forum on the Competitiveness of Cities, urban planning is essential for providing hard infrastructure. Planners must be mindful of how they design cities, avoiding both overplanning and underplanning, which can lead to unpredictable, uneven growth. Balance between planning and organic growth is necessary. Additionally, cities should increase their spending on infrastructure to accommodate the demands of urbanisation. Without this, cities may face obstacles to sustainable growth, which can result in sprawl, congestion, pollution, and inadequate public services. However, cities must take a demand-driven approach to infrastructure projects that respond to the needs of their local economies, rather than a supply-side approach that overlooks demand. The successful implementation of these projects requires careful planning, budgeting, and financial support (Choe & Roberts, 2011).

Consistent Planning Policies and Strategic Spatial Planning

To thrive competitively, emerging cities must adopt a cohesive approach to development that shapes both public and private investment choices. Consistent planning policies are crucial for enhancing city competitiveness for several interconnected reasons. Firstly, such policies establish a stable framework for long-term investment and development, which fosters confidence among businesses and investors. When regulations and zoning laws remain consistent over time, companies can confidently make decisions about where to locate and how to expand, without fear of encountering sudden regulatory obstacles or changes in land use. This stability not only supports local entrepreneurship but also attracts external investment, which will ultimately drive economic growth and job creation (Kamana et al., 2023).

In addition, a transition needs to be made from conservative spatial planning, which is concerned with preserving order, to strategic spatial planning, which focuses more on addressing challenges and transformation. Furthermore, this approach marks a departure from conservative spatial planning that is project-oriented rather than goal-oriented. In essence, emerging cities need to adopt a strategy that effects change and sets meaningful strategic goals, rather than relying on the implementation of spatial projects that may be effective today but ineffective tomorrow (Albrechts, 2015).

Key to strategic spatial planning is the establishment of objectives and the formulation and implementation of strategies to meet those objectives. Cities should have a vision for the future, assuming that current trends will continue (Salet & Faludi, 2000). Public and private sector coordination, along with public participation, is fundamental to the successful implementation of a strategic spatial plan (Oliveira & Hersperger, 2018). Moreover, strategic spatial planning acknowledges that the challenges faced by cities cannot be tackled solely by local authorities, as some fall outside the scope of local government; intergovernmental coordination is therefore necessary (Royal Town Planning Institute, 2015).

Enhancing Human Capital and the Knowledge-Based Economy

Cities must acknowledge the growing influence of technologies such as artificial intelligence, big data, and robotics. Thompson and Curella (2021) emphasise the importance of adapting to these emerging trends. For developing cities, aligning processes with factors outlined in the knowledge economy concept, such as skills development, global competitiveness, and entrepreneurship, is essential (Amo et al., 2017). The initial step for these cities is to formulate appropriate policies and strategies. Although specifics may vary, the World Bank's Knowledge Economy Index suggests focusing on themes such as education, economic incentives, institutional frameworks, and information and communications technology infrastructure. Additionally, cities should consider factors such as research and development, vocational training, government accountability, quality education, and investment in innovation and technology as enhancing measures towards their goals (Asongu & Odhiambo, 2020).

The next crucial stage in improving their knowledge economy involves developing partnerships among various stakeholders. These stakeholders include the city government, businesses, research institutions, emerging entrepreneurs, creative individuals, innovators, and residents. Such partnerships serve as platforms for mutual learning and knowledge exchange, and facilitating the pooling of resources for collective advancement (Praharaj et al., 2018).

Suitable Locations for Special Economic Zone (SEZ) Development

The geographical positioning of SEZs plays a crucial role in ensuring broader inclusivity and maximising their positive impact on local economies and communities. A comprehensive approach to SEZ development must therefore incorporate considerations of both regulatory frameworks and spatial planning to foster holistic socio-economic growth that gives a city a competitive edge (Ahmed et al., 2020; Frick et al., 2019). The locations of SEZs in emerging cities should therefore

be orchestrated to serve the collective interests of various stakeholders, including governmental bodies, investors, local enterprises, residents, and workers. The primary objective should be to address pressing socio-economic challenges such as unemployment and poverty. By situating SEZs strategically, cities can harness their potential to stimulate job creation, enhance economic opportunities, and alleviate poverty (Ali, 2020).

Cities and national governments need to undertake comprehensive feasibility studies in areas where SEZs are to be located in order to determine the most suitable sites that are connected optimally and have the potential to transform a specific area from rural to urban. Furthermore, the choice of location for an SEZ should consider the potential for developing other land uses around it, such as commercial or residential (Janjua et al., 2017).

An Entrepreneurial City Approach to Urban Governance

Both theory and practice demonstrate that, for a city to be competitive and attract investment, an entrepreneurial approach to city governance is essential. This approach advocates treating city governance like a business, with the government acting as an entrepreneur to market the city and foster its growth. This involves ensuring fiscal stability and access to financial markets to attract investment and boost investor confidence (Lauermann, 2018).

At the core of this governance approach lies the establishment of public-private partnerships for local governments to secure external funding, create employment opportunities, and attract new direct investment (Delmon, 2017). Olson et al. (2020) refer to these local government initiatives as "entrepreneurial governance", wherein opportunities are identified and assessed, resources are gathered and utilised, and opportunities are exploited.

Furthermore, this city governance model emphasises the creation of institutions or municipal entities that are tasked with revenue collection and public service delivery on behalf

of the municipality. These entities operate independently from the municipality and mitigate the bureaucratic constraints faced by public entities by adopting private sector delivery models. Although these entities maintain public accountability and transparency, they do not represent full-scale privatisation. In addition to revenue collection, these entities are responsible for generating job opportunities across various skill levels (Mabalane, 2019).

Safe Environments

The United Nations Office on Drugs and Crime (2005) highlights various factors that contribute to urban crime. Key among these are unregulated urban growth, large income disparities, and inadequate governance. To tackle these issues, cities, particularly those in developing nations that are undergoing rapid urbanisation, need to establish robust regulatory frameworks and enforcement mechanisms. It is essential that these efforts involve active engagement with local communities. Additionally, prioritising socio-economic inclusion is crucial. This means integrating crime prevention strategies into a range of social and economic policies and programmes, including those that address employment, education, healthcare, housing, and urban planning. By doing so, cities can work towards creating safer and more inclusive urban environments.

Urban planning approaches in developing cities must be re-evaluated to ensure the establishment of safe urban spaces. For example, mixed land uses should be encouraged in city development, as well as strengthened pedestrian traffic movement. This strategy not only increases the vibrancy of urban areas but also reduces the need for long commutes, which can contribute to safety by decreasing congestion and potential areas for criminal activity. Street layout design should deter criminals, which involves careful consideration of factors such as visibility, access points, and lighting to minimise opportunities for crime, while ensuring that housing density standards provide adequate space for community facilities, natural light, ventilation, and open spaces for residents (Al-Ghiyadh & Al-Khafaji, 2021).

Political Stability

Grøn and Salomonsen (2019) contend that a city's reputation can be adversely affected by political instability. Consequently, it is crucial to proactively address potential conflicts between administrative and political entities. Public managers should also be mindful of their organisations' historical reputation, as this could impede their ability to coordinate an effective and unified response when faced with threats to the organisations' image. Furthermore, effectively managing the discord between politics and administration in Gqeberha is essential to uphold a positive public image and foster collaboration among all stakeholders.

Implications of the Study

The study's findings have important implications for the future of Gqeberha. By adopting the suggested framework, the city can position itself to compete globally while addressing the urgent issues of urbanisation and spatial injustice. The framework focuses on key elements related to location, human capital, and urban planning, which are essential for creating a sustainable and competitive city.

Furthermore, the study emphasises the potential for Gqeberha to become a model for other developing cities facing similar challenges. By sharing best practices and lessons learned, Gqeberha can contribute to a wider discussion on urban competitiveness in the Global South. The framework outlined in this study provides a flexible blueprint that can be customised to address the distinct challenges faced by different cities.

Future Research Directions

Expanding on the findings from Gqeberha, future studies on city competitiveness in developing nations can explore the following areas:

- Assessing the effects of SEZs: Investigate whether the current SEZ model promotes economic inclusion or perpetuates existing disparities.

- Enhancing port operations: Study effective port management strategies from prosperous developing countries to identify adaptable solutions for Gqeberha.
- Aligning education curricula with industry needs: Conduct a skills gap analysis to identify specific mismatches between current educational offerings and industry requirements in Gqeberha.
- International promotion: Investigate the impact of global promotion on driving economic growth and competitiveness for Gqeberha.
- Urban governance collaboration and spatial planning: Identify successful instances of collaborative urban planning from other developing cities and evaluate their applicability to Gqeberha.
- Contextualising the competitiveness framework: Refine the proposed competitiveness framework by incorporating specific data and best practices relevant to the South African context.

Conclusion

The dynamics of competitive cities are shaped by various factors that influence the economic, social, and environmental landscapes. Cities that emphasise knowledge and innovation, allocate resources towards infrastructure, and utilise effective urban planning strategies are more likely to thrive in the global arena. As urban areas face changes in demographics and rapid technological progress, embracing sustainable practices will be crucial for long-term viability. Cities must evolve, experiment, and engage in collaboration to create vibrant and competitive environments that satisfy the needs of their inhabitants.

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Impacts of Poor Basic Service Delivery on the Development of Sustainable Human Settlements and Improved Livelihoods

Case of Stjwetla, Alexandra

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Abstract

The Constitution of the Republic of South Africa acknowledges the importance of basic service delivery in the development and improvement of lives, thus making it the government's mandate. With access to basic services being a legitimate expectation of citizens, the government is responsible for ensuring that it provides continuous service delivery and maintenance to its people. Service delivery enables individuals to meet their own needs by providing the security necessary for a household to function fully, and it is a prerequisite for poverty reduction. Despite the well-known benefits of providing basic services, delivery challenges persist, particularly in informal settlements. Informal settlements fall outside the regulated, legal, planned channels of city development; they therefore

receive little government attention. The lack of government support for informal settlements is a barrier to improving basic services and infrastructure.

The objective of this study was to investigate the influence of basic service delivery on sustainable human settlements and improved livelihoods in Stjwetla. To address the research objective, a case study using a phenomenological design was conducted, analysing a particular situation through qualitative (questionnaires, interviews, observation) and quantitative (survey questionnaire) methods of data collection and interpretation. The concepts of sustainable human settlements and improved livelihoods were examined in relation to the settlement in question.

The findings revealed that Stjwetla lacks the necessary basic services (water, sanitation, housing, refuse removal, electricity, drainage, and roads) required to encourage sustainable human settlement. Many people in Stjwetla are unemployed and rely on child support grants, while others depend on low-wage jobs due to illiteracy or having only completed primary school. Being illiterate prevents individuals from obtaining stable, high-paying jobs. Such conditions continue to marginalise people and push them further into poverty, which hinders their ability to achieve improved livelihoods. To promote better human settlements and livelihoods in Stjwetla, in situ upgrading and relocation methods have been recommended.

Keywords: Service delivery, informal settlement, sustainable human settlement, sustainable livelihoods, basic services.

Introduction

The public sector is recognised globally as an entity that is responsible for providing the essential basic services necessary for individuals to meet their daily needs. Service delivery refers to the distribution of public activities to the general public (Fox & Meyer, 1995). This delivery applies to both tangible and intangible assets. Tangible assets include water, sanitation, waste management, transport, and communication facilities.

In contrast, intangible assets encompass healthcare, education, energy, emergency services, public safety, social welfare, and open space management (United Nations Human Settlements Programme [UN-Habitat], 2006). The delivery of basic services not only encourages an improved standard of living but also fosters social, economic, and environmental sustainability.

In South Africa, basic service delivery is used to address the spatial imbalances created by the apartheid regime. Apartheid segregation laws prevented individuals of colour from having the same access to land, housing, and services as white people (Socio-Economic Rights Institute of South Africa, 2018). While white people lived in well-developed residential areas in the city centre, Black-only townships developed on the edges of cities, housing most of South Africa's population (Socio-Economic Rights Institute of South Africa, 2018). The apartheid state's lack of investment in housing, basic services, and infrastructure in these townships resulted in a severe housing shortage and the proliferation of informal settlements (Malpass, 1990; Marutlulle, 2017).

To guarantee the development and reconstruction of post-apartheid South Africa, it became imperative for the South African government to provide and maintain basic service delivery for all; to upgrade informal settlements in the marginalised areas of many rural areas, towns, and cities; and to encourage the development of sustainable human settlements (Kroukamp, 1999). To this day, the South African government remains focused on providing basic services and upgrading informal settlements for its people.

For the first time, many individuals can enjoy access to basic services that were previously reserved for white developments. People now have access to housing, water, electricity, sanitation, waste removal, healthcare, education, and economic inclusion. Despite these improvements, challenges in basic service delivery persist. The country still experiences inequitable public service distribution (Department of Public Service and Administration, 1997), with informal settlements continuing to receive the short end of the stick

regarding basic service delivery. Informal settlements continue to suffer from a lack of basic services. For those who do receive such services, the quality is often inadequate and lacking in maintenance. The inability to provide basic services to informal settlements undermines the prospects for economic, social, and environmental development in those areas. However, the provision of basic services through informal settlement upgrading is crucial for encouraging sustainable human settlements and improved livelihoods. Informal settlement upgrading provides people with better housing and the services and infrastructure necessary to enhance their lives and communities (Wekesa et al., 2011). Ensuring equal access to basic service delivery is therefore critical (Pekmezovic et al., 2019). By examining how poor basic service delivery has impacted Stjwetla's sustainable development and people's livelihoods, this paper aims to shed light on the significance of upgrading informal settlements for the provision of basic services, improved livelihoods, and sustainable human settlements.

Literature Review

Informal settlements can be found in both developing and developed countries around the globe. They exist in urban contexts worldwide, in a variety of forms and typologies, sizes, locations, and names (such as slums, favelas, squatter settlements, barrios bajos, bidonvilles, and shacks) (UN-Habitat, 2015). There is no universal definition of "informal settlement", and each country has its own interpretation. However, informal settlements share similar characteristics, which include insufficient access to clean water, inadequate sanitation systems, low structural quality of housing, environmental deterioration, overpopulation, lack of infrastructure and social investment, unlawful subdivision, and insecure tenure (Jiusto, 2012). The homes, like those in other informal settlements, lack formal legal tenure, have inadequate services, are of poor quality, and are overcrowded due to overpopulation (Nixon, 2020). The global population of slum dwellers has increased by 213 million since 1990 (UN-Habitat, 2013). More than a billion people now live in slums, with over half of them situated in East,

South-East, Central, and South Asia, and 23% in sub-Saharan Africa (UN-Habitat, 2020). Over 90% of urban expansion occurs in developing countries, and each year, approximately 70 million new citizens are added to large cities in these countries (World Bank, 2008). Informal settlements house more than 50% of Africa's urban population (61.7%), and the continent's urban population is expected to increase from 400 million to 1.2 billion by 2050 (UN-Habitat, 2013). It is estimated that between 1.1 and 1.4 million South African families lived in urban slums in 2011 (Statistics South Africa [Stats SA], 2011). Unfortunately, given the insecure tenure arrangements and rising occupancy in these settlements, this figure is likely to be significantly higher. Despite the global explosion of informal settlements, the issue remains unaddressed. Rapid urbanisation is one of the causes of increasing development of slums in developing and some developed nations (World Bank, 2006). Unplanned urbanisation continues to expand against a backdrop of significantly lower income levels, which are exacerbated by rising unemployment, increased poverty, poor governance systems, under-resourced municipalities, municipal maladministration, corruption, lack of accountability, and the absence of housing policies (World Bank, 2006; Nathan, 2013; Tshishonga, 2015; Marutlulle, 2017; UN-Habitat, 2020). Rapid urban growth under these conditions would create a formula for the spread of informal settlements.

Today, informal settlements continue to thrive because urbanisation has outpaced the government's ability to supply land, housing, and basic service infrastructure. The absence of integrated urban planning is also to blame for the continued proliferation of informal settlements. The design of human settlements, along with the institutions and regulations for managing future development, is the responsibility of urban and regional planning (Fischler, 2012). Urban planning assists in making land available, controlling its use, organising its distribution among users, and ensuring that the resulting spatial order is acceptable to all (Fischler, 2012). In the absence of planning and regulatory measures to direct land distribution, land is invaded and built on illegally, which results in informality (Tsenkova, 2012). Without planning,

informal settlements spread out in an uncontrollable manner, leaving little or no space for the installation of basic services and supporting infrastructure. To pursue the sustainable growth of informal settlements with service delivery, competent and appropriate land use planning is essential. Urban planning is crucial for driving development and creating successful solutions for integrating informal settlements into the city's formal land management and economic processes (Tsenkova, 2012). Integrating informality into a city is important for providing basic services to informal settlements and addressing its unwanted side effects. Providing basic services encourages improved livelihoods and the potential for creating sustainable human settlements (Tsenkova, 2009).

In providing basic services, governments aim to promote sustainable growth and meet the expectations of equalisation across gender, race, geographic, and socio-economic boundaries that exist between the rich and poor (Van der Wal et al., 2002). Improving access to basic services has been a key component of the Millennium Development Goals (MDGs), which seek to eliminate extreme poverty globally (Durand-Lasserve et al., 2007). Additionally, Sustainable Development Goal (SDG) 11 aims "to make cities and human settlements inclusive, secure, resilient and sustainable". SDG 11.1 specifically states: "By 2030, secure access for everyone to sufficient, safe and affordable basic services and housing, and improve slums" (Sachs, 2012). Hernandez (2006) recognises that basic services are critical to alleviating poverty and achieving the SDGs both directly and indirectly, by improving access to health, education, power, information and communication services, and fostering poverty alleviation and women's empowerment through entrepreneurship and job creation opportunities in service enterprises. It is therefore important for planners and the government to work hand in hand to ensure "that governance systems are improved and apply urban planning principles, respect the rights of impoverished communities, and create space, services and opportunities for impoverished people to continue improving their circumstances and participate in the distribution of benefits that the urbanisation process has to

offer" (Department for International Development, 2000). SDG 11 should be prioritised by ensuring equitable access to housing, basic services, and land tenure, as well as the provision of socio-economic opportunities.

Research Setting

Figure 1: Map of Stjwetla, Alexandra Informal Settlement. Source: Authors' construct (2022)

Stjwetla in Alexandra is the ideal location for a case study in basic service delivery. Stjwetla, denoted in red in Figure 1, is situated in Johannesburg's Alexandra Township. It is an informal settlement near the graveyard in Alexandra, adjacent to the Jukskei River below Roosevelt Road. According to the 2011 census, the informal settlement had a population of around 5 000 people and covered an area of more than 0.13 km's. The census also revealed that the area had 2 609 households, made up of 100% Black Africans, with a linguistically mixed population. The most prominent first language is Xitsonga (54.52%), followed by Sepedi (20.56%), isiXhosa (6.76%), isiZulu (4.60%), Tshivenda (3.64%), Sesotho (2.73%), Setswana (1.95%), English (1.75%), isiNdebele (1.19%), SiSwati (0.95%), Afrikaans (0.12%), Sign Language (0.10%), and others (1.13%) (Stats SA, 2011). Stjwetla exemplifies an informal settlement

that suffers from a lack of basic service delivery. Residents still use candles and paraffin for lighting, while others have illegal electrical connections. Additionally, there are high levels of informal housing, a lack of clean water, inadequate sanitation, insufficient refuse removal, poor drainage, substandard roads, and a lack of social infrastructure (Stats SA, 2011; Kotze & Mathola, 2012). Development in this area occurs uncontrollably, with houses packed closely together, leaving no space for the installation of basic services and infrastructure (Ferrinho et al., 1991). The social living conditions have become unacceptable to residents, which resulted in an increase in violent and destructive service delivery protests (Lekaba, 2014). At the heart of these protests is a growing dissatisfaction among the marginalised and impoverished due to corruption, lack of service delivery, and inadequate response to community needs by local authorities (UN-Habitat, 2006). The context of this study involved measuring the effects of poor basic service delivery on Stjwetla's livelihoods and long-term physical development.

Approach and Methodology

The research followed a case study in phenomenological design, in which a particular situation was analysed using both qualitative and quantitative methods of data collection and interpretation. In this case, the phenomena under investigation were the extent of service delivery and its impact on the population of Stjwetla and the overall development of the informal settlement. Qualitative tools, such as interviews and questionnaires, were used to understand the experiences, perceptions, and opinions of the residents of Stjwetla regarding the factors that influence their everyday lives, as well as their own developmental analysis of the problems and impacts of inadequate basic service delivery on Stjwetla households. A structured interview plan was created for the qualitative part of the analysis and administered to the participants. To elicit information from the people of Stjwetla, open-ended and semi-structured questions were also employed. Open-ended questions allowed the participants to provide answers that showcased their feelings, experiences, and understanding of the

subject. Semi-structured questions enabled the participants to express their views by choosing their preferred answer from a set of predetermined options.

A quantitative method was also utilised in this research to describe the participants' biographical data. To collect quantitative data, structured questionnaires were administered to the participants. Observation was also used to collect data, which included viewing and photographing the basic services and supporting infrastructure available in Stjwetla. Additionally, secondary data were utilised, which included municipal policy documents to provide insight into municipal service delivery operations, as well as census data, news articles, Geographic Information System (GIS) images, websites, and journals.

Both probability and non-probability sampling techniques were utilised in this study. For this analysis, a stratified sampling method was used, which consisted of participants from various strata, such as diverse age groups, different genders, income levels, and South African residents of Stjwetla, Alexandra, as well as individuals from interested professional platforms. Those who met these criteria were deemed capable of offering valuable insight into service delivery concerns, partly because they were either personally affected by the service delivery problems or were aware of the issues regarding basic services in this informal settlement.

A purposive sampling approach was also employed to select specific individuals working for the City of Johannesburg Metropolitan Municipality, which is responsible for ensuring the delivery of basic services in Stjwetla. The final sample of 30 participants was chosen to ensure that representation was distributed rationally based on the variables defined during the sampling process. Additionally, the sample size enabled the researchers to study smaller populations and to produce generalisations that could be extended to the broader population.

Research Analysis and Findings

A total of 30 individuals participated in the study, all located within the informal settlement of Stjwetla. The participant profile ensured a representative sample of respondents in terms of age, gender, income, and activity. The following are the responses regarding basic service delivery in Stjwetla.

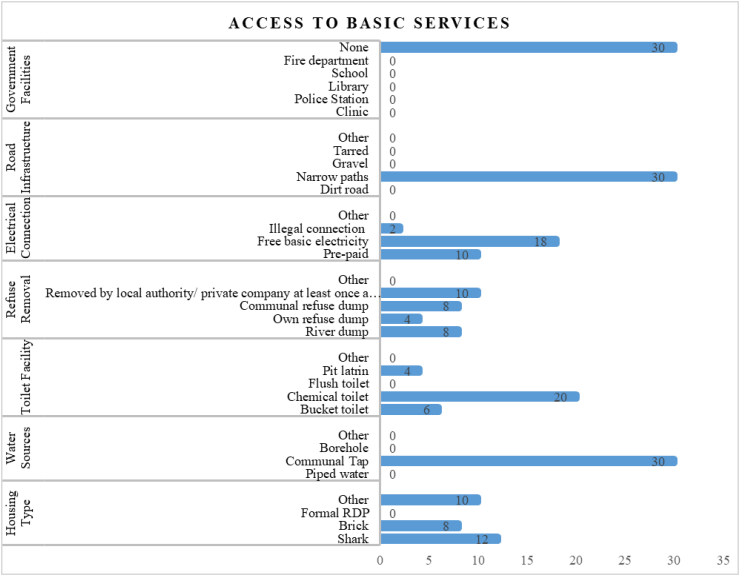

Figure 2: Access to Basic Services in Stjwetla. Source: Authors' construct (2022)

Sustainable Human Livelihoods in Stjwetla, Alexandra

Livelihoods consist of capabilities, activities, and assets that are necessary for a person to live life to the fullest (Chambers & Conway, 1992). Maintaining one's livelihood includes various aspects such as adequate nutrition and diet, access to quality education for children, job opportunities, and income sources. By asking questions, the researcher gained insight into the socio-economic profile of the participants and confirmed that individuals do not have enough to ensure good livelihoods. Of the 30 respondents, 14 reported being unemployed, while

16 were employed, either through self-employment or formal employment.

Regarding the types of income, most residents depend on Child Support Grants and Old Age Grants, with some supplementing their income through street vending, spaza shops, domestic work, nanny services, retail and factory work, gardening, and scavenging. With such limited prospects for adequate and stable salaries, especially during the current economic recession and increased unemployment, many participants stated that providing for basic needs is challenging. Without stable income sources, families struggle to improve their living conditions. The expenses of these households are predominantly managed by individuals, particularly women with a low level of education or no education at all. To cope with such insecure living circumstances and low wages, they are forced into means of subsistence that are often "dangerous, antisocial, and unlawful, including theft, prostitution, drug trafficking, and child labour" (United Nations Office on Drugs and Crime, 2005). For many, the prospect of achieving a decent standard of living remains nothing more than a fantasy.

Most of the interviewed participants had received some form of education, including primary (four), secondary (six), and Grade 12 (10), but none had completed higher education. The other 10 had no form of schooling at all. Most of the participants were illiterate or had only elementary schooling. Being illiterate restricts access to better salaries and stable jobs that could sustain their livelihoods. The lack of access to services has also deprived many residents in this area of their right to education. Women, in particular, are compelled daily to deal with financial pressures on their own, such as collecting water, harvesting wood, managing household duties, and providing protection to the household; among other livelihood concerns. As a result, they often do not have enough time to focus on improving their lives. Children are also vulnerable to not completing their schooling. Disruptive factors, such as living in overcrowded households and lacking space for homework, have been identified as significant causes that discourage many children from receiving an education. Children tend to share

beds, which leads to conflicts when it is time to go to bed. The need for children to share bedrooms and go to sleep at various hours contributes to sleeplessness, which in turn leads to poor concentration in school and unsatisfactory classroom performance. Furthermore, growing tension between siblings can lead to behavioural management issues in schools. Children who live with working parents are required to perform domestic duties at home, such as washing, heating, collecting water, and a host of other chores. These responsibilities interfere with their education. The slum conditions in Alexandra impede children's growth into qualified professionals. These barriers are also perceived as restricting factors for securing schooling and higher-paying jobs. What is evident here is the persistent expression of generational poverty.

Apart from income and education, access to basic services such as housing, water, sanitation, waste collection, electricity, and other civic amenities contributes to sustainable livelihoods. The lack of access to these basic services has dire impacts on individual livelihoods, as it prevents the attainment of better capabilities. The results from the interviews and observations confirm that Stjwetla is another case of an informal settlement with limited basic service delivery. The settlement has restricted access to housing, piped water, sanitation, waste collection, and other civic amenities. Having little or no access to basic services amounts to poverty. Poverty is characterised not only by a lack of wages but also by a lack of basic facilities and social services (Sheuya, 2004). In fact, basic infrastructure is the most critical need for human livelihoods. Housing with the necessary services and infrastructure is important for encouraging economic growth, enhancing people's quality of life, reducing poverty, and promoting social sustainability and sustainable human settlements.

Housing serves a variety of purposes, including family life, security, safety, leisure, and cognitive self-fulfilment, which captures the essence of human dignity and facilitates sustainable livelihoods. It also provides tolerance to climate and a refuge from the troubles of the outside world (Tsenkova, 2009; Smit & Musango, 2015). Housing equipped with essential basic

services such as clean water, sanitation, and electricity increases the physical well-being of vulnerable individuals, allows for privacy, enhances social ties, and improves social standing within the local community (Pynoos, 1973). Housing not only serves as shelter for human life but also as the foundation for economic growth, without which households would struggle to survive. For many individuals, homes are places of work that provide spaces that can be used to start small businesses (De Wet, 1994); for others, they serve as sources of employment. Individuals use their houses to generate income, by engaging in income-generating activities such as informal trading enterprises, including shops, workshops, and even nursery schools. The housing crisis, caused by a severe scarcity of homes, lies at the heart of the problems faced by Stjwetla's informal settlements. The components of a decent home, as listed above, are what the residents of Stjwetla are missing.

Figure 3: Living Conditions in Stjwetla. Source: Authors' construct (2020)

The majority of housing in Stjwetla is constructed from pieces of polystyrene foam, sheets of corrugated iron, cardboard, wooden planks, and plastic sheeting salvaged after fires. These housing structures are associated with various indoor environmental problems, including limited space for sleeping, bathing, sitting, and storing food and clothing, as well as a lack of windows for ventilation and no cooling or heating systems. In addition to these internal issues, there are external challenges such as flooding, fires, and narrow, polluted alleyways. Floods and fires

are particularly traumatising for residents, causing not only physical harm but also mental health issues due to displacement, loss of property, despair, increased risk of infectious diseases such as cholera, and loss of livelihoods. Although people have access to water from communal taps, there are still coverage issues. The available communal taps are insufficient to serve the entire informal settlement, and the system design cannot meet supply capacity due to the increased demand for water. Stjwetla, like most informal settlements, is characterised by solid waste scattered throughout the area. Limited waste collection services in Stjwetla result in waste accumulation in and around the informal settlement, which causes pollution and the spread of disease vectors such as pests, infected vermin, and rodents, which deteriorate the hygiene of the slum. Although there is no formal sewerage system in the settlement, the municipality has provided a number of plastic buckets and communal toilets that are emptied weekly. Buckets and chemical toilets have numerous issues, including uncleanliness, poor maintenance, and being disease spreaders, as well as being difficult to access, particularly at night. In the informal settlement, faulty electrical connections increase the risk of fire and the loss of property and lives. In terms of well-being, the neighbourhood suffers from alcohol abuse, rape, drug abuse, criminality, and extreme poverty. The participants reported experiencing crime in their everyday lives, which includes house robbery, theft of all sorts, purse snatching, pickpocketing, as well as domestic assault and rape. All the aforementioned issues hinder the long-term development of the informal settlement and prevent sustainable livelihoods for all individuals living in Stjwetla. It is thus important to ensure that no compromises are made when delivering basic services.

Sustainable Development in Stjwetla, Alexandra

Sustainable development is defined as "development that meets the needs of the current population without compromising future generations' ability to meet their own needs" (World Commission for Environment and Development, 1987). It encompasses economic, social, and environmental development.

This analysis focuses on the concept of sustainable human settlement, specifically regarding the informal settlement of Stjwetla in Alexandra.

Upon examining the notion of sustainable livelihoods, it became evident that the informal settlement suffers from poor economic development. Many individuals are unemployed, and those who are employed struggle to afford healthy livelihoods. Having established the economic challenges of sustainable development, this section focuses on the social and environmental aspects.

Observations reveal the extent of environmental issues in the informal settlement, particularly along the peripheral area by the riverside in Stjwetla. The continued expansion of the informal settlement has led to deforestation and erosion along the entire settlement and riverbanks. Deforestation and soil erosion are inextricably linked. When trees are destroyed to create space for human settlement, tree cover is compromised, the soil loosens, and land becomes barren and erodes. When the top, nutrient-rich soil is eroded and only the hardened surface remains, the land becomes unproductive and unsuitable for cultivation. Additionally, deforestation and soil erosion have devastating consequences, such as biodiversity loss. Unsafe human practices, such as inadequate sanitation, poor drainage, and insufficient waste disposal, pollute the soil, rivers, and air in informal settlements. The lack of waste collection, defecating in waterways, greywater discharge, illegal dumping, and sewage spills have resulted in the pollution of the Jukskei River. Evidence of this includes the changing colour of the river, algal blooms, and a foul smell. The continued combustion of fossil fuels such as wood, paraffin, and coal, along with the unpleasant odour of uncollected waste, has led to air pollution in informal settlements. The lack of green spaces and constraints on addressing pollution and improving air quality exacerbate the problem of air pollution (Givoni, 1991). Contaminants from illegally disposed trash, as well as inadequate sanitation and inefficient sewage and waste disposal systems, pollute the air, degrade soil quality, and contaminate the water in informal settlements. These issues not only contribute to

the vulnerability of the natural environment (environmental degradation) but also affect the state of the environment that humans inhabit.

The goal of social development is to improve the well-being of all individuals in society so that they can reach their full potential (Rogers et al., 2012). Living without access to basic services, coupled with increasing environmental degradation, subjects individuals to mental health problems. The lack of access to a stable income subjects the individuals of Stjwetla to poverty and prevents the attainment of capabilities. Capabilities are described as a person's and a community's ability to cope with or recover from adversities and function during tough times (Sen, 1993). The research participants who were not working attested to experiencing everyday stress and worrying about how they would provide for their family members. Others expressed understanding towards those who commit crimes to survive. The living conditions in Stjwetla, combined with the absence of income, can force individuals to commit crimes. Access to housing is crucial for achieving social development. Housing serves a variety of purposes, including family life, security, safety, leisure, cognitive self-fulfilment, which captures the essence of human dignity, facilitation of sustainable livelihoods, tolerance to climate, and a sanctuary from the troubles of the outside world (Tsenkova, 2009; Smit & Musango, 2015). Housing with necessary service provisions increases the physical well-being of vulnerable individuals, allows for privacy, enhances social ties, and improves social standing within the local community (Pynoos, 1973). Access to housing has been shown to improve people's living conditions by providing individuals with a "sense of place and hope for marginalised groups, offering a vision and promise for the future", thereby reviving communities (Tsenkova, 2009). The components of a decent home listed above are what the residents of Stjwetla are lacking.

All the aforementioned components are hindering the sustainable development of human settlements. In particular, the illegal nature of these settlements poses the greatest impediment to service delivery. The informal settlement

is illegal, and therefore the physical characteristics of the land do not support development (Huchzermeyer, 2004). Furthermore, even if the inhabitants have the financial means to improve their houses, they are often unwilling to invest due to the increasing threat of eviction from local authorities and other regulatory bodies. This threat of eviction prevents the development and maintenance of structures and infrastructure in the informal settlement. As a result of living in constant fear of displacement, residents' lives remain stagnant, as they cannot pursue improvements in their informal settlements.

Challenges and Solutions to Service Delivery (Community Perspective)

Municipal maladministration, mismanagement of funds, corruption, and poor communication between municipal departments and residents were the most frequently mentioned challenges to basic service delivery by the participants. The participants also felt that the government does not seem to care and continues to make empty promises in exchange for votes. They have emphasised the importance of basic service delivery in improving their lives and plan to continue pressuring the government to provide these services.

In response to possible interventions for the service delivery issue, 20 participants were adamant about the importance of the government providing Reconstruction and Development Programme (RDP) housing and supporting basic services to enhance their lives. Ten participants expressed a willingness to move to other areas if given the opportunity, while the rest were concerned about where they would be relocated and how the move would benefit them. Those willing to relocate were attracted by the prospect of accessing a larger plot of land, a house connected to basic services, better roads, public spaces, and a cleaner, safer, flood-free environment. Conversely, those reluctant to accept the relocation solution stated that they did not want to move because they were close to work opportunities, transport, and had established strong social ties and networks. They believed that moving would not guarantee an improvement in their lives. Those opposed to

relocation suggested an alternative: re-blocking the settlement to accommodate better housing and services. Re-blocking involves changing the current layout of the informal settlement to include basic infrastructure such as roads, drains, sewers, water taps, electrical connections, and walkways, among others, in order to create a sustainable division of the plots (García-Villalba, 2014). In addition to enhancing the physical conditions and standard of living in these deprived communities, physical improvements will serve as a basis for other forms of growth, such as generating income, welfare, and community-based enterprises. In addressing the problem of high unemployment in the area, the participants suggested solutions that include improving infrastructure to attract businesses. Additionally, they proposed supporting informal sector enterprises to encourage people to develop and grow their businesses. Others emphasised the importance of providing training skills for the unemployed to make it easier for them to access jobs in the formal sector.

Challenges and Solutions to Service Delivery (Local Government Perspective)

The vulnerability of the land on which Stjwetla is located is a key factor that prevents the provision of basic services to the informal settlement. Ms Ayanda Ngcobo, a Senior Specialist Planner in the City of Johannesburg, identified several factors that hinder basic service delivery in Stjwetla. The settlement is situated on wetland and above electrical mainlines. The compact, clustered nature of the informal settlement further complicates the provision of basic services, as there is insufficient space to allocate services and infrastructure. Ngcobo (personal communication, October 25, 2020) stated: "The general unsafe conditions that people are living in this area make it difficult to justify investing in infrastructure in a place like Stjwetla; the area cannot even be upgraded to accommodate people formally." Additionally, the increasing number of foreign nationals settling in Stjwetla has made it challenging for the government to assist everyone. Ngcobo (personal communication, October 25, 2020) noted that while

the municipality continues to relocate people and demolish illegal structures, others are moving into the area at a rapid pace in hopes of being provided with RDP housing. This behaviour complicates efforts to remove the informal settlement entirely. The structures that were recently erected are made of bricks and mortar, which makes the demolition process difficult. The final challenge to providing service delivery is said to be the people themselves. People continue to clash with the government, accusing it of corruption and failing to provide basic services. In her response, Ngcobo (personal communication, October 25, 2020) stated that "people are unaware that there is a court interdict preventing the city from planning or implementing anything in Old Alex before land restitution problems are resolved". Ngcobo (personal communication, October 25, 2020) further noted that poor communication on their part has impacted the community's trust in them. It is therefore crucial to ensure that proper communication exists between the people and the government in the future. "Speaking with one voice will really assist in building trust and implementing projects timeously" (A. Ngcobo, personal communication, October 25, 2020). Instead of providing basic services, the only feasible and effective solution for improving Stjwetla is through relocation, followed by the rehabilitation of the stressed wetland (A. Ngcobo, personal communication, October 25, 2020). To achieve this, the government is said to be developing a comprehensive plan, which outlines a broad strategy for resolving various issues in Alexandra. In Stjwetla, the government is reportedly considering government-owned land in surrounding areas to accommodate its needs. Collaborating with different levels of government will facilitate the swift development of Alexandra. There are also plans to redevelop old Alexandra into an urban area featuring four- to five-storey buildings to accommodate more residents. Densifying Alexandra is one of the primary strategies aimed at addressing the housing crisis, along with upgrading the infrastructure. However, all this can occur only after restitution issues are prioritised and resolved, before redevelopment can commence.

Conclusion

This paper demonstrated how poor service provision affects overall settlement growth and individual livelihoods. Stjwetla was used as a case study to highlight the importance of basic service delivery in improving lives and fostering development. Access to service delivery, whether through in situ upgrades or relocations, may be the best measure for enhancing people's quality of life, reducing poverty, and promoting the economic, social, and environmental sustainability of development, thereby achieving sustainable human settlement in the Stjwetla informal settlement. The results also showed the need for improved communication and intergovernmental intervention among all stakeholders.

Recommendations

In order to improve the Stjwetla informal settlement, relocations are recommended. Relocation on its own has its drawbacks, such as the high cost of development and unsuitable relocation destinations. However, if executed correctly, relocation could provide individuals with better housing, basic services, and supporting infrastructure. Government-led relocations should adopt an integrated approach that considers physical, social, recreational, environmental, economic, and institutional aspects. For relocations to benefit everyone, it is important to find land that is near employment opportunities, basic amenities, social infrastructure, and public transport. The factors mentioned above are often overlooked by the government when relocating people to new developments. As a result, once relocations are completed, people tend to return to squatting in the city and selling their land.

Instead of being reactive to the development of informal settlements, proactive planning is important. Proactive planning includes planning for city expansion as a means of preventing the emergence of informal settlements. Not only do planned extensions prevent informality, but they also promote a variety of positive outcomes, including "an appropriately planned future supply of land with cost-effective development solutions;

a lower risk of spontaneous informal settlements; minimisation of the effects of urban growth and land speculation; optimization of land use and allowing the population to live closer to employment opportunities; lower energy consumption and a lower carbon footprint; and maximization of the usable land" (Clos, 2014). Territorial planning is also a motivating force for long-term and inclusive economic growth by creating an enabling environment for new economic opportunities, regulating land and housing markets, and ensuring the timely delivery of adequate basic services and infrastructure (UN-Habitat, 2016). The government should be encouraged to develop resettlement policies, recommendations, and schedules. Implementing city-wide plans and recommendations to address relocation concerns will aid in preparing and executing site-specific measures where appropriate. This will also facilitate the prediction and scheduling of services required over time. Additionally, it is important to establish boundaries and physical security for abandoned land and farmlands, where people are more likely to move illegally. Lastly, while many initiatives can be proposed, unless we address the issues of poor governance, municipal maladministration, corruption, lack of skilled professionals, and a deficiency in transparency and accountability that are undermining our government, nothing we do as a country will ever succeed.

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ABOUT THE BOOK OF PROCEEDINGS

This is the first edition of the Proceedings of the Conference for Planning Students and Young Graduates (CPSYG). The CPSYG was held from the 24th to the 25th of October 2022, and was organised by the Department of Urban and Regional Planning, Faculty of Engineering & Built Environment of University of Johannesburg, South Africa. It brought together young planning researchers, seasoned academics from various universities, built environment practitioners and relevant stakeholders from South Africa and other countries to share and debate latest research findings, forster interdisciplinary collaboration and explore innovative / cutting edge solutions to both current and emerging challenges in the built environment. Areas of focus as shared in this proceeding and volume includes: the emergence and evolution of Alexandra Township in Johannesburg; the assessment of the relationship between urbanization and economic development around the world, how policies and legislation responds to water infrastructure in Rustenburg, South Africa; Wetland ecosystems in Limpopo Province, the influence of Non Motorised Transport (NMT) systems around the world, Planning for sustainable Tourism in Zimbabwe, the use and application of 4IR in the revitalization of declining mining town in South Africa, Urban Informality Presence in Botswana, Demolition and Forced eviction in Accra, Ghana, Challenges of state-subsidised housing provisions in Maseru, Lesotho; Urban Renewal and sustainable development nexus in Mbombela, Competitive Cities in South Africa and Poor basic services provisions in Stjwetla, Alexandra, Johannesburg.

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