

Review

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Review

Socio-Economic Dynamics Inhibiting Inclusive Urban Economic Development: Implications for Sustainable Urban Development in South African Cities

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Abstract: Globally, the need for sustainable urban development has never been more urgent than now. This is because estimates indicate that more than half of the global population will be living in urban areas by 2050, with South Africa estimated at 80%. This paper focuses on socio-economic nuances that impede sustainable urban development, as well as the strategies that can accelerate sustainable urban development in South Africa. Through a literature review methodology, the analysis identified the following issues as impediments to sustainable urban development in South Africa, informal settlements and businesses, lack of consultations with urban citizens, unresolved apartheid legacies, violence, crime and insecurity, and migration and immigration intricacies in South Africa. The paper also established the strategies to accelerate sustainable urban development as working with informality and against it, promoting inclusivity and access to resources, formulating, and accelerating policy reforms, investing in rural areas and towns, and finally investing in superior technology and innovation. These findings imply that there is a need to seek alternative development models and approaches, to address social challenges such as poverty, unemployment, and poor housing, aspects that impact negatively on urban development planning and sustainable development. This is because the major challenges to sustainable urban development are human-related challenges, that need social and economic solutions. There is also a need to reduce rural-urban migration by developing rural towns to ease pressure in major towns which are already spilling over.

Keywords: South Africa; sustainable development; sustainable urban development

1. Introduction

Globally, the aspiration for sustainable cities and communities is expressed in the United Nations Sustainable Development Goal 11 which focuses on making cities and human settlements inclusive, safe, resilient, and sustainable [1]. These aspirations are important because the global urban population is growing speedily. The United Nations Habitat [2] estimated that 68% of the world's population will be living in cities by the year 2050, while the United Nations 2023 Sustainable Development Goals Report (special edition) estimates the urban population at 70% in 2050. These statistics are a clear indication of urban growth, which demands holistic approaches to sustainable planning and development to achieve the set targets. Interestingly, the United Nations Habitat South Africa [3], reports that South Africa is one of the most urbanized countries in Africa, with an urban population estimated at 67% with a future projection of 80% by 2050. This is above the global average estimates of 68% and 70% in 2050 [2,3].

Therefore, urban planning and development are of paramount importance in South Africa to ensure social, economic, health and environmental sustainability in the urban areas as well as rural towns. The need for deliberate transformative and sustainable urban planning and development in

South Africa is informed by the ugly legacies of apartheid that still linger in the country, especially in the socioeconomic and spatial development of rural and urban areas [4,5]. Consequently, there is growing fragmentation of rural and urban areas causing a high rural-urban migration [3,6–9]. Urban areas across the globe continue to experience increasing pressure from the growing urban population and its spinoffs such as poverty, inequality, informal settlements, crime, and unemployment to mention but a few. These shocks and disruptive events underscore the urgent need to think about urban sustainability by tackling underlying systemic and structural problems [10]. Moreover, the report by the Cities Network acknowledges that the government alone cannot solve these problems because they are complex and entrenched, hence inclusive innovative approaches are needed to find long-term and sustainable solutions.

Previous studies show that the challenges of urbanization in South Africa reflect the fundamental weaknesses of the country's economy, which severely limit the capacity of the urban areas to accommodate and employ rural migrants [11–13]. Moreover, research on sustainable development and urban planning in Africa shows that countries are confronted with two critical challenges, which are rapid urbanization and the severe impact of climate change [14]. He underscores that most African countries have not yet departed from the colonial urban planning systems to effectively respond to the needs of rapid urbanization and high population growth. The none or sluggish change of urban planning systems has created and widened the gap between formal and informal settlements in many countries, such as South Africa [15–17]. Literature indicates that cities in Africa have doubled in the last three decades from 3 300 to 7 600 accounting for a population of about 500 million people [18]. From these figures, Africa's cities are rapidly growing and the impact on the economic, social, environmental, and political landscape in the future is profound. For instance, urbanization presents immense opportunities to accelerate progress towards the 2030 and 2063 development agendas for Africa and South Africa in particular [18].

The UN-Habitat [2] World Cities Report stresses building resilience for the success of cities, towns, and urban areas, and emphasizes policies that protect and sustain all, leaving no one behind. It calls for green investment for sustainable patterns of consumption and production; responsive and inclusive urban planning; the prioritization of public health; and innovation and technology for all. These focus areas underscore the significance of economic, social, and environmental investment for sustainable cities. According to Totaforti [19], the issues of sustainable urban development should not be mere analysis of the consequences of urban development in African cities, but also the development of new paradigms or the assessment of the adequacy of traditional development paradigms to understand the consequences that new urban dynamics have on the quality of life of its residents. Therefore, policymakers and urban development practitioners have a very important role in managing the nuances associated with urbanization and its impact on sustainable development. The debates on urban sustainability and the approaches to achieving it cannot be overemphasized. This paper aims to identify socio-economic nuances that impede sustainable urban development in South Africa and suggest strategies that can accelerate sustainable urban development in South Africa.

2. Literature Review

An overview of economic and urban development in South Africa

The term *sustainable urban development* has been defined and conceptualized differently depending on the focus of the subject matter. For instance, according to Pisano, Lepuschitz and Berger [20], urban sustainable development encompasses the practices and activities that relate to sustainable development within cities such as the promotion of organic farmers, markets, access to sustainable mobility, reduction of power consumption, recycling, and waste prevention. It also encompasses processes of sustainable development such as being cognizant of the infrastructural needs of the cities such as the provision of affordable housing for disadvantaged residents. Finally, it is about reflecting on the outcome of cities with a sustainable development perspective, focusing on land management and consumption of water resources. Irrefutably, urban planning is key to

sustainable development. Proper planning creates space to address critical infrastructure shortages, improve urban living, promote inclusive and resilient urban futures, and promote community involvement in planning decisions and actions [14].

According to UN-DESA [21], sustainable urban development should be premised on four pillars of sustainable development. The first pillar is social development which constitutes education and health, food and nutrition, green housing and buildings, water and sanitation, green public transportation, recreation areas, and community support. The second pillar is environmental protection focusing on forests and soil management, waste and recycling management, energy efficiency, water management, air quality conservation, and adaptation and mitigation of climate change. The third pillar is economic development which focuses on green productive growth, creation of decent employment, production and distribution of renewable energy, and technology and innovation. The fourth pillar is effective urban governance which entails decentralization and planning, reduction of inequalities, strengthening civil and political rights, and support of local, national, regional, and global links. For the cities to be considered sustainable their input, throughput and output must be balanced within these pillars.

Since the end of the apartheid political era, South Africa has endeavoured to correct the past injustices believed to be detrimental to urban development through policy and development programmes. In 1997 for instance, the South African Department of Housing launched the Urban Development Framework, which underscored the potential of urbanization in economic and social progress, and the improvement of quality of life for many South Africans [22]. This Framework ushered a momentous period in urban development in the country because the colonial and apartheid eras denied most South Africans urban opportunities, and the then policy legislations made urban planning dysfunctional and unsustainable [22]. South Africa further embarked on various transformative socio-economic plans, which include Reconstruction and Development (RDP), Growth, Employment and Redistribution (GEAR), the Integrated Sustainable Rural Development Programme (ISRDP), the Urban Renewal Programme (URP), the Accelerated and Shared Growth Initiative for South Africa (AsgiSA), the New Growth Path, the National Development Plan (NDP), the Nine Point Plan, the Fourteen Point Plan, the New Dawn, the Growth Renewal and Sustainability Plan, the Economic Recovery and Reconstruction Plan, the District Development Model and attendant master plans, and Just Energy Transition. Recently, the cabinet also adopted the Integrated Urban Development Framework and the National Spatial Development Framework [23]. The series of programmes and policy frameworks over the years indicate the efforts made by the government to achieve socioeconomic goals such as employment, lessening inequality, economic growth, and inclusive urban development. On the other hand, moving from one policy to another is indicative of a struggle to get it right as a country in the economic development of the country. Perhaps, this points to the failure of the government in the implementation of policy, or the programmes are not sustainable.

Nonetheless, South Africa's vision for sustainable urban settlements as well as guidelines and programmes to achieve this vision, are outlined in the Integrated Urban Development Framework. The vision for the Integrated Urban Development Framework is to have liveable, safe, resource-efficient cities and towns that are socially integrated, economically inclusive, and globally competitive, where residents actively participate in urban life [24]. The Integrated Urban Development Framework seeks to transform and restructure South Africa's urban spaces and foster a shared understanding across government and society. This shared understanding is important in facilitating best practices for managing urbanization and achieving the goals of economic development, job creation, and improved quality of living [24]. The Framework encompass four strategic goals which are inclusion and access, inclusive growth, effective governance, and spatial integration. This is also aligned with South Africa's National Development Plan which focuses on nine key areas namely, creating jobs, expanding infrastructure, transitioning to a low-carbon economy, transforming urban and rural communities, improving education and training, ensuring quality healthcare, building a capable state, combating corruption, and improving accountability, and consolidating social cohesion [25]. Nonetheless, the question remains whether South Africa has

attained sustainable urban planning and development. Far from it, the urban conditions in the country seem to be deteriorating with increasing housing challenges, informal settlements, and congestion in cities [3].

However, recent studies in South Africa report goodwill from social investors and planners to make South African urban life sustainable by promoting social inclusion, economic growth, and environmental sustainability by seeking new ways to solve the historical and underlying challenges [23,26]. This is possible through collaborations and partnerships of professionals and practitioners in various sectors such as health, the economy, safety and security, and human rights to design, develop and implement urban models that make the cities and towns more liveable, equitable and sustainable. A well-planned urbanisation plays a pivotal role in reducing rural poverty, improving food security, and creating opportunities for rural transformation [27]. Therefore, the success of urban areas has direct and indirect positive impacts on rural areas.

Globally, despite the benefits associated with urbanization, there are myriad challenges, some common across the board, while others are unique to specific contexts. Looking at the South African context, the South African Cities Network [10] reported that the global financial and economic crisis, water shortages due to droughts brought about by climate change, and the health and socio-economic devastation of the COVID-19 pandemic are the current challenges facing urban development. The report also revealed public unrest, violence, and crime to be daunting challenges in South African cities. The unprecedented rate of crime results in looting and destruction of businesses and property, hence pushing away investors to grow the economy. Perhaps, these social ills are attributable to what Cobbinah [14] notes as the widening inequalities within cities, unemployment, infrastructure deficits, concentration of vulnerable populations in vulnerable locations, and slum growth in South Africa. South Africa like many other countries in Africa suffers from the informality of activities in cities, such as informal economic activities, and informal land occupation. Research shows that in some towns in South Africa, land ownership is brokered by traditional leadership, and indigenous, or tribal leaders [14]. Therefore, informality is a key feature of South Africa's urban areas [14,19].

Moreover, Adam and Postma [23] highlight challenges to urban development and sustainability as a lack of implementation of planning policies; a lack of collaboration between other urban professionals and urban planners such as the South African Council for Planners (Sacplan) in the transformation of urban planning; and lack of good governance. With these challenges aboard, it is difficult to develop and implement a transformative urban policy premised on sustainability pillars of social justice, environmental stewardship, and economic inclusion. Consequently, this affects the well-being of individuals and communities, and ultimately urban planning and development [28].

3. Materials and Methods

To understand the multifaceted dimensions of sustainable urban development, different research approaches such as quantitative, qualitative, and mixed methods should be used [29,30]. This paper adopted a discourse analysis, a sub-method of qualitative research to discuss the nuances that impede and accelerate sustainable and inclusive urban development in South Africa. The literature search does not directly yield publications on the impediment to sustainable urban development in South Africa, hence this paper seeks to address this gap. However, there is a plethora of literature on sustainable development, and urban planning and development that provides adequate information to conduct a discourse analysis to inform discussions driving to a meaningful conclusion on the subject.

This paper utilized journal articles published in the English language, from across the world to build on the theoretical understanding of sustainable urban development, while the empirical papers focused on the South African context. These articles used quantitative, qualitative, and literature review methods. The findings from these multiple methods provide confidence that the analysis is based on rich verifiable, and reliable information. In addition to the peer-reviewed articles and credible organizations reports such as the United Nations and, the government of South Africa Departments were used, as they provide the latest statistics and policy-based data on sustainable urban planning and development. The search for the appropriate materials was conducted using a

combination of the following words and statements, social investment, South Africa, sustainable urban development, challenges of urbanization, urban planning, urban development, and sustainable development. Understanding the dynamics around sustainable urban development is important for South Africa's rapidly growing cities and towns. The findings are presented in two-fold. First, the issues that impede sustainable urban and economic development, and second the strategies to accelerate sustainable urban development in South Africa.

4. Results

4.1. Nuances that Impede Sustainable Urban Development in South Africa

4.1.1. Informal Settlement and Businesses

Previous studies such as that of Totaforti [19] and Cobbinah [14] portray African cities as being highly characterised by informality which reflects the socio-economic and cultural context of African communities. However, urban planning and development have not fully acknowledged the importance of this informality in the development paradigm. Consequently, informality has been treated like a crime resulting in frequent demolitions, and eviction, and being used as bacon for political milage [14]. These studies argue that informality is not a problem, but the lack of urban planners' capacity to work with informality is the main problem. For instance, a study by Cindy [32] revealed that metropolitan municipalities in South Africa are experiencing a lack of adequate infrastructure, 'mushrooming of informal settlements', and a lack of effective urban planning strategies to address the increase in rural-urban migration. The population growth and varying cultural aspects in cities are putting tremendous strain and pressure on the availability of utilities and resources [33], hence the majority result in seeking alternatives and establishing ad hoc plans to fend for themselves. The growing phenomenon of informal settlements and businesses indicates urban poverty, unemployment, and stark inequalities. Consequently, informality is attributed to various social ills including crime, violence, and low standards of living [32,34]. The South African government needs to proactively adopt urban planning and development strategies that promote inclusivity socially and economically.

4.1.2. Lack of consultations and engagement with the Urban Citizens

The success of sustainable urban planning and development is premised on various factors including active consultation with all stakeholders. However, in South Africa, there is none to the limited involvement of citizens in consultations regarding urban planning and development [14]. Consequently, this has created a situation where many urban citizens do not know much about planning requirements, hence unsustainable practices in urban areas. The lack and failure to consult widely are blurred by colonial elitism, thus ignoring inputs from the people most affected by the urban development spinoffs such as the poor slum dwellers. It is for this reason that Cobbinah [14] argues that unless urban citizens are holistically engaged to appreciate the value of urban planning, the concept and purpose of sustainable urban development will continue to be a mirage in African countries and cities. Therefore, it is not until urban planning and development in Africa, and South Africa specifically is reconstructed to focus on cultural matters and practices rather than implementing colonial ideologies, that sustainable urban development can be realized.

4.1.3. Unresolved Apartheid Legacies

Historically, South Africa has an ugly political apartheid legacy that touches all aspects of development including spatial planning. The apartheid policies on Bantustans and forced removals led to spatial challenges such as spatial injustice, spatial unsustainability, lack of spatial quality, spatial inefficiencies, and lack of spatial resilience [35]. Various factors perpetuated the apartheid spatial patterns, which include continued segregated urban settlements, unequal income levels and access to services, unsustainable infrastructure networks, consumption patterns, existing markets, and land use [17,19,36,37]. Moreover, previous studies show that the existing inequalities in South

Africa are predominantly based on a racial sub-group, with the White minority being the affluent and the Black majority being impoverished and living in squalor conditions in urban areas [4,35]. The impact of spatial segregation in South Africa is glaring and negatively influences the sustainability of urban planning and development, especially in Black-dominated areas.

4.1.4. Violence, Crime, and Insecurity

Due to the widespread poverty and inequality in urban areas, many young people are pushed into looking for alternative strategies for sustaining their livelihoods. This has resulted in violence and organized crime in urban areas in South Africa [34,38,39]. These studies indicate that cities with social, economic, and spatial inequalities are more likely to have high crime rates. These criminal activities range from petty theft to armed and organized crime, drug trafficking, terrorism, and xenophobic attacks [38,39]. According to the UN-Habitat [40], insecurity and violence are attributed to a wide range of social, economic, and psychological problems at the individual, community, and country levels. It also highlights the fact that insecurity and violence have paved the way for widespread fear among urban dwellers leading to a deterioration of foreign direct investment, a decrease in productivity, an increase in the number of private security agencies, and an uneven distribution of public services [40,41].

Migration and immigration issues in South Africa

South Africa is a choice destination for thousands of African and Asian immigrants [42–45]. South Africa benefits immensely from immigrants who contribute their skills in various sectors such as business, medicine, mining, and education among others [46]. However, this phenomenon has increased the number of urban residents in South African cities such as Johannesburg putting more pressure on available amenities and services. Additionally, South Africa continues to experience high levels of economic inequalities, with major towns posting a grim of affluence, while the rural and peri-urban areas show a stark state of impoverishment [35]. Thus, the economic growth in the cities and the poor living conditions in the rural areas have led to increasing rural-urban migration [47,48]. Consequently, this results in the housing crisis in urban areas which further causes challenges of land grabbing, illegal occupations, and an increase in informal settlements [49–51]. The struggle for limited resources has been attributed to occasional waves of xenophobia violence in South African cities, destroying personal and public property [38,39,52]. Moreover, internal migrations within the country such as schooling have implications for urban development. For instance, the Gauteng Province receives hundreds of thousands of international and local migrants every year, adding pressure on social amenities such as schools. To address these inadequacies, proposals have been made to the government to expand and establish more social amenities to accommodate migrants in the cities [53]. Therefore, the burgeoning number of city residents is overwhelming the current city's capabilities in many aspects, hence calling for restructuring and planning for sustainable urban development in South Africa.

4.2. Strategies to Accelerate Sustainable Urban Development

4.2.1. Working with informality and not against it.

South African cities like other African countries are characterized by informal businesses and informal settlements [14,18,54]. These informalities present various challenges to urban planners and developers. However, since the economy of the country is not adequate to provide decent jobs for every urban resident, there are suggestions for supporting the informal economy and smoothly transitioning it to the formal one. Therefore, urban planning and development practitioners should work with the informal sector and not against it, to address inequalities, and unemployment and improve local resilience (50, 55). Recognizing the usefulness and drivers of informality through urban planning can inform sustainable urbanization in the future. The United Nations Conference on Housing and Sustainable Urban Development [56] principle four aspires to achieve sustainable development through urban economic growth and development that enable, not destroy, informal

livelihoods. It recommends economic development strategies to provide multiple avenues through which informal workers and entrepreneurs can expand their businesses, increase their productivity, and climb up the economic ladder.

The current global trends in urban development are shifting towards smart cities [54,55], and this might further exacerbate the gap between formality and informality in urban areas. With South African cities characterized by socio-economic inequalities, unreliable public transport systems and massive governance failures among other challenges [57,58], there is a need for effective implementation of smart urban technologies to address these existing inequalities and harmonize the spatial exclusion of urban space [55]. It is for these reasons that Bandauko and Arku argue that the adoption of smart city ideas in Africa must be rooted in contextual realities and properly designed to create urban spaces that are sustainable and inclusive. For instance, a study by Loewenson, Mhlanga, Gotto, Chayikosa, Goma and Walyaro [59] reported potential gains in urban development by focusing on low-income communities, links between social, economic, and ecological benefits, and investment in women and young people as well as urban biodiversity. This implies that the entire value chain whether from formal or informal dimensions must be considered to optimize planning, enable economic growth, and improve the sustainability of the resources required. This prompts the planners to 'think inside, outside, and around the box' to decriminalize some aspects of informalities such as those with economic value and use them as a baseline for improving and building inclusive cities for sustainable economic development.

4.2.2. Promote inclusivity and access to resources

As alluded to earlier in this paper, South Africa is still nursing the impact of the apartheid regime. Most of the citizens were excluded from the mainstream economy and denied the choice of spatial space. This paper finds that new approaches such as social investment are instrumental in promoting inclusivity and accessibility to social and economic opportunities [60–62]. This is achievable through integrated infrastructure network systems, and efficient land governance which can trigger economic diversification and inclusion and empower communities [24]. There is also a need for accessible water, sewerage, transport, education facilities, police, and health facilities. These would promote healthy living and instil a sense of belonging and a sense of responsibility among the city residents. For instance, water is such an important basic need, but prospects of future droughts in Southern Africa are likely to polarize urban inequalities, and regress progress in water access [63].

The United Nations Sustainable Development Goal number 11(SDG 11) calls for inclusive, safe, resilient, and sustainable cities. To advance and achieve this goal urban planning and development must focus on inclusive and accessible health, education, housing, safety, jobs, innovation, and reduction of air pollution [64]. Literature shows that social investment can accelerate the achievement of these ideals. Social investment is a new approach to social welfare in which governments prioritize policies and programmes that promote employment, equipping people for productive work through training, skilling, reskilling, and supporting socio-economic development through progressive policies [61,62,65]. Globally, social investment is becoming increasingly important to address both social and economic challenges. This is possible through the provision of finance to organizations and institutions with the explicit expectation of a social as well as a financial return [66,67].

However, social returns must be clearly defined a priori and not a spillover of a commercial project [68]. Over the last decade, several OECD member countries have been actively creating policies and mechanisms for the support of social investment [60]. For instance, social housing in South Africa is a government programme to redress the old apartheid spatial inequities by providing low- and moderate-income households with good quality and affordable rental housing opportunities in well-located parts of South African cities [36]. According to Totaforti [19], the issues of sustainable urban development should not be mere analysis of the consequences of urban development in African cities, but also the development of new paradigms or the assessment of the adequacy of traditional development paradigms to understand the consequences that new urban dynamics have on the quality of life of its residents. Thus, social investment as one of those new paradigms needs to be studied in the context of South African sustainable urban development. This

view corroborates with Kanayo and Mngometulu [67], that social investment has the potential to address poverty and inequality and spark economic development. They recommend that South Africa's macroeconomic policies need to be rethought into more inclusive policies.

4.2.3. Formulate and Accelerate Policy Reforms

Over the past years, South Africa has embarked on formulating policies and programmes to facilitate reforms in urban development as indicated in the literature overview section. However, the main challenge has been the effective implementation of these policies. The Coalition for Urban Transitions [69] report outlined the six ways South Africa can advance a socially just urban transformation. These ways include, accelerating policy reforms to enable municipalities to procure their clean energy and use renewables to improve electricity access; putting pro-poor urban measures at the heart of plans and development; prioritise improved mobility for lower-income urban residents; revamping housing strategies to prioritise smaller-scale projects that can be built in city sub-centres and on providing well-connected, serviced sites for construction; providing targeted support for cities of different sizes and economic structures, helping them to overcome capacity and resource gaps and fostering mutual learning; and protecting and restoring ecosystems in and around cities and invest in greening the urban landscape [69].

Socially friendly policies are important in achieving urban sustainable development in South Africa. This is because the processes of urbanization and industrialization are socially, economically, and politically mediated and may not automatically improve the livelihoods of city residents if they are not supported by progressive legislation. Policies that support people moving to cities to organise themselves to advocate for the removal of barriers that prevent them from securing better living and working conditions, and access to urban labour markets and well-located land for settlement are necessary [59]. The pro-policies premised on constitutional rights can help to promote decent urban living conditions, especially when supported by social investors and with sufficient government resources. Equally, leadership and investment plans to manage urban development to boost jobs and livelihoods, and to work with poorer communities to improve essential services are policy-embedded. Moreover, climate policies must address inequalities and develop equitable water distribution and conservation measures to ensure sustainable and inclusive adaptation to future climate changes [63].

4.2.4. Investing in Rural Towns

The influx of people in urban areas is exacerbated by rural-urban migration [8,27,48,57]. This is because of the pulling factors such as jobs and access to services in cities, as well as push factors such as poverty and unemployment in rural areas. To sustainably, therefore, have sustainable economic urban development, rural towns must be developed to absorb the number of job seekers migrating to urban areas [58]. Moreover, Arndt, Davies and Thurlow [12], studied urbanization, structural transformation and rural-urban linkages in South Africa and recommended expanding and maintaining investments in rural areas to provide job and income opportunities for poor rural households who would otherwise migrate to cities. They argue that financing urbanization by reducing rural investment is counterproductive. According to COGTA [24], responding to urban challenges does not imply an exclusive focus on cities but also the alternative, which is rural development. This is because in South Africa the different types of 'urban' and 'rural' settlements are interconnected in dynamic ways and driven by a range of historical and contemporary factors such as cultural practices, capital flows, and environmental resources [24]. It is thought that investing in and establishing rural towns will lessen the pressure on available resources and services such as housing, water, and healthcare among others.

A study by Kajiita and Kang'ethe [70,71] shows that rural areas have great potential for social investment due to the availability of unexploited resources such as land, and readily available labour. Through innovative planning approaches, urban planners through social investors can keep people in their rural communities by creating employment opportunities and bringing services to their proximity. Previous studies have recommended that the government review the urbanization

policies to manage rapid rural-urban migration [41,72]. The failure to manage the rural-urban migration leads to housing, water, electricity, and unemployment challenges in the cities. These undertakings can be considered as an urban resilience strategy which is defined by the OECD as a strategy for enabling cities to absorb, recover and prepare for future shocks related to economic, environmental, social, and institutional changes [18]. The Urban Resilience Strategy entails identifying the extent of residents' demand for developments and/or services to be provided; the benefits such developments or services will bring to the city and its community; the preparedness of the city residents to pay for the development or service through their taxes and/or user pays; and the extent to which the development reinforces the resilience of the city in meeting existing or future 'shocks' of any nature.

4.2.5. Investment in Superior Technology and Innovation

As the world's population grows exponentially, millions of people are added to urban environments. Thus, communities and cities must start to build and rebuild differently and use space more efficiently. The infrastructure designs must enable the use of modern technology and innovation to make the cities more sustainable and resilient to human pressure. Urban planners and developers must prioritize smartly in making decisions about where and when to invest and look for plans and designs that serve multiple users with multiple objectives [73]. Research shows that superior technology in communications, control systems, and big data has a great potential for guiding urbanization, and connecting people with the services they need most [73,74]. The South Africa National Space Agency (SANSA) indicates that there is an urgent need for effective and sustainable urban planning and development management, supported by an adequate and up-to-date geospatial information database. According to SANSA [75], using satellite earth observations and other socio-economic and environmental datasets can effectively support the implementation of key national programmes and policies to achieve sustainable urban development. This is because Satellite Earth Observation is vital in supporting the National Development Plan in curbing urban sprawl through the densification of housing on well-located land parcels in the inner cities and focusing on urban development holistically.

Moreover, geospatial information derived from satellite imagery is critical in planning and identifying suitable locations for human settlements and infrastructure development. This information enables planners to broaden their understanding of urban ecology necessary for designing smart cities resilient to the various impacts of social economic and environmental changes [75]. Thus, the superior spatial and temporal parameters from satellites allow for simultaneous assessment of various parameters. This reduces the cost, and time of data acquisition especially for urban areas providing accurate spatial coverage of and change detections necessary for the national Environmental Impact Assessments (EIAs).

5. Discussion

The imperative of urban transformation towards sustainability is not unique to South Africa. Globally, the importance of cities and urbanization in driving sustainable and equitable forms of development is acknowledged in multilateral conventions such as the Sustainable Development Goals, the New Urban Agenda, and the Paris Agreement [54]. These conventions, agendas, and agreements portray the global recognition of the kinds of innovation, investment, and management needed to realize the drivers of sustainable development at multiple scales [54]. Globally, the urban population is fast growing, a phenomenon that prompts efforts towards sustainable development than ever before. Therefore, the concept of *sustainable urban development* has gained momentum in the current dispensation to balance the social, economic, and environmental resources to support the current and future generations. However, achieving sustainable urban development is not smooth sailing as it is linked to the complexities of economic, social, and environmental needs [76]. For instance, the provision of affordable housing in cities does not match the rapid urban inflows of people, hence leading to informal settlements and squalor conditions threatening urban

sustainability. Perhaps, this is the reason why the literature recommends a regular critical assessment of urban development approaches to track whether urbanization is on a sustainable trajectory [77].

The strategies for sustainable urban development must focus on the economic, social, and ecological, as well as sustainable spatial development, and cultural continuity (Ahmadi & Toghyani, 2011). It is for these reasons that the World Bank Group supported South Africa in urban development focusing on creating a more enabling intergovernmental environment for coordinated development in human settlements, urban public transport, streamlining policy and regulatory systems [13]. These undertakings are significant in supporting South African cities' transformation and strengthening the capacity of municipalities to lead, plan, finance and execute elements of urban sustainable programmes. The United Nations Habitat for Africa notes that sustainable urban development in Africa can serve as an enabler in attaining the desired structural transformation, increased prosperity, and peaceful co-existence within the framework of Africa Agenda 2063 [3]. This implies that urbanization that is not inclusive is detrimental to the quality of life of the urban poor, and ultimately all its inhabitants. Therefore, getting urban planning and development right could lessen the impediments against growth, but instead increase decent jobs, economic growth, social inclusion, protection of local and regional ecosystems, and ultimately reduce pollution [41].

However, despite the benefits of urbanization, the global trend of rapid urbanization prompts the local, national, regional, and global urgency for sustainable urban development. This is because emerging issues such as climate change and migration have local and international effects, which require both homemade and collaborative solutions. For instance, the risks of environmental and land degradation are high in urban areas due to increased rural-urban migration leading to informal settlements, and eroding social cohesion, which affects the safety of cities due to inherent inequalities [64]. Therefore, there is a need for more strategic approaches and models of urban planning and development which deliberately balance the economic, social, and environmental inputs and outputs of development. One of the approaches identified in this paper to accelerate sustainable urban development in South Africa is social investment focusing on housing, transport, and recreational facilities among other social services. This is aligned with the United Nations Habitat's [2] recommendations of mainstreaming social inclusion in all types of urban projects and throughout all project phases. This is important because social inclusion cannot be seen as a mere rhetoric exercise but rather as an integral approach to urban development in its entirety.

To achieve sustainable urban development in South Africa, urban developers and planners must ensure meaningful participation from all levels including the disadvantaged groups through local-level partnerships to the senior most levels of governance and investors to harness and enhance development and concrete implementation of inclusive urban proposals. The consultations among stakeholders as a participatory process are necessary for knowledge and expertise sharing through the life cycle of urban development. Sustainable urban development approaches must consider both formal and informal types of labour markets and spatial arrangements through detailed assessments of job opportunities and distribution, accessibility to basic services, and cultural dynamics and strategically support the informality to transition to the formality progressively [2].

6. Conclusion

South Africa is the most urbanizing country in Africa, with prospects of increased growth. Despite the benefits of urbanization such as economic and infrastructure development, urbanization has an equal share of challenges such as urban poverty, pollution, informal settlements, crime, and inequality to mention but a few. This paper focused on nuances that impede sustainable urban development in South Africa as well as the strategies that can accelerate sustainable urban development. The nature and scale of urban growth, and its impacts on economic transformation, technological shift, climate change, and general insecurity, provide an opportunity to embrace multisectoral investment frameworks and governance to make urban areas more equal, resilient, productive, and sustainable. However, these investments and development plans must be premised on models that are more climate-sensitive and people-centric. Importantly, significant investments in urban housing are to be made since the population of South African cities is mainly young people.

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