



The plight of urban settlements based on the proliferation of dichotomy in Tanzania

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Keywords

Urbanization
Spatial and settlement development
Dichotomy urban settlement
Land cover change
Land governance

Research Article

DOI: 10.26833/ijeg.1149133

Received:27.07.2022

Revised: 20.04.2023

Accepted:28.04.2023

Published:08.05.2023



Abstract

The observation of the juxtaposition of formal and informal urban settlements in the commonwealth and sub-Saharan developing countries has been trending as a common mundane phenomenon in emerging and fast-growing cities. Dar Es Salaam is one of the largest, and most populous cities in Tanzania; the dichotomy of informal and formal settlement is ubiquitous in peri-urban areas and its urban vicinities where land evolves from village to urban. The dichotomy of urban settlements occurs when the public authorities do not satisfactorily provide public urban services which are customarily attributed to poor governance and policies formulated, financial deficiencies, and nonstrategic urban land development. Different strategies and approaches have been applied by the government for at least providing the proper infrastructure; however, most of the approaches are not well successful and deliver the expected results following the high cost of urban land development. To comprehend the urban typology and land development characteristics of Dar es Salaam, urban land transformation, and to detect the change in the built-up area, data from 1975-2020 were examined through remote sensing, and images with ArcView GIS and LADER. The field survey data analysis supported the cause of unplanned settlements and the limitation of urban land acquisition and development. The aim of this study is to analyze the built-up area growth through the years for the study area. The result showed that rapid urbanization and dramatic growth in built-up areas especially between 1990-2000 years were easily observed, financial deficiencies and conventional urban land development policies have a significant contribution to the thriving of dichotomy settlement. The study suggested that innovative urban land development must be integrated with conventional approaches to leverage urban land development and cater to sustainable urban development.

1. Introduction

The informal land rights seem to hamper the effective functionality of respective authorities over land development for so long when the rapid urbanization evolves, and the outpour of population increase does not match with the acute serviced urban land supply and decent social infrastructures [1,2]. Without effective land governance and urban management, the social infrastructures, and environmental amenities in the urban vicinities are predominated by informal land rights which tend to be over-consumed; hence, open spaces continue to have encroached upon the urban growth [3]. It is well noticed that necessary urban

infrastructures are far from adequate, and urban plots fetch high prices due to their scarcity in most of the growing urban areas of Tanzania. Residents' quality of life has remained low, if not deteriorating. The arguments stance that the juxtaposition of informal urban land settlements and formal suburban gated housing estates in most of the Tanzanian cities is a result of the dominancy of informal land rights over formal land rights without the presence of effective land governance over the rapid urbanization [2-7].

For many years urbanization is considered to cost the developing countries in contrast to the developing countries which reap a lot of benefits from the cause of urbanization just because most of the urbanization

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Cite this article

Uisso, A. M., Sevgen, S. C., & Tanrıvermiş, H. (2023). The plight of urban settlements based on the proliferation of dichotomy in Tanzania. International Journal of Engineering and Geosciences, 8(3), 262-276

process comes with a lot of costs strings which outweigh the benefits due to poor infrastructures facilities, crime rates, congestions, lack of resources to provide basic services, overcrowdings, environmental deteriorations, just to mention few [8]. Factors such as lack of planning, poor land governance, and difficulties in obtaining the serviced land with title deeds, lead to cities growing horizontally (outward) rather than vertically (upward) making commutes to be longer and costlier with insufficient infrastructure [9]. On the other hand, a total estimate of a loss of TZS 655 billion of money every year in Tanzania from traffic congestion-related delays and extra fuel use associated with poor urban infrastructure facilities [10,11]. In addition, research shows that most of the roads in Dar es Salaam are operating above capacity during pick hours [12], while other researchers [7,13,14], identified that congestion is a major source of air pollution in the city.

Many countries in Sub-Saharan Africa are still undergoing land reforms since independence and they are still experiencing the juxtaposition of informal and formal settlement [15,16]. The informal settlements are prevalent to the extent that about half and three-quarters of all newly constructed houses in African cities have been developed in un-serviced and unplanned lands without having formal land administration and legal compliance, land use planning, construction permits, and transfer of ownership right [17,18,19,59,60]. For example, only 15% of the population in Tanzania is living in a well-serviced and well-planned formal settlement only [20,21]. The challenges of urban land development in Tanzania in meeting the demands of urban serviced plots have led to the development of unplanned urban land settlements more obviously in the urban periphery where land is cheap and people run after it [4,63,69]. The development of informal settlements or interchangeably referred to as unplanned settlements, appeared when the private interests override the public interest whereby private land is developed and compromises with the fundamental urban land use planning role of the government [4,29,68].

The main characteristic of the informal settlement is mainly associated with inadequate infrastructure which can't allow the smooth habitable and healthy environment of the space occupiers more specifically wider and networked roads, lack of allocated public spaces such as open and green spaces, the social infrastructures notably schools, health facilities, graveyards and may be fostered by lack of clean and safe water, sanitary sewerage systems and electricity to mention few [4,6,19,22]. However, the revolving question to many is that despite being unplanned and even some of the areas regarded as hazardous, why do most of them continue to receive public services such as water and electricity from the main which is regarded as legal-illegal conduct in these unplanned areas [23]. They are not only receiving services such as water and electricity from the main but also, they are regarded as a source of tax to the local and central authorities [23]. These precedents impair the efforts of ensuring sustainable cities as stipulated in goal no.11 of the sustainable development goals, which target investment in public transport, creating green public spaces, and

improving urban planning and management in a participatory and inclusive way. Consequently, the flourishing of dichotomy urban settlements in fast-growing cities which are exorbitant and unmanageable towards efforts of ensuring sustainable urban land development. Analysis of land use and land cover change offers useful results for determining and implementing land management policies [24,25].

The dichotomy of urban and development structure has different historical reasons whereby formal and customary land ownership runs simultaneously [2,49]. On the other hand, the dichotomy of urban land development has an inherent effect due to the colonial land laws which accommodated the dual tenure system of customary land or quasi-customary land ownership and formal or statutory land ownership, especially in the peri-urban areas [2,4,53]. The other reason for the dichotomy of urban land development is the speed of the government to supply buildable service land is lower compared to the demand of people [62,63,65,73]. Furthermore, the existence of a land black market and informal marketization of public land development operationalized by the landowners at the urban fringes subdividing land and selling it to other buyers who seek land for dwelling purposes deter the sustainable urban land development and hence dichotomy urban settlement [2,28,58,63,67]. Land cover studies has been studying over the years by many researchers [79,80]. This study aims to examine the cause and challenges of duo settlement urban partners in Dar es Salaam and track the urban land development land cover typology using remotely sensed images and investigate the situation of the land cover and its dichotomy flourishing.

2. Urban land development regulation

Urban land development in Tanzania is governed by various regulations from land management and administration, land acquisition, planning, surveying, titling, and registration. The constitution of the United Republic of Tanzania is the overall of human rights and land rights; the Land Act No. 4 of 1999 and The Village Land Act No. 5 of 1999 (as amended in 2004, 2005, 2008, and 2009) to manage urban and village land respectively. The Land Use Planning Act (LUPA) 2007 and the Urban Planning Act (UPA) No. 6 of 2007 (revised in 2002), also facilitates land administration processes specifically for planning before titling and registration. The Land Acquisition Act, 1967 for compulsory land acquisition matters; The Land Survey Act of 1975, Cap 324 (Revised in 2002) for the cadastral survey and geodetic referencing procedures; The Local Government (Urban Authorities) Development Control Regulations, 2008 which delegate the responsibilities for Local government and Urban authorities, The Human Settlement and Development Policy of 2000 and National Land Policy of 1995 [74]. Once the area is declared as a planning or zoning area, especially for the provision of public facilities and other infrastructure community needs, the landowners have no option rather than waiting for the compensation and reallocation processes to take place. The President can resort to compulsory urban land

acquisition on the condition of compensation, for the public interest and this will include investment in the national interest and urban land development [49]. The operating modal in question which is expropriation or eminent domain in urban land development is being debated now and then due to dissatisfaction allegations, unfair compensation claims, land dispossession of claims, and in other places land squabbles and claims for the unjust spatial land development with little inclusiveness and participation. However, the land development process faced with challenges right away from the land acquisition stage due to a lack of diversity in land acquisition and development. Compulsory land acquisition had extensively used as a development approach without proper resettlement plans because of financial deficits. Financial deficits make people receive a little amount of money as compensation after land acquisition and make them go to the periphery to seek unplanned cheaper land which they can afford. On the other hand, the national land policy of 1995 has identified the unplanned settlement by making the provision to all residents found in the unplanned settlements for their land rights to be recognized and registered [71]. The upgrading of the informal settlements in urban settings had been recognized through the National Human Settlements Development Policy of 2000 as the result of the high birth rate which cause population increases and rural-urban migration [78]. The two policy stances had been supported by Land Act No.4 of 1999, under sections 57 to 60 by the provision of a regularization process which is the upgrading of informal settlements, hence supporting the dichotomy of urban settlements [74].

3. Local and central government initiatives and role of international organization

Urban development and resettlement had been faced with several challenges that are affecting urban portfolio performance due to the exercising of the conventional approaches in land acquisitions and urban land development [52,62,66]. The rapid urbanization in Tanzania exposes its emerging cities and the process appeared to cause a burden and challenge to local and central governments which have the responsibility and overseer of any urban land development in their jurisdictions [5,6,23,64,70]. In the land development process, there is a close relationship between compulsory land acquisition and land development or urban planning [26]. The acquisition of the private land properties and resettlements actions of the project affected people in the cause of urban land development seems to be thorny and challenge to government authorities [27]. The settlement actions for most of the cities in developing urban vicinities, especially peri-urban areas in Tanzania, are not identified early enough, and the challenges of the (re)settlements outcomes are not well contained and addressed [4,5,19].

The influence of the government, the World Bank, and other international counterparts towards urban development and infrastructure provisions, in African countries and Tanzania in particular, is of greater importance. The number of projects introduced in

Tanzania through direct intervention or sector loans is increasing rapidly. However, most of the projects normally adopt the conventional approaches in dealing with land acquisition and resettlement actions which in most cases have limited successful and promising future results [28,29]. It is nothing short of axiomatic that problems of urban management and resettlement were not likely to be contained through conventional land development approaches due to underlying factors such as; land acquisition and relocation of project-affected people due to the rapid urbanization process, exorbitant land prices, and paucity of resources for large scale public land development and supply of low-cost housing programs, especially at this time where the country is facing with many urban developmental challenges with limited available financial resources [4,30-32].

4. The description of the study area and data

Dar es Salaam is in the eastern part of Tanzania, on the western shores of the Indian Ocean. It is the largest business city in Tanzania. It is situated in the coastal region of Tanzania, and it serves as a prominent business hub and site for public and private administrative offices and agencies. It is the richest city in the country and saves as an important economic center in the region due to its geographical location, concentration of trade, and other services including manufacturing compared to other regions. Dar es Salaam, which serves as the capital of the country until the mid-1970s, remains the center for the central government bureaucracy, although Dodoma is the new capital and political city of Tanzania since 1974. The study area was based on the analysis of all municipalities of Dar es Salaam, which includes: Temeke, Kinondoni, Ilala, Ubungo, and Kigamboni municipal councils (Figure 1) represented the selected study area which is around 1641 km² surface area.

To support the rising challenges in urban land development, the study used observational, documentary, and green literature review together with field survey data. The examination of the flourishing of unplanned settlements and hence the dichotomy of urban settlement, and the limitation of the applicability of expropriation were examined by field survey. Questionnaires covering 330 respondents affected by land acquisition and urban land development with a turnout of 246 respondents were used for analysis. Yet, the study used remote sensing and imaging as a method to investigate Tanzania's urban land development typology. Dar es Salaam was specifically chosen because it is the fastest expanding and stands for the subject matter under this study.

As mentioned above, Dar es Salaam is the business capital city of Tanzania, and it is Tanzanian's first largest and most populous city due to the economic opportunities it offers [1]. The population of Dar es Salaam encompasses 8.7 % of the total population of Tanzania [75]. The population density of the study area is projected and given in Figure 2 to analyze the populous areas and compare them with the built-up area [36,37]. The most highly and predominantly populous area was seen to be in the middle and coastal areas of the city, where most of the built-up areas were identified to be

upper buildings or tall buildings compared to other areas in the city. On the other hand, southeast parts of the study

area were identified to have a very low population distribution as indicated in Figure 2.

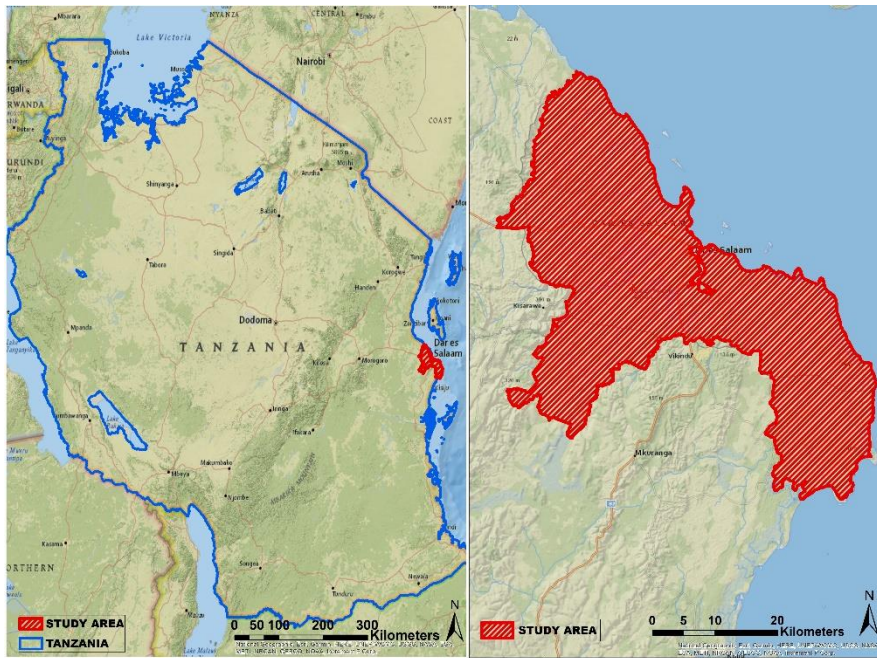


Figure 1. Tanzania (a), official boundary of Dar es Salaam (b) (Data Source for map ESRI online 2021).

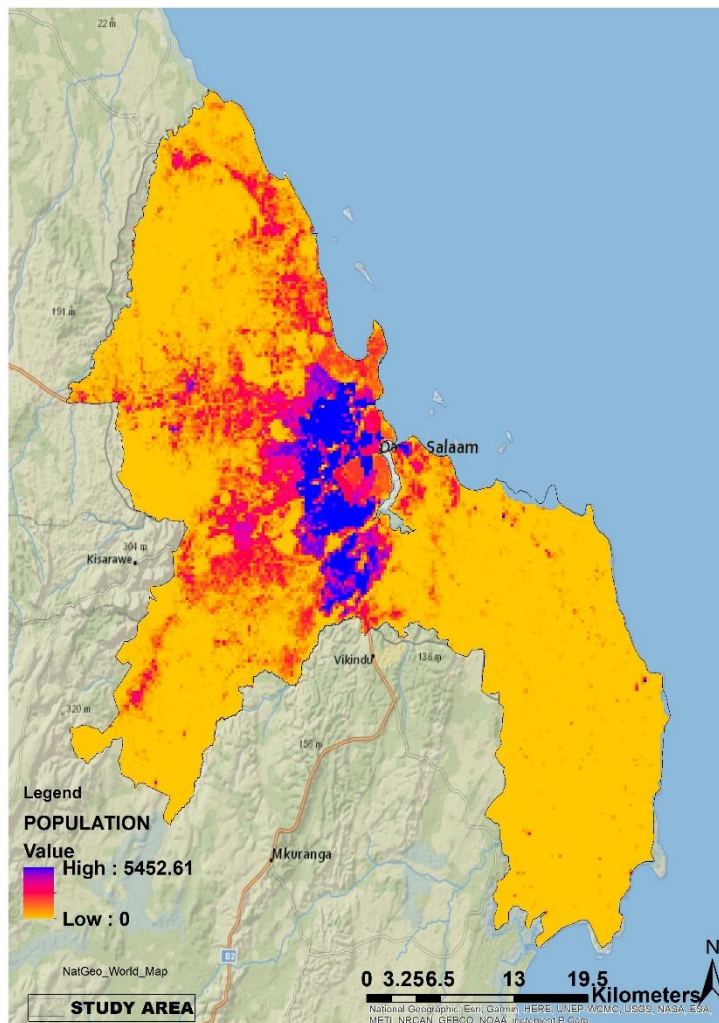


Figure 2. The population density in the study area by the year 2015

The population of Dar es Salaam has been growing over the years (Figure 3, Table 1), The current population

of Dar es Salaam in 2021 is estimated to be as 7,047,000, which is a 5.15% increase compared with the 2020

population [38] so that one can easily figure out that the growth of population has been greatly increasing. It is also necessary to analyze the population of Dar es Salaam between 1975-2020 since these years are the subject of the monitoring change detection of built-up areas in Dar es Salaam. According to the official population data, even though the population has shown a significant increase in the last 5 decades, starting from 1975 the growth rate was decreasing up to 1990 whereby the population was identified to rise significantly. One can say that the result of this population growth is the increase in the built-up area within the period. To compare the change in the built-up area and the population growth it was crucial to investigate the correlation between the two variables [1,39].

In detail, Tanzania’s total population and Dar es Salaam’s population were analyzed at 10 years intervals as seen in Table 1. In 1978 the number of people for km² was 19.65 in 1978, while it was 67.00 in 2020. This data shows that there was a significant increase in both populations and built-up areas.

The population of the city as of now is approximately having a population of 7.04 million [40]. Nevertheless, it is expected to cross the threshold of “megacity” cities with a population of 10 million by having 13.4 million in 2035 (Figure 4). The official boundary surface area of Dar es Salaam is 1590 km². The total land and green land per person have decreased since the 1950s due to population and urban growth. The physical population density in the city is 67 people per km² and the average land per person is 0.45 hectares [54].

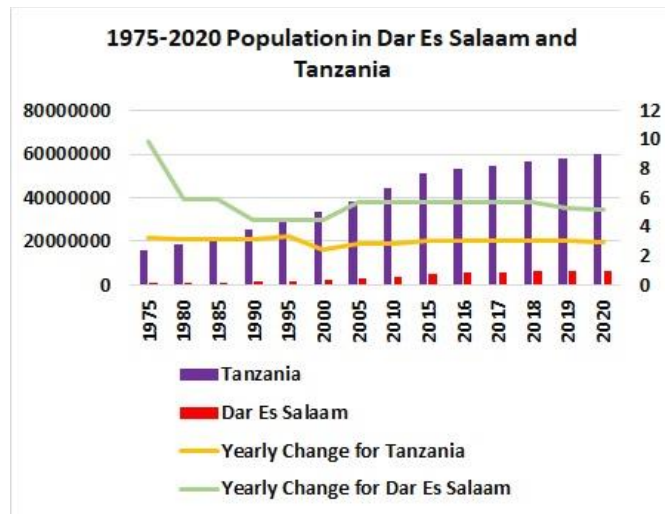


Figure 3. Population and yearly change in Dar es Salaam and Tanzania between 1975-2020

Table 1. Urban growth in Tanzania mainland and Dar es Salaam 1978-2020 [41-42]

Population Category	Years					
	1978	1988	1998	2008	2018	2020
Total population (000 000)	17.43	23.67	31.92	41.85	56.32	59.73
Urban population (000 000)	2.38	4.31	6.89	11.21	19.02	22.11
Population density (People/Km ²)	19.68	26.72	36.04	47.25	63.58	67.00
% of the Urban Population from the Total Population	13.66	18.22	21.59	26.78	33.78	37.00
Dar es Salaam Population (000 000) [40]	0.85	1.36	2.08	3.46	6.048	7.040

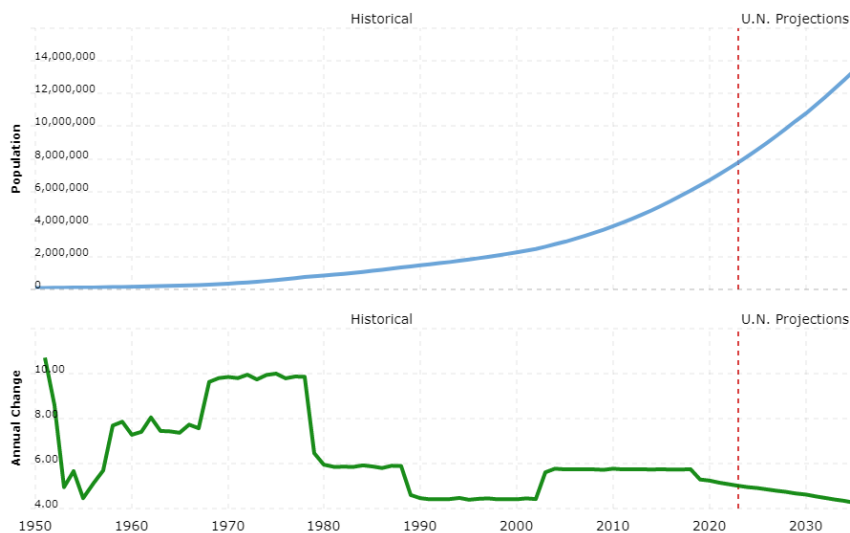


Figure 4. Dar es Salaam population future projection [43]

5. Results and Discussion

5.1. The flourishing of unplanned settlements

Several reasons were identified as to why unplanned settlements in urban vicinities were flourishing. Factors such as high population increase which creates a demand for serviced land plots and infrastructures had been leading among the other factors. On the other hand, respondents commented that the lack of financial capacities for the implementation of land development, conventional urban land development tools, and policies do not complement the need and the speed of contemporary urban land development. Factors such as lack of expertise, poor land development, and land development policies are the major factors for informal land development incidences (Figure 5).

5.2. Limitation of implementation of compulsory purchase

The study showed that factors such as inadequate financial resources, and budgetary deficits are the leading factors delimiting the successful compulsory purchase of land acquisition. On the other hand, bottom-up land development (lack of participation), court injunctions, and court cases, obtaining cheap land for land development, and smooth land transfer including holdouts from landowners were identified factors that limiting the implementation of expropriation and land acquisition in urban land development (Figure 6).

5.3. Built-Up area in Dar Es Salaam

Dar es Salaam as the case study area is adjoining the Indian Ocean; therefore, it was very hard to find a cloudless satellite image that covers the total study area. Since this study aims to figure out the built-up area change and examine the urban land development typology, the pre-prepared land cover more specifically built-up area maps from various sources was collected

and used. GHS-BUILT [37] and ESRI Land Cover [45] data were re-symbolized and re-analyzed to monitor change in the built-up area in Dar es Salaam. Change monitoring for built-up areas between 1975-2020 was analyzed in detail. More specifically, built-up area changes in the study area in 1975, 1990, 2000, 2015, and 2020 were conducted and illustrated in Figure 5-7. It is easily seen from Figure 5 that between 1975 to 1990 there was a significant increase in the built-up areas in Dar es Salaam. In 1975 total built-up area of Dar es Salaam was 24.79% of the total study area, while it was almost the same as the 1990 data, where the total built-up area was found to be 24,80% of the total selected study area (Figure 7).

In Figure 8 which shows the built-up area of the study area in 2000 and 2015, it was easily observed from the figure that there is a significant difference between 2000 and 2014. The total built-up area was 30.42% and 33.37% in 2000 and 2014, respectively. As was formerly mentioned that in 1990 the total built-up area was 24,80% while in 2000 was identified to be 30,42%; In comparison, these results show that there is a 5.62% difference as an increase between 1990 and 2000. According to this result, one can say that there is a high construction between 1990 and 2000 in Dar es Salaam. Again, as was previously stated, in these years it experienced rapid population growth which demonstrates the increase in the built-up area for settlement.

Finally, the latest results of the built-up area have been investigated by using the land cover map of 2020 [41]. It is noteworthy to say that the latest built-up area map (2020) has a 10-meters spatial resolution while the other built-up area maps above have a 250-meter spatial resolution, therefore, in the latest built-up map, smaller buildings were easily identified compared to the coarse resolution in previous years land cover maps. In the latest years, it was identified that settlements were scattered and distributed everywhere within the city, while the total built-up area was 35,06% of the total area of the city.

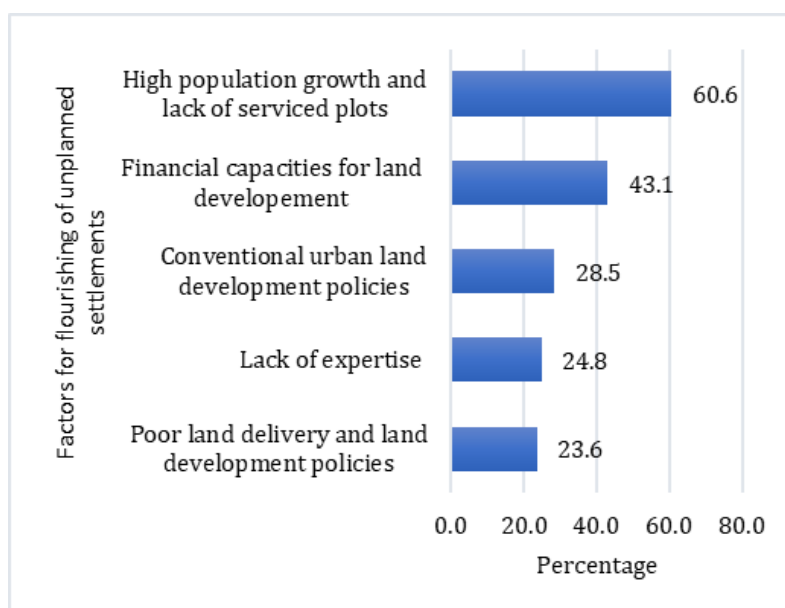


Figure 5. Causes of unplanned settlement and urban sprawl

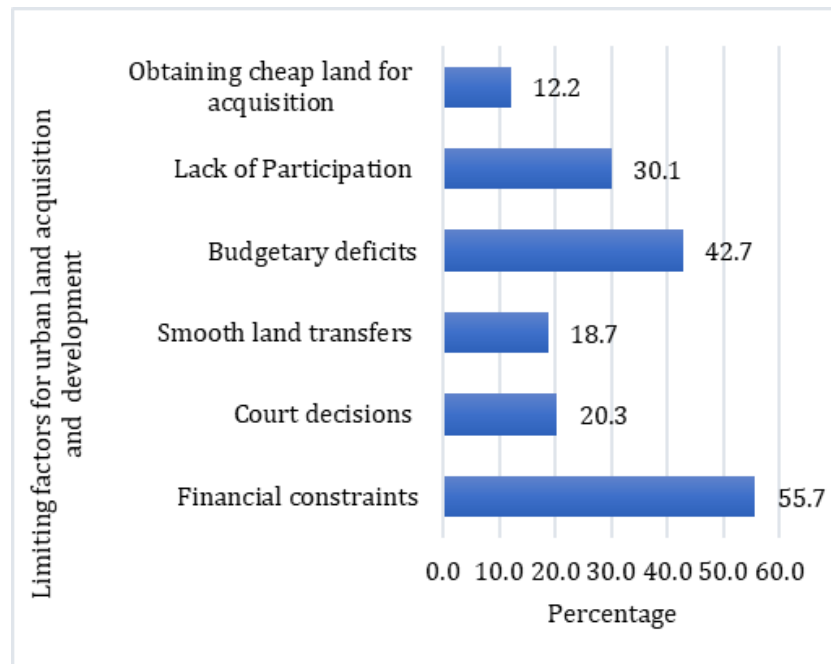


Figure 6. Limitations in implementing expropriation in land acquisition and urban development

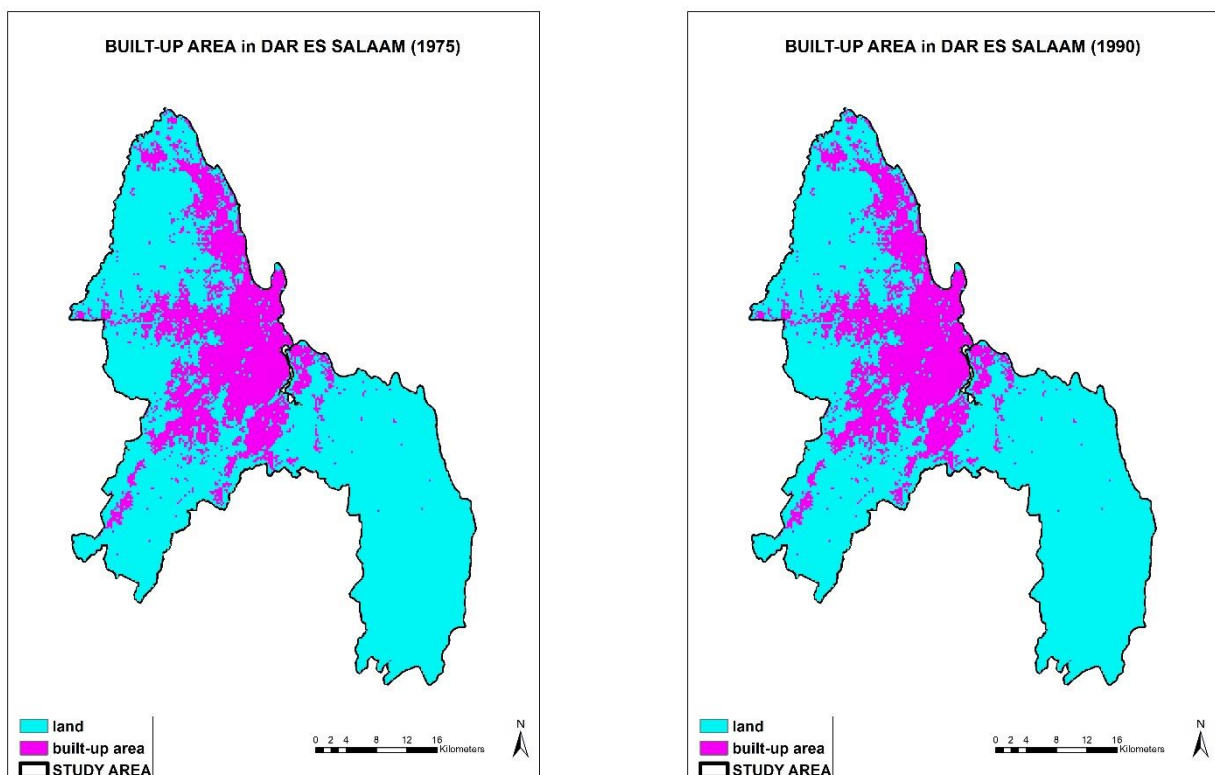


Figure 7. Built-up areas changed in Dar es Salaam between 1975 and 1990

Furthermore, [Figure 9](#) was displaying the change in built-up area by comparing and tracking changes from 1975, 1990, 2000, 2015, and 2020. Consequently, the use of the remotely sensed and processed data demonstrates that Dar es Salaam's built-up area has been continuing to grow in every direction both horizontally and vertically. Therefore, it is necessary to note that initiatives for proper planning and land development must be linked with the trend of population growth in Dar es Salaam and emerging cities of Tanzania.

[Figure 10](#) shows the percentage of built-up area in the selected years with a land cover map. From the image, it can be noted that built-up areas and urban land development changes in Dar es Salaam between 1975-1990 were significantly low, while the growth of the built-up area has been accelerated and took a new pace after 1990 and reached the highest score at 2020 with 35,06%.

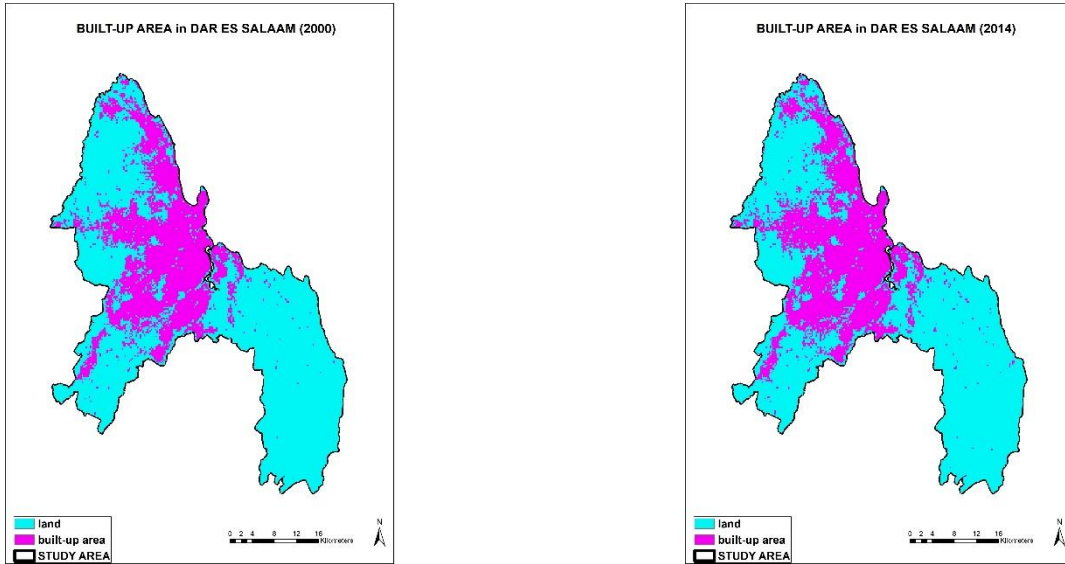


Figure 8. Built-up area changes in Dar es Salaam between 2000 and 2014

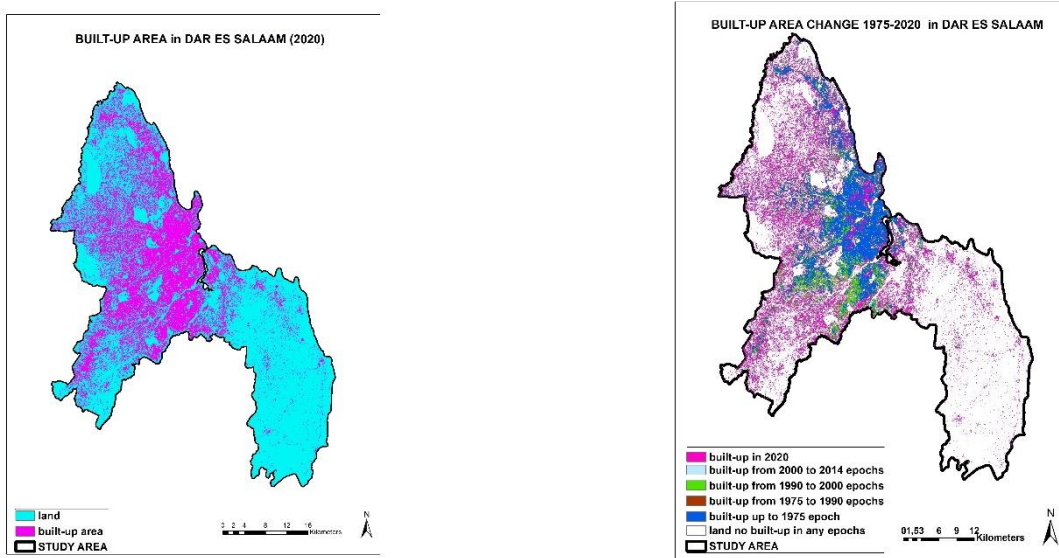


Figure 9. Built-up area of Dar es Salaam in 2020 and change in built-up area between 1975-2020

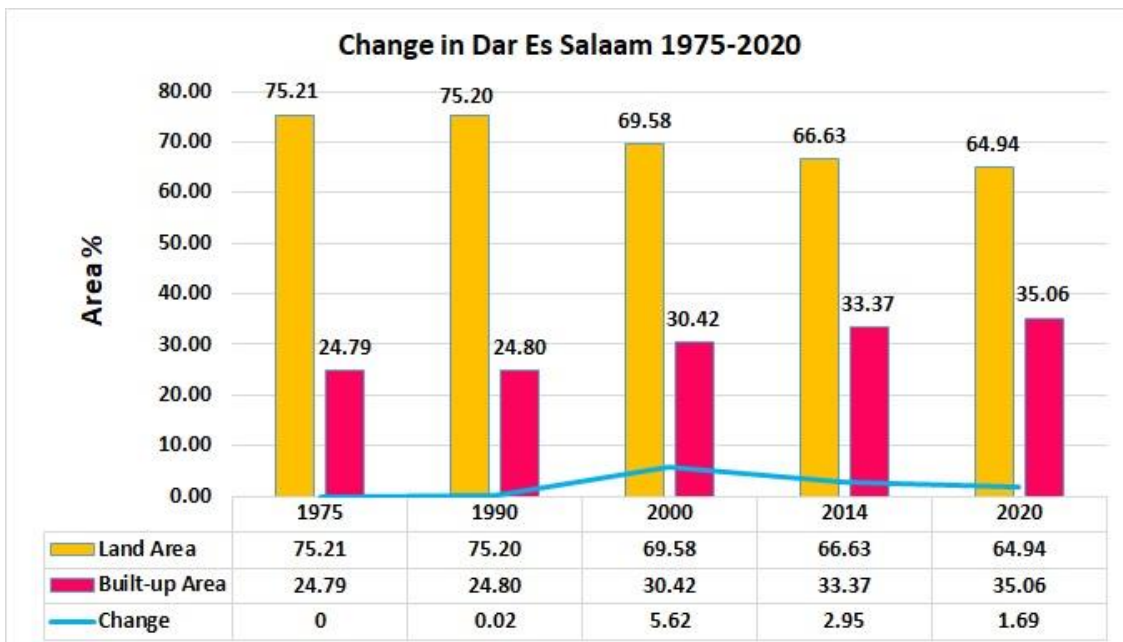


Figure 10. Built-up area changes in Dar es Salaam between 1975-2020

6. Land governance and sustainable urban development

Land governance is all about how policies, institutions, and other procedures by which land resources and natural resources are managed [33,46]. It includes the decisions on access to land, land rights, land use, and land development [33,46]. Good land governance is about the process of making and implementing decisions on land resources; it does not connote implementing “correct decisions” but rather towards enriching the best possible decisions on land resources [5]. It is the governmental side of space and land management [47]. Good land governance has a greater influence on ensuring the proper achievement of global sustainable goals and especially goal 11 of sustainable cities under UN Agenda 21 [33]. Land governance is ideally about determining and implementing sustainable land policies and making sure that urban development is realized [33,46].

Urban land governance and smooth land development were termed as a campaign of alleviation and combating poverty in developing countries and it was launched as the global campaign for good governance in 1999 by the UN-Habitat. The improvement of urban land governance was identified as an important point in urban poverty alleviation and promoting sustainable cities [7]. Urban governance was linked with poverty mitigation procedures and sustainable urban development which are among the common problems recurring in most of the developing countries, especially in the global south [15].

The land governance in Tanzania has its birth and evolved from historical land tenure and ownership, ranging from the traditional alias customary land tenure followed by the colonial system which introduced the statutory land tenure system, and then neo-liberalization and structural adjustment programs (SAPs) adopted in the 1980s [5,48,49]. The adopted SAPs had a greater change on the social, economic, and political structure had a greater impact on land governance, and influenced land development [2,3]. Despite the legal development of structural adjustment programs, land reforms, and relatively progressive land laws, land governance is still dominated by customary and statutory governance [46,47]. While all powers over land remain to the President with the radical title while citizens remain only with a position right [29,49].

Following the historical background land governance in Tanzania is being exercised under legal pluralism in the sense that the implementation of land governance adopts both the wings of customary legal arrangements (village land and trans-urban areas) and the statutory legal arrangements [32,49]. The dualism in land tenure and legal administration which stems from the colonial era is precisely undermining the efforts towards achieving sustainable urban planning and development due to innumerable challenges that appeared in land development, especially in the peri-urban areas [3,48]. The flourishing of informal settlements with formal settlements on the other side, building in hazardous areas, corruption, unequal land access to women, and land use squabbles among the land-based sectors are

among the crucial challenges faced by the land sector in Tanzania, precisely because of past precedents and are customarily attributed to poor land governance and policies which guide the urban land development and growth [2,3,5,49]. Sustainable urban growth which has three pillars such as economic, social, and environmental aspects is the good use of resources in recent times without compromising with the future generation. With proper land governance, it could be easier to control resources, land use and planning, and land delivery and distribution while achieving effective land development.

7. Policy and legal provisions for addressing dichotomy urban proliferation

Various policy actions and regulatory approaches had been implemented in the cause of dealing with the unplanned and informal settlement among cities that are more likely thriving along the urban vicinities. Right after the independence officials and politicians had initiated special actions to deal with the continued growth of informal settlements especially in cities like Dar es Salaam and Mwanza due to its high urbanization pace [4]. In this case, the main purpose was meant to prevent all forms of squatter settlement development which happen to be inconsistent with the master plan and modern land development and impose non-payment of compensation to cleared squatter settlements [3,4,30]. However, those measures were not implemented corresponding with the master plan of 1978 which recognizes the informal settlement, and all areas in squatters were zoned as residential areas [4].

The national land policy of 1995 has identified the unplanned settlement by making the provision to all residents found in the unplanned settlements for their land rights to be recognized and registered. The land policy discourages the demolition of the unplanned settlement rather than upgrading them by the provision of basic social infrastructure facilities in non-hazardous areas [74]. On the other hand, the upgrading of the informal settlements in urban settings had been recognized through the National Human Settlements Development Policy of 2000 as the result of the high birth rate which causes population increase and rural-urban migration [74].

The efforts of containing the unplanned settlement were not only ending on recognizing the properties and regularizing them but also in how these regularized properties can be formalized and be accepted as collateral in the eyes of financial institutions [31]. The process entails conducting planning, surveying, and land registration after the due payment of statutory fees [31]. Under this context, the Unplanned Urban Settlements Regularization Program, Property and Business Formalization Program (MKURABITA), and the National Program for Regularization and Prevention of Unplanned Settlements come up with the concern of regularization of informal settlement as the effects of the rapid increase of unplanned settlement in Tanzania [32,49].

The idea of regularization and theoretical perspective originated from the Peruvian economist book by De Soto 2000, which stressed that the significant regularization of the informal settlement could have a greater impact on

the urban economy if the informal extra-legal economy could have been linked up to the formal economy [23,31]. The concept revolving around the whole idea is to unlock the dead capital into live capital or liquid capital and to reduce the poverty impact as financial recognition and inclusion [53]. The regularization is supposed to provide several benefits from the individual property owner to the government; legalization of properties will help to obtain credit as collateral, registration of property and smooth transactions, tax gains to the government, etc. [31].

8. The dichotomy of urban proliferation

In Tanzania, there is a dual structure of land ownership and development, whereby the formal (legal) and informal (illegal) land and structural development is widespread and evolved together (Figure 11a and 11b). The government through its authorities is predominately the regulator and invests little in urban land development by producing public social infrastructure and urban plots productions [4,31]. The private sector has a prime position in urban land production, whereas land development by different landowners is overriding when it comes to property development or land development processes [6,54]. The property owners in the unplanned settlement in Tanzania have nowadays got a legal backup which has not existed before let alone in the colonial era itself. The legal ringfencing of the unplanned settlement (comprising more than 70% of urban cities) in many urban areas, substituted them to be legal owners of the properties with the assurance of having residential licenses or regularized [31]. In addition, it was estimated that in Tanzania approximately 81% of the workforce is employed and operating under the informal sector while the livelihood of the workforce depends on access to public infrastructure services which does not delineate private ownership [54].

Legal acknowledgment of the informal settlements with policies such as regularization and the formalization of informal settlements without any property demolition in the squatter and unplanned settlement generates confidence and the flourishing of the extra-legal urban development and result in a dichotomy urban land development [6,23]. Consequently, the informal landowners develop permanent structures whereby few of them have access to public services such as water and electricity and can be taxpayers and illegal utility purchasers from the main [23]. Again, the development of informal settlements was not limited only to the low-income groups but also the settlement structures show the presence of middle-and higher-income groups in the unplanned alias informal settlements [4,28,56].

The government does not have a well-established social housing policy and leaves the role of providing settlement production to be in the hands of landowners after having land through formal or informal ownership [23,30]. Despite the role of the private sector in the cause of providing urban land plots and infrastructure services,

there are some limitations for the private sector to intervene in the provision of urban land supply and infrastructure services and generate profit by covering the existing demand gap in urban land plots. Nevertheless, some land survey private firms had been devoted themselves to this business, but the problem is still existing at large because of several factors such as inadequate compensations, delay of payments, lack of awareness, political interference, and other complexities in land acquisition procedures [3,54].

Therefore, informal settlement can be considered a land governance failure in carrying out proper land development, distributions, and other land administration and management responsibilities to meet the shelter needs [3,4]. In Tanzania between 50% to 80% of the urban population is living in informal or unplanned settlements [6]. Illegal dwelling leads to poor infrastructure settings and poor quality of housing stocks which impair the efforts of sustainable urban land development.

On the other hand, the dichotomy of urban land development has an inherent effect due to the colonial effects in land laws which leads to the existence of a dual land tenure system; customary land or quasi-customary land ownership especially in the urban fringes areas [2,4,49]. This situation makes land development initiatives face some challenges especially when land acquisition is required for urban land development due to the legal requirement of paying relatively expensive compensation. The major reasons for the dichotomy of urban land development among the challenges stipulated by these scholars are dissatisfaction of the project-affected peoples [9,27], inadequate and delay in payments of the compensation fees [9,29,30], lack of financial resources for projects to regularize land through compensation [57], socioeconomic challenges after the compensation project and incapacity to overcome the relocation and resettlement of project affected people [5], lack of good governance, failure to adhere with the statutory requirements and corruption practices revolving within the land management and administration authorities. Furthermore, other studies revealed that the resettlement actions plan resulted from the compensation in land acquisition and planning which entails reducing the informal settlements, had resulted in the vicious circle of the emergence of new informal settlements because the displaced people were not able to find alternative plots, they could afford with the amount of money they received from compensation in their previous acquired land for development purposes [5,30]. Operation of the land black market and informal marketization of public land development coxed by the landowners at the urban fringes through subdividing land and selling it to other buyers who seek land for dwelling purposes deter the sustainable urban land development and hence dichotomy urban settlement [3,4,28,58,76]. Figures 11 a and 11b represent two scenes of formal (well-planned and serviced land) and informal settlements that evolved together.



Figure 11. a) Msasani and Masaki aerial photograph in Dar Es Salaam **b)** Mikocheni aerial photograph in Dar Es Salaam

7. Discussion and policy implications

The current situation is seen in the cities of Tanzania whereby massive population growth, urbanization pace, and higher economic growth it has been the case in the countries such as Japan, Taiwan, Thailand, and South Korea for decades back [77]. Stemming from the foregoing literature and different case studies, the urbanization challenges which had been experienced in different places of the words evolving cities including developing countries, particularly in Tanzania is not a new phenomenon in the cause of land and urban development. It is a common phenomenon that had been experienced by developed countries in the 19th and the early 20th century in the aspect of urban land development and infrastructure land services in most European and Asian countries. Most developed and developing countries show that they had been experiencing similar challenges and pressures from urbanization, such as financial constraints in the land acquisition by local and central authorities, sustainable urban development challenges, how to unlock complex land ownership structures, and supplying of land for the public, environmental issues just to mention few [61,77]. On the cause of finding the solution for urban development, most of the then-developing countries had now adopted and implemented alternative and innovative land development models for land acquisition such as land readjustment, tax increment finance, infrastructure financing models, land value capture, innovative land cadastral, and administration approaches to deal with the urbanization challenges and enhancing the sustainable urban development by evading from the financial and budgetary burdens pinned by conventional land development approaches.

The co-existence of formal and informal urban land development which is purely backed by legal and institutional framework appeared to be a threat to sustainable urban land development and is making public infrastructure, public spaces, and environmental amenities in the cities to be insufficient [74]. The lives of many around the world are merely integrated with the environment while it's true that future survival is tied to an environmental relationship [48]. Alternative urban land development approaches or integrating alternative urban land development approaches are inevitable for sustainable urban land development [61,77].

The only way of reaching sustainable urban development is not only relying on the well planned and cost-effective or self-financing approaches but also should be focused on vertical urban development rather than horizontal urban development since encouraging horizontal urban development whether planned or unplanned will compromise with potential agricultural land in the cause of urbanization. This is because population growth creates demand for affordable food production, decency settlements, and sustainable environmental development.

Tanzania has been facing challenges and struggles in the cause of achieving the aim of sustainable development goals towards achieving sustainable cities as lack of finance for real estate development. The pictorial evidence is revealed under the analysis of satellite imagery of dichotomy settlements. The situation as it is now threatening sustainable urban development, the inadequate fund from the government to finance the urban development process by continuing to implement conventional approaches turns out into environmental problems, impoverishment through loss of land, and resettlement programs.

The urban land development without a proper real estate financing system will make way for the land speculators and endanger the livelihood of the poor or low-income people who will be forced to be displaced from their original premises and as a result, people will seek alternatives and affordable ways to find the land to set up settlements and investment. The government authorities should supply adequate funds, or else should opt for cost recovery models for urban land development and for the implementation of master plans whereby study shows that its implementation is not sufficient to address the urban growth challenges, sustainable growth, and population needs [48].

9. Conclusion

Developing countries had been in a state of challenges in the cause of supplying affordable and sustainable well-serviced land for settlements and infrastructural facilities for urban land development. Most developing countries had been faced with the challenge of supplying infrastructural public services which can support the population growth of rural-urban immigrants, and at the same time achieve sustainable city development and environmental management. Urbanization rate and

population growth in developing countries which has been taking place at a greater momentum in cities undermine the effectiveness of the state's ability on the cause of land development and provision of infrastructural land facilities. Excessive cost and budget constrain which are facing developing countries led to the insufficient supply of serviced land and consequently lead to price hiking of available serviced land which makes it difficult to be affordable among most land seekers. When the government is not in a state of supplying affordable housing settlements and serviced land, the private and informal self-help took part to find a solution and develop informal settlements which as a result challenges the efforts of achieving proper land governance and sustainable urban land development. However, it appeared that the self-initiative actions for settlements are not purposive in achieving environmental amenities, considering public spaces, land economy, and sustainable urban development. It has been found that most people with limited access to housing end up developing land illegally and sometimes in hazardous areas without following the urban land use plan and master plans at large. The low-cost informal settlements are found affordable to most of the people who did not afford the serviced land plots which are scarce and if available are expensive. All these urban land development consequences and land governance misfortunes do not end up in the emergency of informal settlements only but also lead to the emergency of social polarization within the community by the emergency of gated communities.

The key solution to the urban development challenges and dichotomy of informal and formal land rights is to supply affordable housing by means of innovative approaches which can be inclusive and participatory in land-use decisions, land development, and land acquisition. Innovative land development tools are not necessarily to be introduced as a new modal and paradigm shift but rather can be integrated with the existing conventional land development approaches to start with and leverage the land supply and infrastructure services.

The discouragement of top-down land development approaches and encouragement of the bottom-up approach and self-financing land development approaches are found to be relevant and indispensable due to the land development budgetary constraints in developing countries which are facing many economic, social, and environmental issues to achieve.

Having the proper finance is observed as a challenge when it comes to urban land development in many developing countries because of the dichotomy and unsustainable urban growth which was witnessed; it is imperative that innovative policies which have a successive history in other countries such as Japan, Malaysia, South Korea, and India can be applied to get rid of the very same experienced land developmental challenges.

When public governance does not deliver through land governance the proper evidence is the dichotomy of urban settlement development, with the worsening of the urban environment, consequently because sheltering is the basic need of humans, private interest will override

the public interest, and private land governance will rise to fill the void. As a result, social classes, segregation, and even social polarization appeared within formal and informal spatial communities. To contain these challenges the collective actions under the arms of the community and the state as the third part of land development should remain responsible and intact. Urban re-generations and (re)development are among the other issues that developing countries must comprehend and conduct research on the applicability and demonstrability of successful applicable models in sustainable and living cities.

Author contributions

Amani Michael Uisso: Conceptualization, Writing-Original draft preparation, Methodology, Field study
Sibel Canaz Sevgen: Data Analysis, Methodology, Visualization, Image-Data Processing, Software
Harun Tanrivermiş: Conceptualization, Supervision, Writing-Reviewing and Editing.

Conflicts of interest

The authors declare no conflicts of interest.

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