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The spatial and environmental dimensions of sustainable development: a comparative analysis of major urban centres of Tanzania

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Abstract: The concern over sustainable development in cities of the developing world has evoked a debate from various scholars and contexts. The justification for this debate emanates from the fact that informal urbanization that pervades urban development presents bleak opportunities towards achieving sustainable development goals. This has been largely attributed to the limited capacity of urban local authorities to plan and provide basic services and address spatial and environmental challenges. Unplanned sprawl, low population and housing densities, rapid growth of informal settlements and conversion of agricultural land into other urban uses charactirize spatial concerns of urban sustainability. On the other hand; limited capacity to manage wastes and flooding and inadequate water and sanitation constitute key environmental concerns. This paper attempts to analyse sustainability issues from spatial and environmental point of views from eight major urban centres of Tanzania. It utilizes data that was collected from the 'Tanzanian State of the Cities Project' (2010-2013). The data collection methods included household interviews,review of official records, workshops, group discussion and reports from city coordinators. The results shows that across the eight urban centres, Zanzibar was leading towards sustainability by achieving 476.7 points of the aggregated indices, followed by Mwanza city that registered 458 points. The least performing was Tanga that achieved 221.1 points. As a way forward, it has been recommended that; cities should be planned and guided for increased densities and facilitated to provide services to achieve sustainable urban development.
Keywords: Environmental and spatial sustainability, sustainable development, urbanization

INTRODUCTION

The concern over sustainable development as a concept and a paradigm in development is not new and has been in academic currency since the 1980s. It was first put into context in 1987 when the World Commission on Environment and Development defined sustainable development as: "development which meets the needs of the present without compromising the ability of future generations to meet their own needs" [1]. More impetus emerged after the Rio Conference of 1992 that put environmental conservation as one of the world agenda to address environmental sustainability. In the broadest sense, sustainability refers to the capacity of socio-ecological systems to persist unimpaired into the future[2]. Three broad aspects of sustainable development have been frequently brought into focus. The first is economic sustainability which refers to systems that must be able to produce goods and services on a continuing basis, to maintain manageable levels of government and external debt, and to avoid extreme sectoral imbalances which damage agricultural or industrial production. The second is environmental sustainability that focuses on environmentally sustainable system which must maintain a stable resource base, avoiding over-exploitation of renewable resource systems or environmental sink functions, and depleting non-renewable resources. This includes maintenance of biodiversity, atmospheric stability, and other ecosystem functions not ordinarily classed as economic resources. Environmental sustainability refers to the maintenance of the ecosystem and the natural resource base. Environmental degradation takes three forms: depletion of resources; pollution, or overuse of the waste-absorbing capacity of the environment; and reduction in biodiversity - a loss of some types of resources[3]. Hardoy, Mitlin and Sattherthwaite, [4] point out that environmental capital can be divided into three broad types namely; the *'natural sink'* focusing on the capacity of local and global systems to absorb or break down organic wastes and absorb gases without adverse effects on climate or the stratospheric ozone layer; the *'finite stock'* of non-renewable resources such as fossil fuels and other minerals. Biological diversity, one key part of environmental capital, might also be considered a non-renewable resource; renewable resources such as

crops and trees which are renewable only within finite limits set by the ecosystem within which they grow. Fresh water resources are also finite; in the case of aquifers, human use often exceeds their natural rate of recharge and as such is unsustainable[5]. Thoughtful use of natural resources includes ensuring that rates of human use of natural resources are within the limits of natural systems for cyclic replenishment, regeneration or recharge. The third is social sustainability with a focus on socially sustainable systems which must achieve fairness in distribution and opportunity, adequate provision of social services including health and education, gender equity, and political accountability and participation [6]. The social sustainability perspective also include addressing the many social inequities in our societies associated with gender, race, ethnicity, etc. as well as the growing economic gap between the "haves" and the "have nots." Social sustainability refers to the social conditions necessary to support environmental sustainability[4,7]. This stresses the fact that natural resources are used within a social context and that it is the rules and values associated with this context that determine the distribution of resources within the present generation and the next.

CONTEXTUALIZING URBAN SUSTAINABILITY

In the context of urban settings, sustainable development can be debated linking the human activities undertaken within cities and its bio-physical characteristics. The South African State of the Cities Report [8] defines urban sustainability as the relationship between urban activities and the bio-physical environment within and beyond city boundaries [8]. The concept includes ecological, social, economic, and governance dimension with some indicators as waste and water, growth in property development and urban density that have significant impacts on functionality of cities. The Report points out that when cities grow, they utilise resources from well beyond their geographic boundaries. Environmental performance of cities should therefore be analysed at two scales, namely; improvement of environmental quality within cities and environmental costs to other people, other ecosystems and other generations [8]. Spatially, Compact cities with most activities located within walking distances and that reduce dependency on motor vehicles have been linked to sustainable cities. This is attributed to the advantages that they conserve energy, reduce air pollution and serve land resources. Sewage effluents, solid wastes and hazardous waste can all be recycled for other uses[9, 10].

There is an inextricable link between prosperity and environmental sustainability of cities[11]. While urban areas consume huge amounts of environmental goods and services such as food, water, energy, forestry, building materials, and 'green' or open spaces, often the assimilative capacity of the environment around these urban to the larger extent has been limited. UN-Habitat, [11] reports that while cities of the world generate over 720 billion tons of wastes every year, in developing countries, only 25 to 55 per cent of wastes are collected. Demographic and spatial expansions are so rapid outstripping the capacity of cities to provide basic amenities such as housing, water and sanitation. This has resulted into poor urban environmental conditions questioning the sustainability of cities [11].

The rate at which spatial growth of cities has been taking place coupled with population explosion in urban centres raises a major concern on how spatial growth of cities can be managed sustainably. Amidst increasing poverty and diminishing capacity of local and central governments to manage and provide requisite services, the emerging city forms in most urban centres depict complex patterns of spatial entities that ought to be addressed if the goals of sustainable urban and development are to be achieved.

One of the challenges confronting most cities of the developing world is informal urbanisation that continues to shape the emerging city spatial structures and patterns. Informality is evident in both human settlements and in livelihood activities through which the majority of urban residents draw their living. The diminishing capacity of urban local authorities to manage spatial growth in rapidly growing towns and cities is rendering most of these cities less liveable. Of particular concern is not just the declining capability of urban local authorities to provide basic services, but the rapid urbanisation that is driven by widespread poverty and stagnating economies. The consequences of this type of urbanisation have been directly related to unsustainable spatial growth of cities. The characteristics of this kind of growth are evidenced by the booming informal economic sector and proliferation of informal settlements, uneconomical service provision due low housing and population densities, limited capacity to collect and dispose solid and liquid wastes, poor sanitation and limited coverage of sewerage networks. Unsustainable urbanisation is manifest in sprawled cities by the outward expansion of built-up areas and the conversion of prime agricultural lands for residential and other land uses, encroachment of fragile lands such as river valleys that culminates into frequent flooding. Other challenges include limited capacity of road networks culminating in traffic jams that impact negatively on the sustainability and productivity of cities. Climate variability has also brought about a number of challenges to cities. Of notable magnitude include the increase in areas prone to flooding, poor drainage systems to cope with flooding effects and lack of city-specific climate change adaptation measures and strategies.

Although sustainability embraces many variables, to apprehend urban sustainability in the Tanzania's city context only a few variables were considered. These included; the proportion of jurisdictional area to the built up area, population and housing densities, percentage of informal settlements, conversion of agricultural land into other urban uses, solid and liquid waste management, water supply, sewerage network systems and flooding levels.

METHODS

This paper is one of the outputs of the study project of 'Tanzanian State of the Cities Project' (2010-2013) that was carried out in eight (8) major urban centres of Tanzania. The project focussed on examining the state of governance, sustainability, safety and security, productivity and inclusiveness[12]. The study captured static and trend data on these five thematic areas. These centres included; the cities of Dar es Salaam City (that comprised the three municipalities of Ilala, Temeke and Kinondoni whereby each municipality was treated as an independent case), Mwanza, Tanga, Arusha and Mbeya and the Municipality of Zanzibar. Participatory data collection approach was implemented by establishing teams from each city or municipality. Both data collection tools and indicators for each thematic area were agreed upon in a workshop that was organized in Dar es Salaam. Each team developed a sample size based on 95 percent confidence. The sample sizes were established based on number of houses in each city from where household interviews were conducted. The estimation on number of houses was based on house count in each urban centre from latest aerial photos of each city (photos of 2010). This culminated in sample sizes of 399 houses for IIala, 287 for Temeke, 399 for Kinondoni, 398 for Mwanza, 440 for Tanga, 278 for Arusha, 397 for Mbeya and 395 for Zanzibar Municipality. Household interviews were complemented by spatial data from city specific aerial photos, satellite images and existing plans and maps. Official data (reports and documents) were collected from relevant offices for spot and trend data spanning for the period of five years (between 2007 and 2012). At data analysis stage, comparison across cities was done using spreadsheet, tables and graphs.

RESULTS

Urbanization trends in major urban centres

Although Tanzania is still a rural populated country, the increase in number and rate of urban population especially in major urban centres is alarmingly high. While in 1948 the proportion of urban population was only 2.4 percent of the total population or 183,862 people. By 1957, the urban population had increased to 364,072 accounting for 4.0 percent. In the subsequent years, the proportion increased to 5.7 percent or 685,547 people in 1967; about 13.3 percent or 2,265,854 people in 1978; approximately 17.8 percent or 4,043,684 people in 1988; 22.6 accounting for 7,943.561 people in 2002 and 29.1 or 12,701,238 people in 2012 (IGC, 2014) (Figure 1). Projection for the years 2020 and 2030 is estimated to rise to 31.8 and 38.7 percent respectively[13].

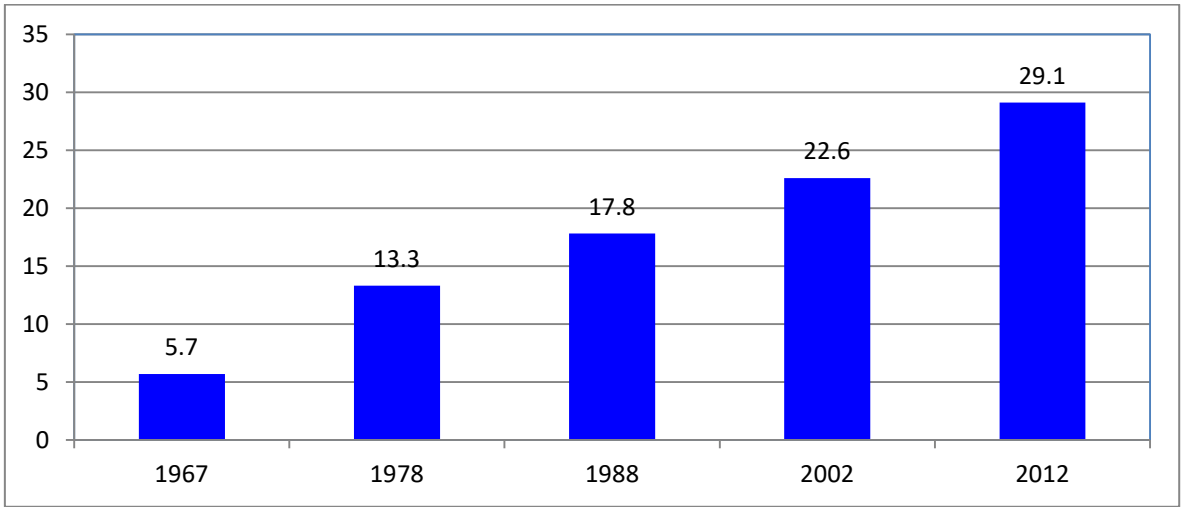
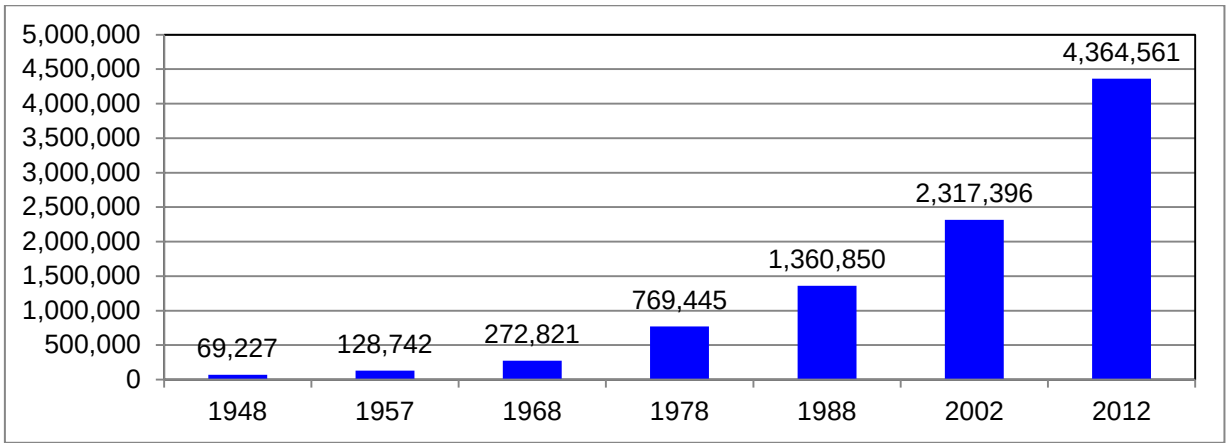


Fig-1: Urban population growth trend in Tanzania (1967-2012)
Source: IGC (2014)

In absolute terms, the population of Dar es Salaam for example leapfrogged from 69,277 in 1948 to 4,364,561 people. Being the primate city and commercial hub of Tanzania, the current population size of Dar es Salaam is almost four times the second largest city of Mwanza with a population of 1,275,955 people (Figures 2). The unbalanced population threshold for urban centres in Tanzania has culminated into varying service levels and unbalanced resource allocation from the central government.



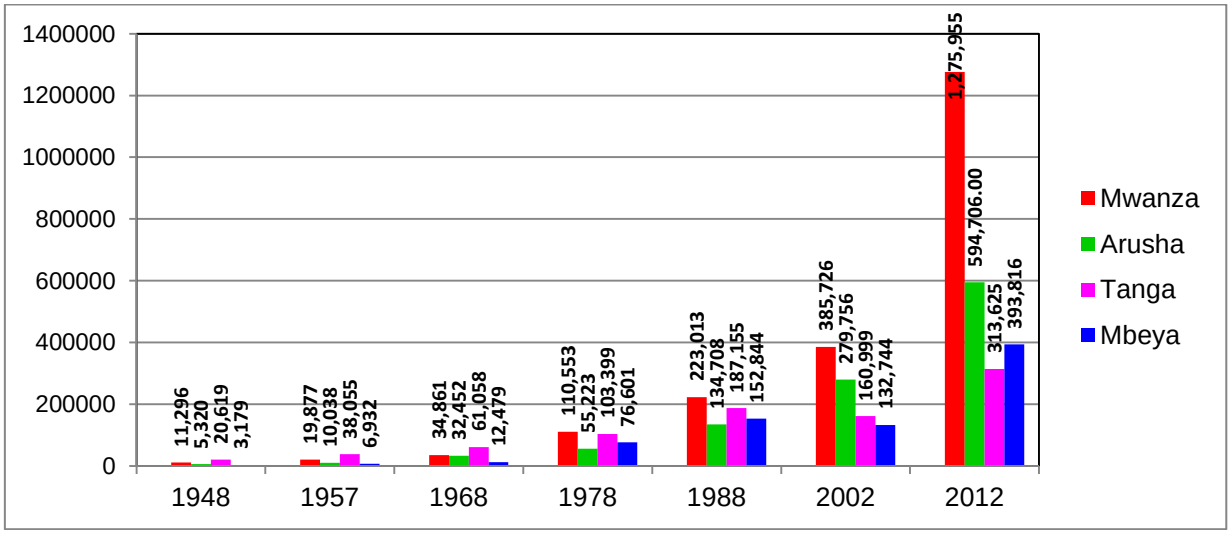


Fig-3: Population growth trends for other major urban centres of Tanzania (1948-2012)

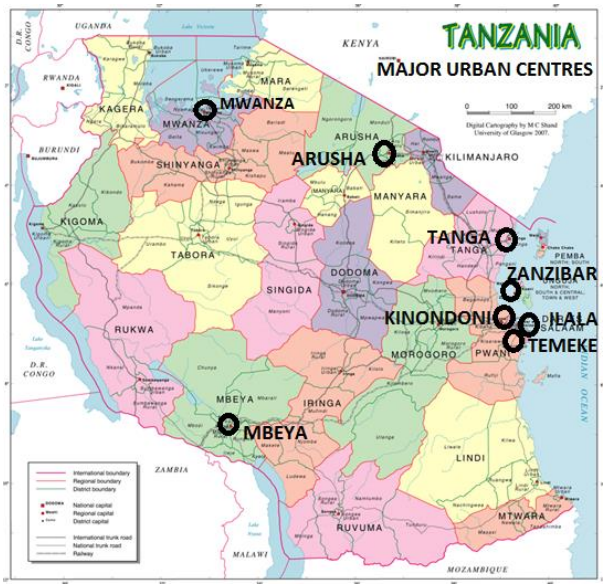


Fig-4: Location of major urban centres Source: Lupala and Namangaya,[20]

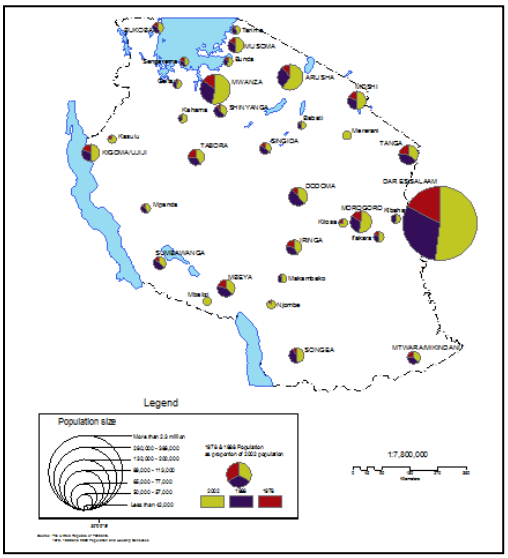


Fig- 5: The primacy of Dar es Salaam Source: Kulaba and Mkai [19]

Spatial elements of urban sustainability

The spatial elements of urban sustainability that have been considered in this paper include; the proportion of built up to jurisdictional areas, density, informality and the proportion of land designated for urban agriculture. Results from these variables are presented as follows:

Jurisdiction versus built up areas

When the eight cities and municipalities were examined in terms of proportion of built-up to jurisdictional areas, the results indicated that, on average, cities and municipalities had only half of their jurisdictional areas developed. Urban boundary extension for speculative land holding and plot selling have promoted city sprawl through expansion of jurisdictional areas beyond the actual requirements. In terms of actual development or coverage of built up areas, Tanga had the lowest covering only 8 per cent of its jurisdictional area. Zanzibar registered the highest proportion covering 81 per cent of its jurisdictional area. Zanzibar, Kinondoni and Mwanza were densely built-up areas within respective urban boundaries. In terms of sustainability, one can argue that spatially, there were moving closer to this goal (Figure 6). The low proportion of built-up area to jurisdictional area was attributed to the declaration of vast areas, including village settlements into urban boundaries with limited analysis with regard to rational justification for such expansive jurisdictional areas. The fundamental issue that remains unaddressed is how to designate jurisdictional areas for urban centres so that they are consistent with the capacity of the urban local authorities to provide requisite services and contain urban sprawl.

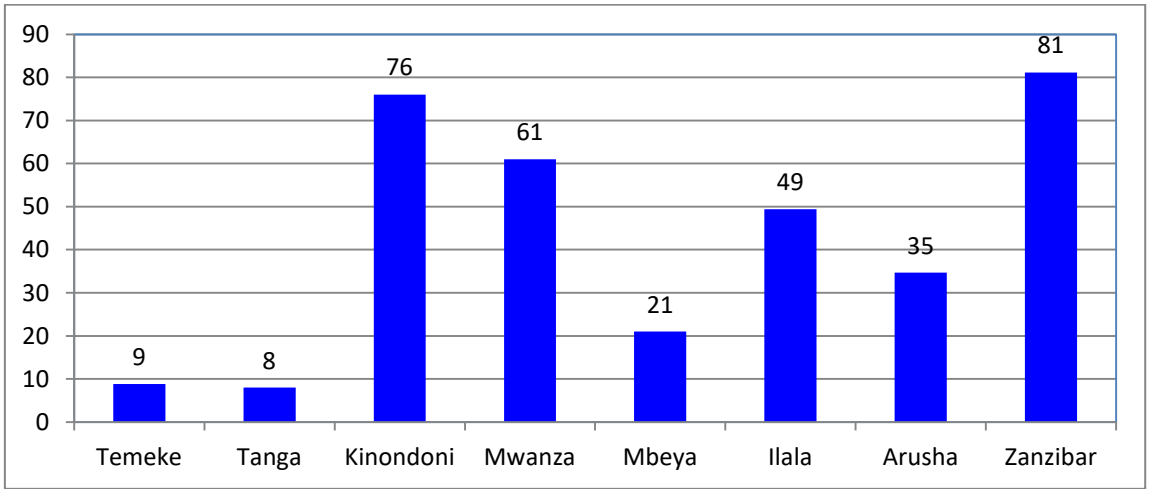


Fig-6: percentage of built up to jurisdictional areas

Density and optimal use of land

Increase in density is consistent with the idea of compact and sustainable neighbourhoods. For example, the city of Barcelona has been referred to as the most compact and vibrant city with average density of 400 dwellings per hectare[14]. However, higher densities also carry the connotations of urban cramming. Research has further shown that real land economy gains are achieved from increasing densities from 20 to 25 dwellings to 35 or 40 dwellings per hectare[15]. Although land use gains diminish above these levels, research confirms that higher densities allow greater number of public amenities and transport facilities to be provided. As density levels are increased to 40 to 60 dwellings per hectare, the land take diminishes rapidly. More people are close enough to communal facilities to walk, and efficient bus service can be made viable. Increased densities contribute to energy efficiency[15].

Across the eight major urban centres that were examined by considering their built up areas, only Zanzibar revealed higher density threshold of 172 persons per hectare (pp/ha). This was followed up by Ilala with 118 persons per hectare. Inter-city comparisons reveal that Mwanza, Kinondoni and Temeke had lower population densities of lower than 50 persons per hectare as compared to other cities and municipalities (Figure 7). Temeke was the least dense urban area, with only 21 persons per hectare. In terms of dwellings, the observed densities were quite low. Only Zanzibar had housing density of 24 dwelling units per hectare (du/ha) followed by Mbeya that had 18 dwelling units per hectare. Temeke and Mwanza registered the least densities of 2 and 3 dwelling units per hectare respectively (Figure 7). These results seem to be on the lower side as compared to other cities of the world and optimal densities for city sustainability. Impliedly, the spatial sustainability in these cities remains to be questionable.

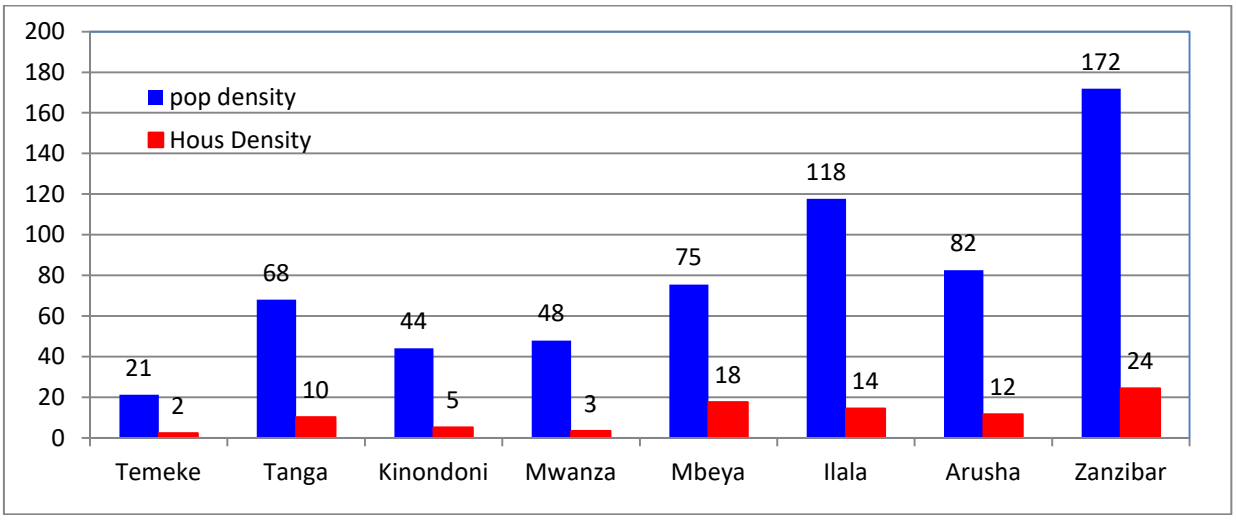


Fig-7: Population and housing density

The low density pattern in these cities is largely attributed to the low rise nature of the house forms located on relatively larger plots. Across the eight cities, only 2 per cent of the city areas were developed with multi-storey house types. The highest proportion of this type of house development was noted in Kinondoni, with 6 per cent of all buildings developed as multi-storey houses. The lowest was observed in Mbeya where 99.9 per cent of all buildings were single storey. Again this pattern of development contributes to the unsustainable nature of urban development which also amounts to poor articulation of city spatial distribution of functions.

Extent of informality in land development

Informal urbanisation is one of the crucial factors that continue to shape the emergent spatial structures and patterns of most Tanzanian cities. Informality is not only prevalent in human settlements but also in livelihood activities in which the majority of the urban residents earn their living. In terms of human settlements, cities were predominantly informal, with an average of 66 per cent of the built up areas. Although studies have shown the potential of unplanned settlements to provide housing for the poor, the unguided nature of informal land development in most peri-urban areas undermines the achievement of sustainable development. This is attributed to the fact that informality limits the possibilities of service provision and future settlement upgrading. In some cities, housing densities have reached prohibitive levels making access to, and provision of roads and sanitation very difficult. Informality was observed to be the lowest in Mwanza with 40 per cent of land coverage occupied by informal settlements. It was the highest in Arusha where 80 per cent of the land was occupied by informal settlements. There was however a notable

variation across cities and municipalities as summarised in Figure 8.

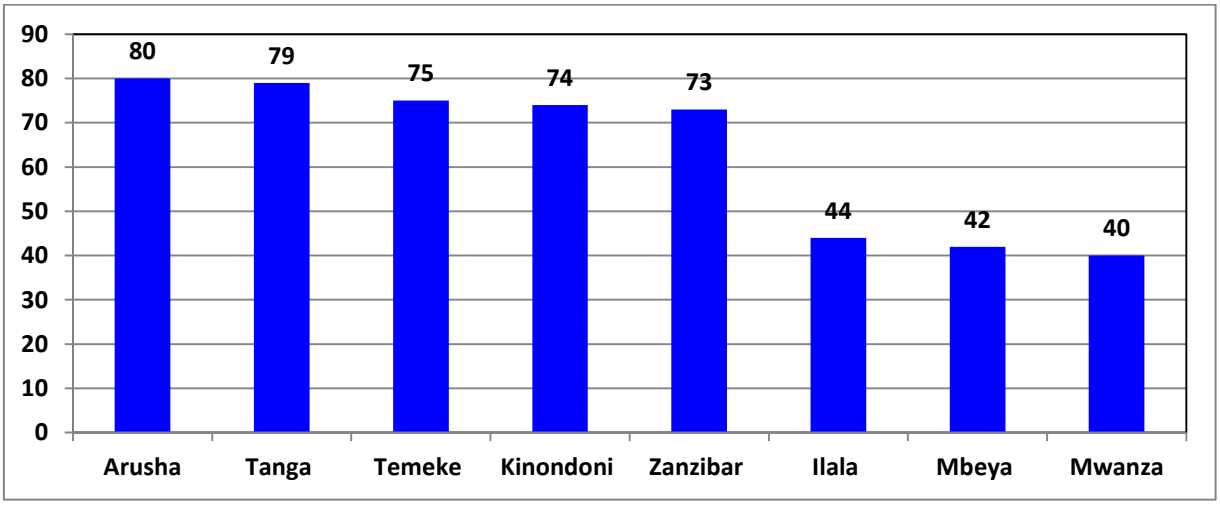


Fig-8: Percentage of land covered by informal settlements

Proportion of land designated for urban agriculture

Although increased land designated for urban agriculture has been viewed as a contributory factor to city sprawl, the externalities associated with rapid conversion of agricultural land into other urban land contributes to congested cities (crammed settlements). This puts urban sustainability at stake because uncontrolled densification especially in informal settlements limits the possibilities of providing services and upgrading. Crammed settlements inhibit effective provision of services including piped water and sewerage, solid and liquid waste collection. Empirical evidence from the eight cities shows that generally, cities were designating enough land for this type of land use with an average of 21 per cent of cities' respective total jurisdictional areas. There was, however, a notable variation across cities, with the extreme case being Arusha, which had designated 69 per cent of the city land for urban agriculture. An extreme case was also found in is Ilala, which had only 2 per cent of its land designated for urban agriculture (Figure 9).

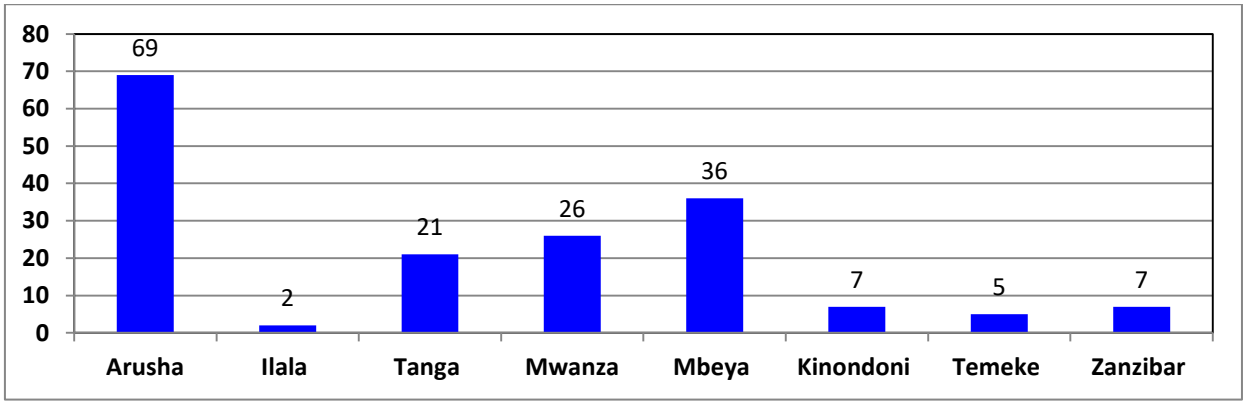


Fig- 9: Percentage of land designated for urban agriculture

When the rate of conversion of urban agriculture into other land uses was brought to focus, it was the highest across cities and municipalities. Evidence from the eight cities showed that within the five year period between 2007 and 2011, an average of 37 per cent of the land under urban agriculture was converted into other uses. The highest proportions were noted in Temeke (78 per cent), Kinondoni (66 per cent), Ilala (56 per cent), Arusha (50 per cent), Mbeya (34 per cent), Mwanza (7.3 per cent) and Tanga (1.6 per cent). Kinondoni was leading in terms of converting land designated for urban agriculture with an annual rate of 6,494 hectares. The rate of change of agricultural land to other land uses was also attributed by the lack of urban master plans that would have been used as tools for guiding land use changes in these cities.

Environmental elements of city sustainability

Under environmental elements of city sustainability, four elements were considered. These included; solid and liquid waste management, water supply/connection, sanitation and flooding. Results from these elements were found to be as follows:

Management of solid and liquid wastes

Solid waste management in cities constitutes one of the biggest challenges affecting urban sustainability. Empirical evidence indicated that on average, the capacity of cities and municipalities in collecting solid waste was limited to only 51 per cent of the waste produced each day. The best performing city was Mwanza, which was collecting approximately 88.9 per cent of waste produced. Mwanza was performing well because of the well-established partnership between the City Council and women's groups that were playing a key role in street cleaning and waste collection. The worst performing city was Tanga which was collecting only 33.3 per cent of the waste produced. Solid waste recycling was being done at a relatively low scale. Except for Mwanza that was treating 100 percent of the waste water other urban centres indicated low variations in the order of Ilala (25 percent), Temeke (20 percent), Tanga (18 percent) and Zanzibar (4 percent). Mwanza was leading in liquid waste treatment apparently because of the construction of waste stabilization ponds under the support of the World Bank in 1990s. The least was Mbeya that was treating only 8.7 per cent. Liquid waste management is another area where cities were performing lowly in terms of sustainability. The factors for low performance in liquid waste management are largely due to low coverage of sewerage systems across cities and municipalities and limited recycling initiatives. It was reported that only 11 per cent of the generated liquid waste was being recycled across cities (Figure 10).

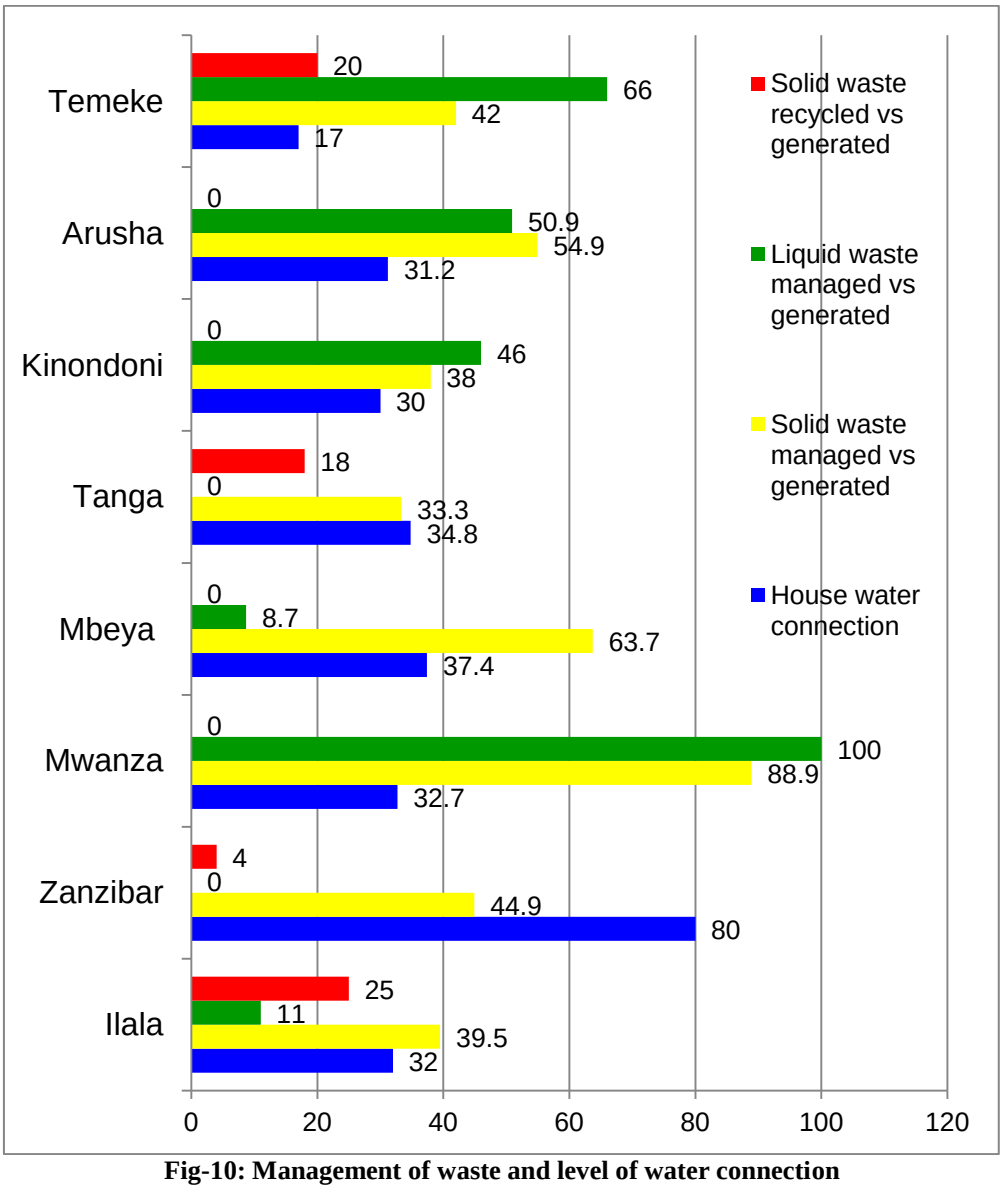


Fig-10: Management of waste and level of water connection

Water supply, level of water connection and sanitation

Although water is a pre-requisite resource for human survival and development it has been also viewed as a distributive component for equity among communities, safety, increased productivity and sustainability of cities. Accesses to water in developing countries typically refer to varied options including domestic water connection, nearby water kiosk, shallow wells and boreholes. It also refers to service levels in terms of hours of water flow from the piped connections. In this paper, only the scope of water connection was considered because of the wider coverage in terms of number of cities studied. The proportion of Tanzania's urban population served with potable water increased slightly from 63.2 per cent in 2007/08 to 64.3 per cent in 2008/09[16-18]. Empirical evidence from the eight urban centres indicates that the proportion of households connected to water supply was generally low. With the exception of Zanzibar, which had 80 per cent of its households having water connections, the remaining other urban centres had less than 40 per cent (Figure 10).

In terms of satiation, the majority of the households were using on-site sanitation namely; pit latrines, septic tanks and soak away pits. On average, 58 per cent of all houses in these urban centres used pit latrines, 32 per cent had a water closets, 5.7 per cent were connected to a sewer, and 4 per cent had no toilet at all (Table 2). In quantitative terms, only 28 per cent of all houses had improved sanitation. Mbeya was exceptional because about 47.9 per cent of the houses were reported to have no toilets (Table 2).

Table 2: Type of sanitation used (%)

Sanitation	Ilala	Zanzibar	Mwanza	Mbeya	Tanga	Kinondoni	Arusha	Temeke
Pit latrine	25.8	59	62.6	48.3	61	ND	62	87
Water closet	ND	33.3	29.9	2.9	21	ND	30	12
Sewer	5.6	7.5	8.5	0.9	4	ND	13.1	0.1
No toilet	ND	0.2	0	47.9	14	ND	0	0.9

Source: Official interviews, January 2013 (ND - No Data)

Adaptation to climate change and vulnerability to flooding

Although trends in climate change indicate reduction in the amount of annual rainfall and slight increase in temperature over the past thirty years, the pattern, intensity and nature of rains has been causing more hazards and disasters especially flooding. More areas are vulnerable to flooding apparently because of poor drainage systems and increased housing development in flood prone areas. Despite the fact that areas affected by floods are generally small in terms of size and proportion of affected population at city scale levels, the frequency of occurrence of flood disasters is increasingly questioning the sustainability of many urban centres in Tanzania. Evidence from cities and municipalities showed that areas covered by storm water drainage systems were only 3.3 per cent of the built-up areas. The limited coverage of drainage systems in cities and municipalities contributed to cities' susceptibility to flooding. For example, while Temeke Municipality had the largest area that was getting flooded (3,372 hectares), Kinondoni had 362 hectares which was frequently getting flooded. This constituted 4.6 and 0.7 per cent of their jurisdictional areas respectively. An assessment of cities' initiatives towards mitigating climatic change impacts indicated that they were underperforming in this category. Out of the eight cities and municipalities, Tanga had four climatic change mitigation projects, which was the largest in number. The remaining cities had either one or no project.

DISCUSSION

Although indices for sustainability vary from one context to the other and from one country to another, for the purpose of this paper, ten variables were developed and deployed to examine and facilitate comparison of sustainability among major urban centres of Tanzania. As discussed in the foregoing sections, empirical evidence was collected basically focusing on the proportion of built up areas as a proportion of the jurisdictional area, population density, housing density and the proportion of informal settlements as compared to the total built up areas in cities. However, in order to facilitate comparison, the formally built up areas were taken as a positive element in calculating points. Other variables included; the percentage of land designated for urban agriculture, collection rate and treatment of solid and liquid wastes, percentage of households with water connection and coverage of sewerage system. Results from this comparison indicate that Zanzibar was doing well scoring 476.7 points as a sum total of all indices (Table 3, Figure 11). Zanzibar was doing well in population density, proportion of built up area to that of its jurisdiction, proportion of population connected to water and relatively better sanitation as compared to the rest of other urban centres. The second ranked was city was Mwanza with a total points of 458 featuring well in liquid waste treatment, solid waste collection and higher proportion of formally developed settlements as compared to other urban centres. Other urban centres of Arusha, Ilala and Mbeya performed modestly and were ranked as third, fourth and fifth respectively. The

remaining urban centres of Temeke, Kinondoni and Tanga were lowly ranked apparently because of lower points attributed to low coverage of sewerage network, low population density, solid and liquid waste collection and treatment. Some information for Kinondoni was not availed during fieldwork at data collection stage especially on sanitation.

Table 3: Sustainability indices

Indicator	Ilala	Zanzibar	Mwanza	Mbeya	Tanga	Kinondoni	Arusha	Temeke
Built up vs. Jurisdiction	49	81	61	21	8	76	35	9
Population density (pph)	118	172	48	75	68	44	82	21
Housing density (duph)	14	24	3	18	10	5	12	2
% formal settlements	56	27	60	58	21	26	20	25
Urban agriculture land	2	7	26	36	21	7	69	5
Solid waste collection	39.5	44.9	88.9	63.7	33.3	38	54.5	42
Liquid waste treatment	11	0	100	8.7	0	46	50.9	66
Water supply connection	32	80	32.7	37.4	34.8	30	31.2	17
Water closet	ND	33.3	29.9	2.9	21	ND	30	12
Sewerage	5.6	7.5	8.5	0.9	4	ND	13.1	0.1
TOTAL	**327.1**	**476.7**	**458**	**321.6**	**221.1**	**272**	**397.7**	**199.1**
RANK	**4**	**1**	**2**	**5**	**7**	**6**	**3**	**8**

Source: Compiled from results from each urban centre (ND-No Data; pph-persons per hectare; duph- dwelling units per hectare)

Reflecting these results in some policies in Tanzania, section 4.3.1 of the Human Settlements Development Policy (2000) provides for containment of settlement sprawl and delineation between urban and rural areas. The policy further recommends that future development of towns will be vertical. The policy further provides for the establishment of limits for horizontal growth of urban areas after which development should be directed to satellite towns [16]. The facts presented in this paper can support this policy initiative of re-examining the spatial growth pattern of cities in Tanzania and designate boundaries accordingly.

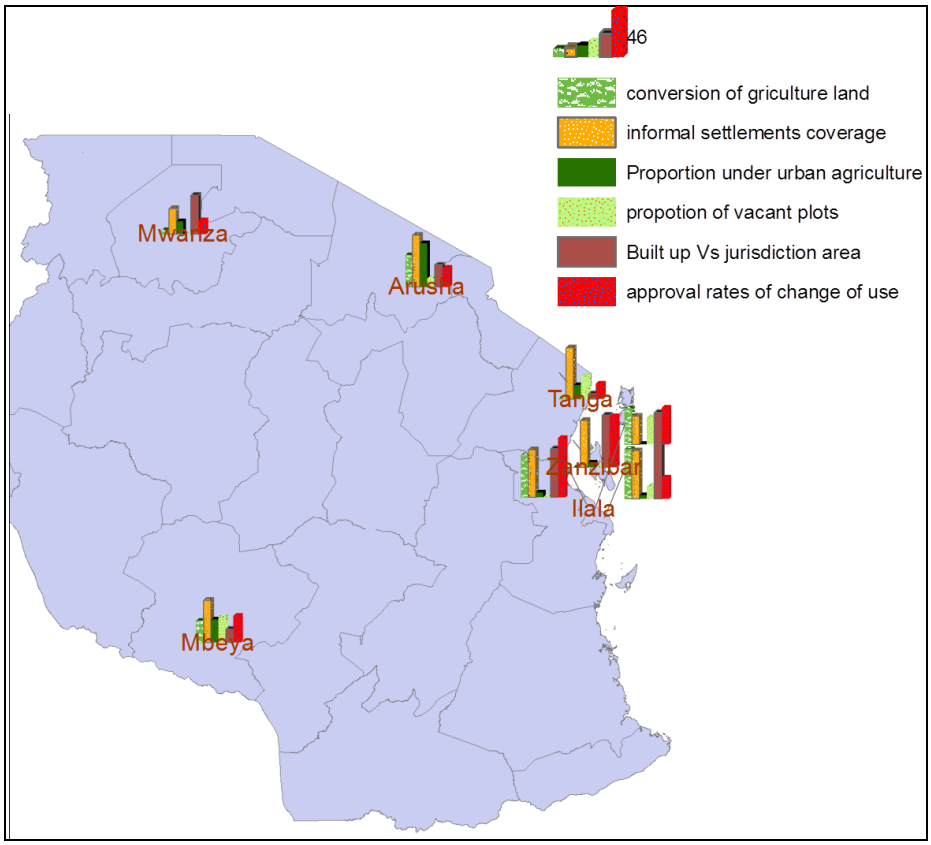


Fig- 11: Some sustainability indices in cities. Source: Lupala and Namangaya,[20].

CONCLUSION AND RECOMMENDATIONS

This paper has empirically shown that both spatial and environmental dimensions of city sustainability still remain a challenge for majority of the urban centres in Tanzania. Cities and municipalities are underperforming exhibiting low proportions of built up areas to declared jurisdictional boundaries, population and housing density thresholds, high proportion of informal settlements, rapid conversion of agricultural land into other urban land uses, limited capacity to manage solid and liquid wastes and supply of potable water to urban residents. If these urban centres had attained scores of 500 and above, the implication is that they would be achieving about 50 percent of the ten variables that were subjected for comparison. The fact that Zanzibar that was leading as compared to other cities had a total score of 476.7, impliedly, it was below this average when actual figures are brought into comparison. In other words, one may conclude by saying that even though some cities were performing better in this contextual comparison, the overall picture that emerge calls for more efforts to address these challenges to make Tanzanian cities sustainable. As a way forward, it is recommended that cities and municipalities should strive to develop strategies that target at consolidating settlements for increased population density thresholds that will facilitate economic provision of services and utilities; develop capacity, strategies and awareness for improved solid and liquid waste management including recycling; and prepare urban plans that take on board all issues addressing sustainable urban development.

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