Research Article

SYNTHESIS OF HUMAN SETTLEMENT LAYERS IN MBEYA CITY IN TANZANIA

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ABSTRACT

This paper reflects on urban human settlement layers with an enquiry on a comprehensive understanding of urban spatial planning and development. It highlights varying scenarios of planned and unplanned human settlement layers in the urban context. Residential and commercial urban human settlement layers are examined. Economic engagement in urban human settlements is mainly none-agricultural undertakings and its population density is normally higher compared to that of rural. Human settlement rapid growth of unplanned urban human settlement layers is accelerated by high rate of urbanization with far reaching threat of leaving dwellers without access to basic physical and social infrastructure such as health centres, schools, churches, mosques, roads, streetlights, water supply, electricity, sewage and drainage systems. This study has employed case study method through Mbeya city in Tanzania to understand various urban settlement layers. Multiple data collection tools were employed such as literature review, interviews, observations, and photographic registration to gather information. The research found out that there is a problem of inappropriate use of resources and rigid urban planning regulations and legislations. Co-existence of planned and unplanned human settlements is the reality on the ground. Seventy percent of urban population dwells in the unplanned human settlements. The study argues that policy makers and professionals should give critical thinking on this reality in the formulation and implementation of national and global human settlement approaches and policies.

INTRODUCTION

Singh (2009) defines human settlements as a place inhabited more or less permanently. It includes buildings in which people live plus paths and streets that they use to move from one place to another. Human settlement layers may consist few dwelling units called hamlets in the rural settings or big cluster of buildings in the urban contexts. The national population census conducted in the United Republic of Tanzania (URT) in 2012 revealed that the country was predominantly rural with 70% of the population and the remaining 30% reside in urban settlements. URT (2000) estimated that urban population in developing countries has increased from 350 million in 1950 to 1.3 billion in 1995. However, the United Nations estimated that by the year 2015, two thirds of world population will be living in urban centres and cities. Such rate of urbanization is alarming in developing countries and poses serious questions on how to deal with issues of sustainable human settlements and adequate shelter for all. The construction policy of 2003 in Tanzania which raised this important issue of human settlements development has neither been adequate nor sustainable for both urban and rural human settlement layers (URT 2003). Urban layers are suffering from inadequate housing stock and poor infrastructure. Whereas, in rural human settlement layers the issue is not adequate stock of housing units but poor housing conditions as well as insufficient physical and social infrastructural services. Senkatuka (2009) contend that sustainable development recognises the need to live in healthy, secure and affordable serviced neighborhoods. Cities must have good physical and social infrastructure such as roads, drainage, water supply, electricity telephones, open spaces schools, churches, mosques, dispensaries and hospitals.

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Tanzania is the largest country in the East Africa region comprising the territory formerly known as Tanganyika, now mainland Tanzania and Zanzibar which is made up of two islands, namely Unguja and Pemba. It covers 945,000 square kilometres (URT 2011). According to URT (2016) Tanzania had a population of 50.1 million in the year 2016 of which 46% were under age of 15. The country is found South of Equator and shares borders with eight countries, namely Kenya, Uganda, Burundi, Rwanda, Zambia, Malawi, the Democratic Republic of Congo and Mozambique. It is a country with abundance of inland water, with several lakes and rivers. Lake Tanganyika runs along the western border of Tanzania and is Africa's deepest (1470m), longest (1,828km) freshwater lake and the world's second deepest lake after Lake Baikal (1642m deep) in Southern Russia. Lake Victoria (69,485 km²) is the world's second largest fresh water lake after Lake Superior the largest (82,103 km²) located on the United States and Canada border. Lake Victoria connects into Nile River (6,853 km long) the second longest in the world after the Amazon River with 6,992 km length. One of Tanzania's most distinctive geological features is the Great Rift Valley, which was caused by geological faulting throughout Eastern Africa and associated with volcanic activity in the North-Eastern regions of the country. Except for a narrow belt of 900 square kilometres along the coast, the country lies 200 meters or more above sea level. In the North is the Mount Kilimanjaro rising to 5,895 meters above the sea level and it is the highest point in Africa. This is the tallest freestanding mountain on earth. These qualities make Tanzania a very interesting country to synthesize its human settlement layers. The case study area for this research is Mbeya city which is found in the Southern part of Tanzania at latitude 8^0 50` - $8^0$ 57` South of Equator and Longitude 33^0 30` - $35^0$ 35` East of Greenwich and covers a total area of 222 km². According to URT (2006) Mbeya City had a population of 265,586, out of which 126,153 (47.5%) were men and 139,433 (52.5%) were women within 64,179 households in the year 2006. Mbeya City is built over an elevated land and spreads along the slopes of two mountain ranges, namely Mbeya and Mporoto, at an altitude rising from 1,600 to 2,400 meters above sea level (Kiondo *et. al.* 2015).

Layering of Human Settlements in Mbeya City in Tanzania

Classification of human settlements layers in Tanzania is based on the population size, level of services and economic bases. Human settlement layers may be divided into two broad categories, namely rural and urban settlements. Rural settlement layers comprise hamlets and villages. On the other hand, urban settlement layers are found in minor towns, towns, municipalities, cities and mega cities. Human settlement layers in Mbeya City are divided into two basic layers, namely planned low, medium and high density human settlements; and unplanned human settlements. The planned settlements are reasonably serviced with modest physical and social services such as health centres, schools, churches, mosques, tarmac roads, streetlights, water supply, sewage, drainage systems and communication networks. High and middle income class people live in low density human settlements layers. Whereas, unplanned human settlement layers exist in Mbeya city with limited social services, basic socio-economic services and are inhabited by low income earners.

Tanzania's Development Vision 2025 wishes to attain a high quality of livelihood for its citizen; peace, stability and unity; good governance; well educated society; and a competitive economy capable of producing sustainable growth and shared benefits by 2025. To achieve this, it requires good strategies and policies to be in place. One of the specific goals of Tanzania population policy of 2006 is to increase and improve availability and accessibility of quality social services (URT 2016). Unfortunately, though the majority of world population are found in the rural settlement layers the larger portion of world resources is directed to urban human settlements (UNCHS 1998).

Singh (2009) argues that human settlements can be classified on the basis of existing sizes and functions into urban and rural contexts of a particular place. Basically, major functions within urban settlement layers include trades, commercial businesses, transport, communication, administration, cultural exhibitions, recreational activities, mining, industrial manufacturing and defense. Whilst in rural human settlement layers the major economic engagement is agriculture and its population density it is lower compared to urban human settlement sizes and densities. Moreover, classification of human settlements can also be based on their shapes and patterns, namely linear, rectangular, circular and star settlement layers (Singh, 2009).

Urban human settlements in other parts of the world are not only classified on the basis of its population size but also on occupational structure. For example in India, if more than 75% of the workforce is engaged in non-agricultural activities then that particular human settlement is referred as urban which is not a common scenario in other countries. In Brazil any administrative centre is termed as urban. Whereas in Tanzania human settlements are classified as: a *village* where the settlement is of less than 10, 000 people; a *minor town* when the population is between 10,000 and 30,000 people; a *town* when a population is between 30,000 and 100,000; a *municipality* is a settlement with a population between 100, 000 and 500,000 people; a *city* is the one with a population between 500,000 and 4,000,000 and a m*egacity is a* settlement with more than 4,000,000 people (URT, 2011).

METHOD

The research was conducted in Mbeya city which is considered to be rich with information of human settlements within planned and unplanned urban contexts. Major field-survey was conducted in the year 2016 followed by minor field surveys in 2017. The main research method used was a case study. Multiple data collection tools that were employed included literature review, interviews with key informants, observations, and photographic registration. Qualitative data of urban settlement patterns were collected, studied, analyzed and presented in the form of text, photographic-images and tables.

FINDINGS AND DISCUSSION

This section presents key findings and discussion of various human settlement aspects which came out of the research. Different human settlement layers ranging from planned and unplanned; Low, medium and high density human settlements; and housing condition are analyzed and discussed.

Low Density Urban Human Settlement Layers in Mbeya City

Low density urban human settlement layers are found in planned urban areas which are supposed to be developed in accordance to city master-plans, regulations and by-laws. However, it has been observed that master plans are prepared but not followed. According to URT (1979), dedicated land for housing must be serviced before it is allocated to developers but the reality on the ground is absolutely the opposite due to financial constraints facing many governments in the developing world. Nnkya (2008) gives another phenomenon on poor planning of city master-plans that there is lack of deliberate collaborative efforts between spatial urban planners and residents. Planners could have an opportunity to learn from local people but they blocked themselves with presumptions that they know what the people want! Low density urban human settlement layers in Mbeya city are mainly found in Sisimba ward popularly known as *Uzunguni,* which refers to European settlements in Kiswahili language.

Figure 1 Example of Low Density Settlement Layers at Uzunguni Area in Mbeya City.

Source: 2016 Field Survey

Most of low density human settlements in Mbeya City comprise colonial residential buildings which are architectural designed in European style as exampled by figure 1. Contemporarily, new low density human settlement layers are growing at New Forest Area, part of Block M, Part of Block Y in Mwakibete and Block X as shown in figure 2. Low density residential areas are human settlements with low built-up areas with lot of open spaces within the plot. These are prime locations which are planned for few residents and exclude semi-detached row houses and residential apartments.

Figure 2 Part of Block X -Contemporary Low Human Settlement Layers in Mbeya City

Source: 2017 Field Survey

This human settlement layer provides reasonable level of accessibility to few but restricts many to enter. Plot boundary walls are built as seen in figure 2. Some community services such as churches, mosques and schools which are found in the low density areas are voluntarily shared by neighbouring communities. Gardening and small agricultural activities are found within the low density human settlements because the built-up area is smaller compared to the total plot area.

Medium Density Urban Human Settlement Layers in Mbeya City

This category of human settlements comprises detached and semi-detached dwelling houses and residential apartment flats. A flat may range from two to three bedrooms, a sitting room, dining and a kitchen in *Uhindini* settlements. *Uhindini* in Kiswahili language refers to Indian settlements. Commercial-residential block of flats in this type of human settlements are designed to accommodate commercial businesses at the ground floor level and residential on upper floor levels in Mbeya City as seen in figure 3. Furthermore, medium density human settlements in Mbeya city include Isanga (Blocks F, Q, and S and T), parts of Blocks X and Y in Mwakibete and Block M in Forest Area. This is a similar and common scenario in other cities in Tanzania as exampled in figure 4 which is a commercial residential undertaking in Kariakoo area in Dar-es-Salaam city.

Figure 3 Commercial-residential Accommodation in Medium Density Human Settlement Layers along Lupaway Street (Uhindini) in Mbeya City

Source: Fieldwork (2016)

Lupala (2006) is giving a similar scenario of Kariakoo urban context in Dar-es-Salaam city Tanzania where massive buildings are compacted in grid-ironed pattern of which ground floors are designated for commercial undertakings and residential apartments on upper floors. Horizontal and vertical building transformation is the basic and fundamental characteristic of these settlement layers. Table 1 explains further number of building storeys, land coverage and floor area ratio into various urban layouts such as medium, mixed and high density human settlements.

Medium density human settlement layers are suitable for urban infill development which includes mixture of dwelling house types, churches, schools, day care facilities, public facilities, and limited neighborhood commercial uses. Small scale domestic industries may be located in designated and selected

medium density human settlement layer as can be seen in figure 5.

Figure 4 Commercial Residential in Kariakoo Urban area in Dares Salaam City Tanzania.

Source: Mosha *et al* (2015)

settlements cannot enjoy fully the natural ventilation and therefore require to be improved by artificial ventilation mechanism but at the same time suffering from shortage of electrical power supply (Nguluma 2006). The level of electricity usage in urban areas in Tanzania is apparently unsatisfactory as it can be seen in table 2. High density urban human settlement layers are explained further in the next section.

Unplanned Urban Settlement Layers in Mbeya City

Unplanned human settlements refer to a phenomenon whereby buildings are constructed without building-permits from responsible government authorities and often times without legal ownership of the land. This type of human settlement is heavily populated and is classified as a high density human settlement layer. Lupala (2002) observed that development controls and guidelines in unplanned urban human settlements are not legally enforced. Nnkya (1999) argued that urban planning sector in Tanzania has failed to address human settlement problems because of too many plans without planning any.

Table 1 An Overview of Number of Building Storeys, Land Coverage and Floor Area Ratios

S/N	Urban Human Settlement Types	Number of Building Storeys	Land Coverage (%)	Floor Area Ratio (FAR)
1	The Administrative/Institutional Area	3 – 12	35.2	1.8
2	Commercial residential area	3 – 5	44.1	2.2
3	The Institutional (Former European residential) areas	1 – 2	10.2	0.19
4	Medium density, moderate height residential	2 – 4	17.9	0.44
5	Mixed density, commercial/residential	1 – 7	40.0	1.5
6	Low density, low coverage residential	1 – 4	7.9	0.16
7	Small detached quarters	1	6.9	0.07
8	Semi-detached residential quarters	1	18.7	0.19
9	Row housing residential quarter	1	22.1	0.22
10	High-density, low rise, Swahili house residential	1	36.6	0.37
11	Consolidated high density, low rise unplanned settlements	1	41.5	0.41
12	High density high-rise residential	5	10.8	0.54
13	Medium density, low-rise site and services residential	1	36.2	0.36
14	Low density, low-rise consolidated unplanned residential	1	25.5	0.26

Source: Lupala 2006

Figure 5 Planned Uyole Human Settlement Layers in Mbeya City with Commercial Activities

Source: 2016 Field Survey

High Density Urban Human Settlement layers in Mbeya City

This type of human settlements comprises houses built and managed by the private sector in Mbeya City. The average occupancy rate in these residential areas is about eight people per household. Existing high density human settlements include Uyole, Ilemi, part of Block "S", Airport Area, Iyunga, and Nzovwe. High and rapid urbanization rates in developing countries contribute largely in transforming urban human settlement layers from low to high densities especially in major arterial city spines. Densely built houses in high density human

There has been a problem of inappropriate use of resources and use of rigid urban planning regulations and legislations. For instance, the practice of trained professional Land Surveyors and Urban Spatial Planners do not necessarily use local skills and knowledge of indigenous people as part of enhancing technical input into city master-planning.

Figure 6 Unplanned Human Settlements Situation of Building Layers at Mabatini high density Settlement

Source: 2016 Field Survey

Unplanned settlements layers are sometimes referred as squatter settlements. This category of human settlement layer

comprises many settlements in Mbeya city such as that of Isanga, Nzovwe, Nonde, Ruanda, Airport, Mwakibete, Mabatini, Mwanjelwa, Uyole, Ilomba, Itezi and Simike just to mention a few.

There are many names by which unplanned human settlement layers can be described ranging from negative to positive perspectives. These human settlement names include informal, semi-permanent, shanty towns, spontaneous, squatter, unauthorized and uncontrolled human settlements. Different countries attach different names to unplanned human settlements such as *barong-barong* in Philippines, *juggi-johmpri* in India, *ranchos* in Venezuel, *favelas* in Brazil and *barriada* in Peru. Turner (1969) takes a positive position of unplanned settlement layers by accepting and describing them as a solution towards urban human settlements problems faced by various countries with limited economic and financial resources. Nnkya (2008) fairly complement Turner (1969) that there was a political will in Tanzania to naively accept the unplanned human settlement layers as a reality of urban life.

Among other governmental efforts, Tanzania has in the past launched several squatter upgrading programmes to uplift living conditions of unplanned urban human settlement layers. Sheuya (2004) argued that some of factors which have influenced emergence of unplanned human settlement layers in various cities of developing country include poverty of the urban poor, unavailability of sufficient surveyed urban plots, lengthy and bureaucratic procedures of acquiring land right of occupancy in planned urban land, unrealistic urban development policies and unaffordable building materials and regulations.

Residential houses in unplanned human settlement layers are built and managed by the individual developers. The most common construction materials in unplanned urban human settlement layers are semi-permanent which include mud bricks for walls and corrugated iron sheets for roofing. Table 2 shows general housing characteristics including various building materials for floors and signifies that in the year 2016 earth floors were 17.5% in urban areas and 77.1% in rural areas in Tanzania. The earth floors in the urban areas are found only in the unplanned settlement layers because in the planned urban settlements earth floors are not accepted nor approved by local authorities at the stage of applying building-permit. Physical and social infrastructural services such as roads, water supply, drainage, electricity and solid waste collection services are unsatisfactorily available in unplanned human settlement layers. The 44.1% of urban population surviving without electricity in Tanzania is mainly found in the unplanned urban human settlements layers.

Housing condition of residential houses in these layers is poor because they are built with poor semi-permanent building materials. Houses are small with different orientations in favour of the available piece of land that could be afforded by the individual housing developer. Lupala (2006) ascertain that houses in the unplanned human settlements are densely layered but sometimes loosely layered with varying house forms from individual intuitive designs and involuntary construction methods.

Table 2 Percent distribution of households by housing characteristics in Tanzania

Housing Characteristics	Tanzania Mainland			Zanzibar	Tanzania
	Urban	Rural	Total		
With Electricity	55.9	5.1	21.9	47.2	22.5
Without Electricity	44.1	94	78.1	52.8	77.5
Total	100	100	100	100	100
Flooring Material					
Earths	17.5	77.1	57.4	23.3	56.5
Dung	0.0	0.5	0.3	0.1	0.3
Wood	0.0	0.0	0.0	0.0	0.0
Palm/bamboo	0.0	0.0	0.0	0.0	0.0
Parquet	0.0	0.0	0.0	0.1	0.0
Vinyl or Asphalt strips	0.3	0.0	0.1	0.0	0.1
Ceramic tile	9.9	0.6	3.7	9.6	3.8
Cement	68.6	21.5	37.0	59.9	37.5
Carpet	3.5	0.3	1.4	7.0	1.5
Others	0.2	0.1	0.1	0.1	0.1
Total	100	100	100	100	100
Rooms Used for Sleeping					
One	40.3	29.3	32.9	21.5	32.7
Two	30.7	38.8	36.1	32.2	36.0
Three or more	29.0	31.9	31.0	46.3	31.3
Total	100	100	100	100	100
Place for Cooking					
In the House	43.5	28.5	33.4	65.8	34.2
In a separate building	23.7	56.0	45.3	15.3	44.5
Outdoors	30.7	15.0	20.2	17.2	20.1
No food Cooked in Household	2.2	0.6	1.1	1.6	1.1
Total	100	100	100	100	100
Cooking Fuel					
Electricity	1.3	0.1	0.5	1.3	0.5
LPG/Natural Gas/Biogas	7.7	0.5	2.9	2.6	2.9
Kerosene	5.3	0.3	1.9	1.6	1.9
Charcoal	63.1	9.3	27.1	30.3	27.2
Wood	20.44	89.2	66.	62.5	66.3
Straw/Shrubs/Grass	0.0	0.1	0.1	0.1	0.1
Animal dung	0.0	0.0	0.0	0.0	0.0
No food Cooked in Household	2.2	0.6	1.1	1.6	1.1
Total	100	100	100	100	100
Percentage using Solid Fuel for Cooking (Include Kerosene, Charcoal, Wood, Straw/Shrubs/Grass and Animal dung	83.4	98.6	93.6	92.8	93.6

LPG = Liquefied Petroleum Gas

Source: URT 2016

CONCLUSION AND RECOMMENDATIONS

Up to 70% of urban poor cannot lawfully access urban planned land, infrastructural services and building standards required by urban human settlement regulators. Consequently, the urban growth cannot conform to pre-conceived and prepared city layered master-plans. Several global human settlements policies such as the one advocated shelter for all by the year 2000 have failed. City layers in urban human settlements are highly impacted with heavy rural-urban migration. National human settlement development policies should ensure government and private sectors are collectively involved in developing sustainable human settlements; promote use of available low cost local building materials; innovative building technologies and practices. Integrated rural-urban synergies are important in national and global human settlements development agenda. Urban and rural spatial planning must be married so that the joy out of that "marriage" brings an improved urban spatial human settlement layers. Regional, national and global institutions responsible in designing,

planning and implementing human settlement policies and development strategies should consider urban and rural human settlement layers as well as planned and unplanned human settlement layers as a magnet. Sustainability of the two are dependant and un-separable.

References

Lupala, J. (2006). Urban Types in Rapidly Urbanising Cities -A Typological Approach in the Analysis of Urban types in Dar-es-Salaam. In: *The Journal of Building and Land Development*, Vol. 13, Number 2, pp 1- 21.

Lupala, J. (2002). Urban Types in Rapidly Urbanizing Cities: Analysis of Formal and

Informal Settlements in Dar Es Salaam, Tanzania. Doctoral thesis, KTH, Sweden.

Mosha, F. and Mosha, L. (2015). Walking in Transforming African Housing Cityscapes, Lambert Academic Publishing, Saarbrucken.

Nguluma, H. (2006). Design Challenges Facing Urban Development in Dar-es-Salaam City, Tanzania. In: *The Journal of Building and Land Development*, Vol. 13, Number 1, pp 1-12.

Nnkya, J. (2008). Marginalizing Themselves: Many Plans but No Planning. In: *The Journal of Building and Land Development*, Vol. 15, Number 1 & 2, pp 58-75.

Nnkya, J. (1999). Land Use Planning Practice Under the Public Land Ownership Policy in Tanzania. In: *Habitat International*, Vol. 23, Number 1, pp. 135-155.

UNCHS, (1998). The Istanbul Declaration and the Habitat Agenda, United Nations Publications, Nairobi.

URT (2016), Tanzania Demographic and Health Survey and Malaria Indicator Survey 2015-2016, Government Printers, Dar-es-Salaam.

URT, (2011). Country Report on the Millennium Development Goals 2010, Government Printers, Dar-es-Salaam.

URT, (2010), Composite Development Goal for the Tanzania Development Vision 2025, Government Printers, Dar-es-Salaam.

URT (2006). Analytical Report. Vol. 10; 2002 Population and Housing Census, Government Printers, Dar-es-Salaam.

URT (2003). National Construction Policy, Government Printers, Dar-es-Salaam.

URT (2000). National Human Settlements Development Policy, Government Printers, Dar-es-Salaam.

URT (1979). Dar-es-Salaam Master Plan 1974, Marshal Macklin Monoghan Limited.

Senkatuka, I. (2009), Management with the People, An Enabling Approach to Neighbourhood Road Intrastructure Mamnagement in Kampala City, Doctoral thesis, KTH, Stockholm.

Sheuya, S. (2004), Housing Transformation and Urban Livelihood in Informal Settlements. The Case of Dar-es-Salaam Tanzania, Spring Research Series No. 45, Published PhD Dissertation, Dortmund.

Singh, S., (2009), *Human Settlements*. Accessed at https://www.exploringgeography.wikispaces.com/file/view/Chapter10+Human+settlements.pdf

Turner, J. (1969), Uncontrolled Urban Settlements: Problems and Policies, in: G. Breese (eds), The City in Newly Developing Countries: Readings on Urbanism and Urbanization, Prentice Hall pp. 507-534.

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