

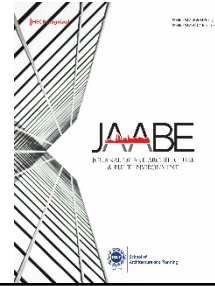
Journal of Art, Architecture and Built Environment (JAABE)
Volume 7 Issue 2, Fall 2024

ISSN(P): 2617-2690, ISSN(E): 2617-2704

Homepage: <https://journals.umt.edu.pk/index.php/jaabe>



Article QR



Title: **Growth of Urban Forms in Informal Settlements: A Study of Streetscapes in Mlalakuwa Neighborhood, Dar es Salaam, Tanzania**

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DOI: <https://doi.org/10.32350/jaabe.72.05>

History: Received: April 05, 2024, Revised: September 25, 2024, Accepted: December 18, 2024,
Published: December 20, 2024

Citation: Lutta, J., & Schoonjans, Y. (2024). Growth of urban forms in informal settlements: A study of streetscapes in Mlalakuwa neighborhood, Dar es Salaam, Tanzania. *Journal of Art, Architecture and Built Environment*, 7(2), 88–125. <https://doi.org/10.32350/jaabe.72.05>

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Conflict of Interest:

Author(s) declared no conflict of interest



UMT

A publication of

School of Architecture and Planning

University of Management and Technology, Lahore, Pakistan

Growth of Urban Forms in Informal Settlements: A Study of Streetscapes in Mlalakuwa Neighborhood, Dar es Salaam, Tanzania

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Abstract

This paper aimed to examine streetscapes as emerging urban forms in the Mlalakuwa informal settlement in District Kinondoni, Dar es Salaam, Tanzania. Using interviews, observations, mapping, and photographs, the study determined how streetscapes are evolving in tandem with growing urban forms, following population densities and activity changes. Moreover, the study also aimed to explore the accumulation of streetscapes with distinct sizes and shapes enabling the emergence of unique urban forms. The modification of building facades from verandas to shops and workshops and the construction of sturdy fences illustrate a shift in streetscapes. Due to an increase in population, the densification of open spaces for social and economic activities has also become a significant feature in the Mlalakuwa urban form. During the years (2000-2020), there has been an increase in new types of social and economic activities. During this time period, services appeared not only for the neighbourhood, however, also for the surrounding city. This resulted in a reduction in the urban permeability of some open spaces that were, at the time, enjoyed by the local community. The current study found that eight of the thirteen streets in the Mlalakuwa neighbourhood are characterized by a variety of economic activities that tend to boost spatial usage and, subsequently, have a bearing on the urban form. At the same time, the ongoing erection of solid fences for security purposes creates hard divisions between private and public spaces. Insights on these changes may help to shape strategic urban planning and induce the prompt adoption of sensible streetscape strategies in developing cities and informal settlements.

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Keywords: informal settlements, population growth, spatial growth, urban form, urban planning

Introduction

The word ‘urban form’ refers to the social product which results in the ordered composition of different urban spatial activities, their linkages, and connections. These factors collectively form a system of built-up areas, such as size, density, shape, and organisation of settlements (Bahendwa, [2013](#); Williams, [2014](#)). With the growing complexity of urban socioeconomic processes and geographical organisation, the physicality of the city is also growing as a component of urban forms (Guan, [2018](#); Williams, [2014](#)). The history of urban form can be linked to various social situations and contents including technology, economics, politics, culture, and the environment. Morris ([2013](#)) contributed to urban form by illuminating the historical background that shaped the spatial generation. He presented two primary factors, that is, geographical features and human activities. These factors helped in shaping the forms of both rural and urban settlements throughout history. These factors influenced the development of every historical urban form including planned and informal spatial growth (Bahendwa, [2013](#); Morris, [2013](#)). Researchers presented a systematic investigation of the structure of urban forms and streetscape typologies, with a specific focus on street networks and a comparison of angular and metric city distances (Oliveira et al., [2023](#); Santosa et al., [2014](#); Serra et al., [2018](#)).

The analysis of urban streetscapes is an essential tool to understand the formation, evolution, and use of different urban physical environments over time. The complexity of streetscapes is reflected in a range of physical forms that make up an urban form linked to appropriate activities serving different users (Hillier & Iida, [2005](#)). In global northern countries, streetscapes are given top priority while emphasizing important elements, such as roads, buildings, sidewalks, street trees, and adjoining open spaces as parts of urban form. On the other hand, most developing cities still lag behind in terms of appreciating the significance of streetscapes and inspiring urban form that supports user activities (Gerike et al., [2021](#); Mohareb, [2009](#)).

Streetscapes in global south cities are hardly investigated. Moreover, their role is also barely analyzed in emerging urban forms due to their

rapid change and informality (Arif et al., [2023](#)). Good and bad features interrelated to the locality can be detected and valuable information can be provided pertaining to the functioning of urban environment and future city development. A large number of informal settlements are less constrained by rules set by the government (Kombe & Kreibich, [2000](#); Nuhu et al., [2023](#)). According to Rupa ([2015](#)), informality operates by continuously negotiating values and unmapping space, whereas formality is established by translating spatial values. In the last few decades, informal settlements were perceived to be the hotbeds of crime, violence, and social ills in the lovely body of the city (Alsayyad & Roy, [2004](#); Hansen & Vaa, [2004](#); Rupa, [2015](#)). Renowned social urbanists, such as John F.C. Turner, William Mangin, Manuel Castells, Fernando Henrique Cardoso, Alejandro Portes, and others contested this conventional perspective in the middle of the 1960s. They criticised the ideas of marginality and untrue preconceptions that confine the urban poor. Informality in postcolonial towns should be seen as a complex adaptive spatial composition (Dovey & Kamalipour, [2018](#)). Distinct schools of thought view informality differently which have been labelled as constructivists. There is no single standpoint on it; rather, perceptions differ based on the work environment, settlements, and enterprises (Rupa, [2015](#)).

Informal settlements in Dar es Salaam are self-organised systems with diverse functions that foster social, economic, political, and cultural needs for most individuals. The system in the informal settlement frequently addresses issues related to inhabitants' job vacancies, accommodation, welfare, and security, which was seen to be unfulfilled by the authorities (Kombe, [1995](#); Lupala, [2002](#)). Under these systems, less visible and self-organised networks are created that work without external forces from the higher authorities. These are partly dynamic, adaptable, transitory, and adaptive ways to create a variety of spaces for social and economic reasons. These types of spatial inventions have been the components of informal settlements, spanning from intimate spaces to street level (Kombe & Kreibich, [2000](#); Nguluma, [2003](#)).

It is commonly acknowledged that good streetscapes can foster social cohesion, despite the possibility of varying degrees of closeness. Factors, such as their placement within the urban fabric, density, climate, and degree of use play a major role in the growth of urban forms (Adeel et al.,

2021; Goffman, 1956). Therefore, the current study aimed to explore the accumulation of distinct-sized and shaped streetscapes, enabling the development of urban forms. In informal settlements, streetscapes seem to be gathering spots for neighbors and families, and function as a crucial bond between private and public spaces (Dovey & Wood, 2015; Madanipour, 2003). Additionally, the study also examined the underlying factors that construct the dynamic urban forms within informal settlements, which need more attention for the current urbanisation process. The development of urban forms in informal settlements sometimes overlooks the role of streetscapes in contributing to safe and healthy surroundings. Therefore, this research can be used as a tool for policymaking, helping to establish standards and encourage long-term spatial development and an integrated approach to urban planning and governance in developing cities.

Materials and Methods

This study aimed to examine the development of urban forms in Mlalakuwa informal neighborhood. In opposition to the provision of legal and administrative frameworks, the study criticized spatial practices in relation to urban growth. The qualitative approach was used in the current study since it is essential to investigate the intricate physical manifestations in the chosen informal settlements. Urban form's complexities can be captured via the qualitative research method (Flyvbjerg, 1998; Gaber, 2020). Beyond facts and descriptions, this approach also aids in providing answers to the "how" and "why" matters.

Observation and Mapping

This entails an in-situ, observation systematic, and in-depth examination of the given situation using what is visible and perceptible. The observation was used to detect how different inhabitant's and visitor's engagement in streetscapes lead towards emerging dynamic urban forms. The mapping process was also involved, capturing the physical reality of existing streetscapes, their surroundings, their configuration, and their urban settings in relation to each other. Maps and documents were analyzed and double-checked with the existing in-situ reality. Maps of land uses focusing on open spaces, public buildings, streetscapes, non-residential buildings, and houses were generated with the field data. This was complemented by many visits to the neighborhood, mapping the

physical structures, and observing the uses of spaces. However, photographs were taken to demonstrate life in many locations and periods, not only to highlight particular problems. Photos themselves communicate ideas that are hard to express in words alone (Elo et al., [2014](#)). The objective was to employ these photos as a separate dataset and integrate them into research to increase its explanatory capacity. It was also feasible to compare some photos with those taken in the same areas in prior years, which produced interesting information for further investigation and analysis.

Semi-Structured Interviews

Semi-structured interviews were also conducted to retrieve focused, qualitative textual data regarding the street changes and how they influenced urban forms. In order to acquire additional data pertaining to the growth of urban forms in Mlalakuwa informal settlement, 73 interviews were conducted in the neighbourhood. The interview process comprised five main groups including gender, education level, profession, authority, and age. However, a total of 37 questionnaires were randomly distributed to various residents' categories using growth of urban forms in Mlalakuwa. A sample strategy was adhered to Glaser and Strauss' theoretical sampling approach (Glaser & Strauss, [2017](#); Wiesli et al., [2021](#)). This enabled to incorporate individuals with a variety of backgrounds and modify the sample to reflect the sociodemographic conditions of the Mlalakuwa informal neighbourhood. Snowball sampling was purposefully avoided to reduce sociodemographic biases.

In light of the sample aims, participants were made to gather near the open spaces of Street Executive Officer's office. The sample shown in Table 1 is the outcome of this methodology. Seventy-three (73) interviews yielded adequate data and qualitative insights, as well as acceptable variation across sociodemographic categories. Even though, the goal was not to conduct a representative quantitative study, the participants in the sample were sufficient to capture the opinions of many different rural demographic groups.

Table 1
Sample of Interview Participants

Social demographic Factors	Frequency	Percentage
Gender		
Male	47	64.8
Female	26	35.1
Total	73	
Education Level		
University Professors	5	6.8
University Students	38	51.7
Others (Primary to Tertiary schools)	30	41.5
Total	73	
Profession		
Other Development Actors (Local artisans, NGOs, Planners, Designers, Engineers)	23	31.8
Army Soldiers	4	5.6
Entrepreneurs	34	45.7
Retired civil servants (Army soldiers)	12	16.9
Total	73	
Authority		
Municipal and Region Authorities	9	12.4
Central Government	14	19.3
Local Leaders	50	68.3
Total	73	
Age		
18-39	40	54.1
40-54	30	41.9
≥55 years	3	4.1
Total	73	

To comprehend the growth of urban forms in informal settlements, discussions were conducted using different parameters. In the first section, the rapid change of streetscapes was presented in Mlalakuwa. In the second section, the densification trends were described and the third section described the spatial appropriation in Mlalakuwa. The proportion of the groups' interviewed responses was determined during the interview process and categorized into five primary groups, as indicated in Table 1. These groups include gender, age, profession, education level, and

authority. Gender-wise, 35% of the interviewed inhabitants were females and 65% were males. The second group viewed the interviewees' ages as a factor in assessing how streetscapes function in the structure of the urban systems. About 54.1% of the respondents were between the ages of 18 and 39 and the majority of them were university students. About 41.9% of the respondents were between the ages of 40 and 54, while 4.1% were over the age of 55. The third group of respondents comprised professionals including fundi, NGOs, planners, designers, entrepreneurs, and civil servants/army soldiers, of which 37.4% and 19.3% were represented by authorities (WEO, MEO, municipal, and central government). Approximately, 58.5% of them were professors and university students.

Case Study

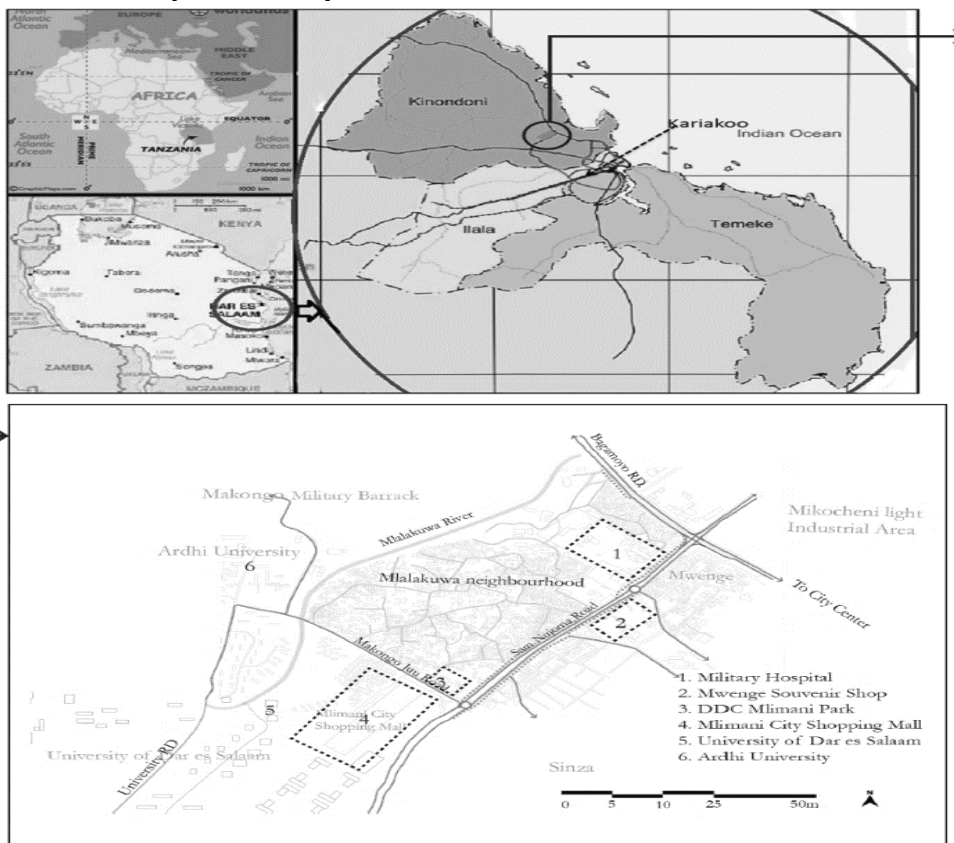
Mlalakuwa informal settlement is a part of Makongo ward which is located in the Kinondoni district of Dar es Salaam. It is in the northwest of the city, 11.4 kilometres from the CBD (Central Business District). It is one of the several settlements in the city of Dar es Salaam. More than 70% of this city is comprised of informal settlements (Kombe, [1995](#); Sheuya, [2010](#)). Mlalakuwa itself is a diverse community of inhabitants. These inhabitants not only belong to different ethnic backgrounds, however, they also come from different social groups (Tesha, [2020](#); Teyanga & Mrema, [2018](#)). Students, faculty of the two universities, non-academic staff, vendors, landlords, nurses, retired army officers, and new families from the inland of Tanzania live in that neighbourhood (Kalugila, [2013](#); Mbisso & Kalugila, [2018](#)).

Mlalakuwa informal settlement is located in the center of Dar es Salaam city and is also surrounded by major roads of Makongo Juu, Sam Nujoma, and Bagamoyo. These three important traffic roads define the edges of Mlalakuwa. The fourth edge is the Mlalakuwa River (Figure 1(b)). On the south and south-west, it is bordered by the Mlimani City Mall and the University of Dar es Salaam (UDSM); on the west, by Ardhi University (ARU); on the north-west, by Makongo military camp; and on the east, by Mwenge sub-ward (Figure (b)). Due to this particular emplacement, it experiences a rapid growth in its streetscapes with extra commercial activities, a growing densification, however, it also tends towards consolidation (and the tension between those two). Figure 2 shows prominent neighbourhood landmarks/areas in Mlalakuwa. These areas serve as a spontaneous attraction of diverse social and economic

activities and create an intricate nature of streetscapes that require careful attention in order to fully understand the urban form, the system, and the range of informal urban street forms. However, more than just the axis of movement and transportation, these areas are also the places where people meet. Moreover, the open space along the streets is adapted for community engagement. For this reason, the current study employed the term ‘streetscapes’ to define a city's shape and how multiple social-cultural and social-economic activities impact the existing street’s forms.

Figure 1

(a) The Dar Es Salaam City Map Shows the Location of the Mlalakuwa Neighbourhood and (b) Map Shows the Mlalakuwa Neighbourhood Surrounded by Six Activity Clusters



Note. Source. Adopted from <https://www.viamichelin.co.uk/web/Maps/Map-Dar-es-Salaam--Dar-es-Salaam-Tanzania> , URT, (2013) and Edited by Author, (2022)

Figure 2

A Prominent Neighbourhood Landmarks/Areas in Mlalakuwa that Serves as a Spontaneous Attraction for the Development of Streetscapes



Results and Discussion

This study discussed the emerging urban forms in the Mlalakuwa informal settlement. The study reflected the progressive evolution of spatial change through buildings built in a given time period (2000–2022). A rapid

change of streetscapes, densification trends, and spatial appropriation were highlighted to understand the growth of urban forms in the Mlalakuwa informal neighborhood.

Rapid Change of Streetscapes

The rapid change in Mlalakuwa highlights the variation in spatial organisation and plot ratios. One can find four types of changes: the changes in building facades and their relationship with the open spaces; the growing number of shops and workshops and their impact on the form and uses of different streets; and the construction of solid walls to segregate and divide the pieces of land. Moreover, spatial appropriation, which involved roadside appropriation for vendor stores and socialisation purposes. However, the current study considered the major streets of Mlalakuwa and some of the primary streets as well (Figure 11 and Figure 15).

Construction of Building Verandas for Socialisation

The quality of the building facades and characteristics in the Mlalakuwa informal settlement are tied to the environmental dimensions. When walking through the streets and major roads in the Mlalakuwa area, the majority of the building facades depict a visual variation and richness of usage due to the adoption of Swahili building culture. The buildings are often provided with typical front and rear verandas for socialisation purposes. The veranda, as a more prominent building facade, has a direct connection with the local climatic aspects, as well as with the long-lasting typologies of the Swahili culture. The two-sided veranda, which divides the space between men and women, is a cultural allusion drawn from the Islamic tradition. For this reason, the rear verandas are frequently used for purposes, such as raising children and doing household chores. Men primarily use the front veranda as a place to socialize and pray.

An investigation was conducted through a timeline from (2000-2022) to understand the transformation of building facade as well as the impact on the streetscapes. A gradual change was observed in front building facades in the previously mentioned two decades. The study showed that the neighbourhood street edges keep changing which reflects changes in social and economic activities. The thin red dotted line in the maps in Figure 5 shows the building facades with front verandas along the sides of

the streets. Within the transformation, a shift can be detected in the edges of streetscapes that contributes to the neighbourhood's urban form.

The study revealed that out of the 314 houses examined, 185 were built with both front and rear verandas. The main reason for this change is that the majority of them adapted this construction from the Swahili building design are the dominant house types in the city Dar es Salaam they often built with front and rear verandas. One hundred (100) had only a front veranda facing the streets that was specifically designed to endure the tropical temperature and 29 didn't have either of the verandas. More than 65% of the interviewees responded that the transformation of the building's verandas is for the indoor environment to receive fresh air and natural light. The study into the usage of the veranda as a social space revealed that 78% of the interviewees responded positively to the use of outdoor spaces for much longer periods of time to take advantage of the cool breezes. The front veranda in Swahili building design is primarily a gathering place for males to exchange views and debate on political and sporting concerns (Figure 4). A study revealed that, during the month of Ramadhan from April to May 2021, and April to May 2022, the inhabitants in Mlalakuwa were seen using verandas for praying, playing mancala games, board drafting games, and dining places. According to respondents, using the veranda as a dining area helps to invite other people who are famished, a typical act during Ramadhan (Figure 3). One of the Veranda users informed us:

...Hey! We are living because of our thanksgiving to Allah (God in Islam). We, Muslims, believe that no one has ever become poor because they helped other people. That's why we are here. We depend on each other, and of course, we are healthy because of thanksgiving, and it's more important to help people during the month of Ramadhan because you will get more blessings from God. This is the reason that we are using front veranda to welcome those people who don't have anything to put in their stomachs (Mohamed, personal communication, May, 2022).

One can state that the veranda buildings create a typical streetscape, structuring the Mlalakuwa neighbourhood. They are a component of spatial development and link different neighbourhood's domestic spaces. This change of veranda is also, seen by Nguluma (2003) and Bahendwa, (2013) as the primary cause of all issues of urban forms in many informal

settlements in the city of Dar es Salaam. Spatial development in informal settlements is not directly controlled by either local or national governments. The government, on the other hand, is an indirect actor in the entire spatial development process.

Figure 3

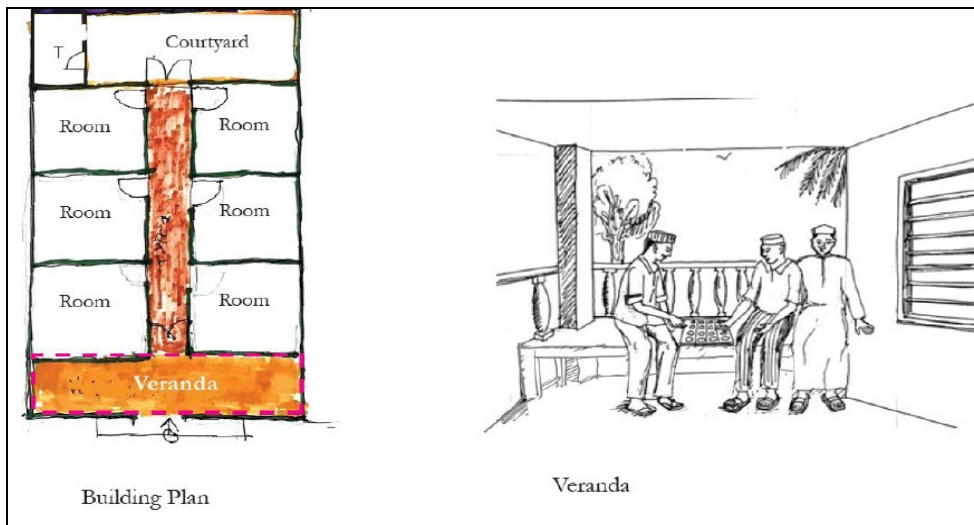
One Side of the Building's Façade (Front Veranda) Along the Street Adapted for Socialisation



Note. Source. Author, Fieldwork, (2020) and (2022)

Figure 4

Building Layout of Where Veranda is Adapted to Space for Social Functions and The Socialisation In The Veranda

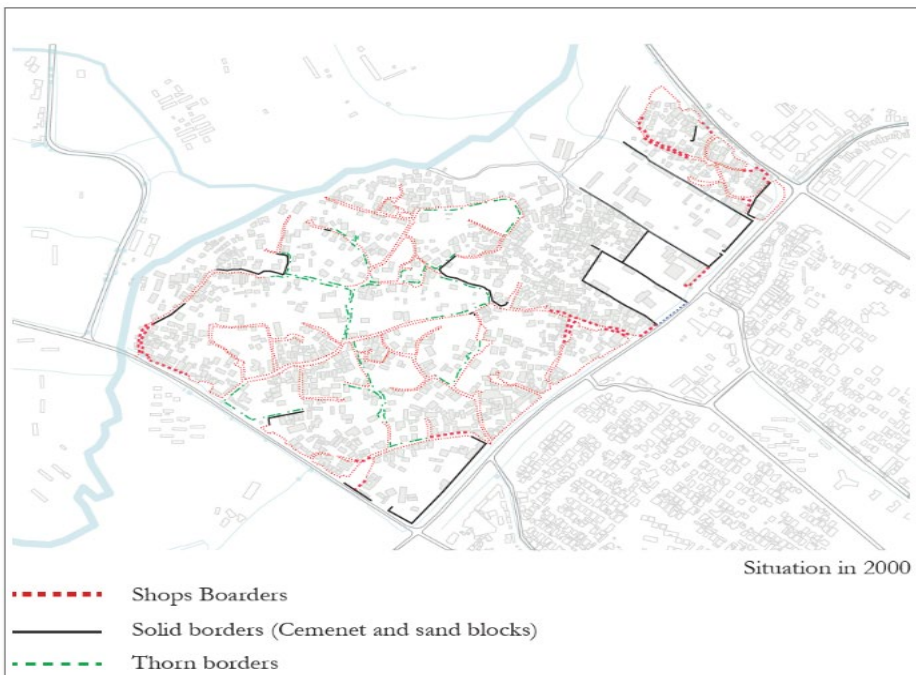


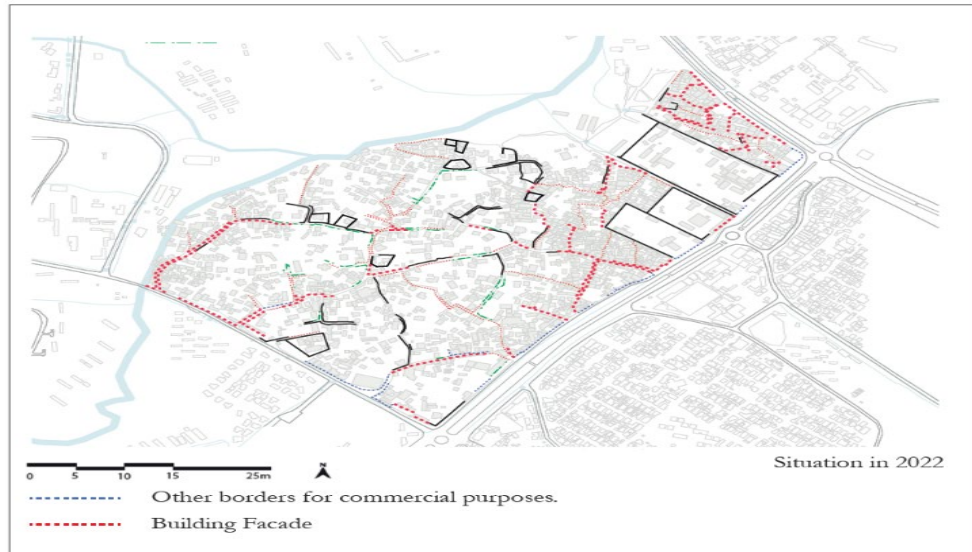


Note. Source. Lutta et al. (2021) Author Fieldwork (2022)

Figure 5

Maps Showing the Emerging Streets in the Year 2000 and the Streets in the Year 2022 in the Mlalakuwa Neighbourhood





Note. Source. Adopted from URT, (2018) and developed by KU Leuven Summer School – Global Minds – VLIR-OUS project, (2022).

Emerging Shops and Workshops

The presence of commercial activities is higher in Mlalakuwa than in an average informal settlement in Dar es Salaam. The existence of the adjacent activity clusters and the major roads surrounding the neighborhood attracted more individuals to move to the Mlalakuwa neighbourhood. The increase in population triggers for a high demand of commercial and social services. In the transformation process, shops and workshops are not often built as new constructions, however, as an additional space for existing houses. The study found that, there are 55 plots surrounding the Mlalakuwa neighbourhood, where more than 240 buildings have been transformed into 261 economic facilities. This provides a significant increase in shopping facilities, with 67.5% of front building spaces converted into shops (retail trade), 14.8% transformed into car/furniture workshops, 5.2% converted into bars and restaurants, 6.1% of space developed for vending; 1.6% transformed to fuel stations, 2.7 of open spaces adopted by parking lots for cars, taxis, motorcycles, and tricycles, and 2.1% converted into housing facilities. Looking at the footprint distribution of building structures on the scale of main streets, it can be stated that retail shops dominate by far when compared to other

developed structures on the main streets, where these kinds of shops tend to contribute to neighbourhood urban forms (Figures 6 and 10).

Figure 7 depicts an example of the scheme plan and section of a typical home arrangement, with the lounge, dining rooms, and veranda (shown in green) converted into shop facilities. However, as seen above, verandas have an important collective function in the community. Spaces that are occupied collectively by people for socialization were, in this case, shifted to the smaller oval shape in the plan depicted in Figure 7. More than 99% of all shops and workshops are constructed on ground level. Most of the shops are concentrated in zones 4, 5, and 6 of the neighborhoods, (Figure 8) where one can find grocery-shops, cosmetic-shops, pharmacies, bakeries, cooking gas shops, and retail shops at different locations. Numerous stores were built in zones 4, 5, and 6 due to their proximity to the major roads of MakongoJuu and Sam Nujoma. Many workshops, such as car repair workshops, fabricate wood and steel furniture, windows, and spaces to store construction materials were used and at the same time they were also used as collective spaces for individuals (Figure 9). Residents from the adjoining settlement of Makongo, and staff from the University of Dar es Salaam and Ardhi University, used to bring their automobiles to these workshops in Mlalakuwa since their location was conveniently accessible (Figure 12).

Figure 6

(a) Street Activities at a Nail-Decorating Salon (b) Socialisation Spaces Next to Front Shops in One of the Streets in Mlalakuwa



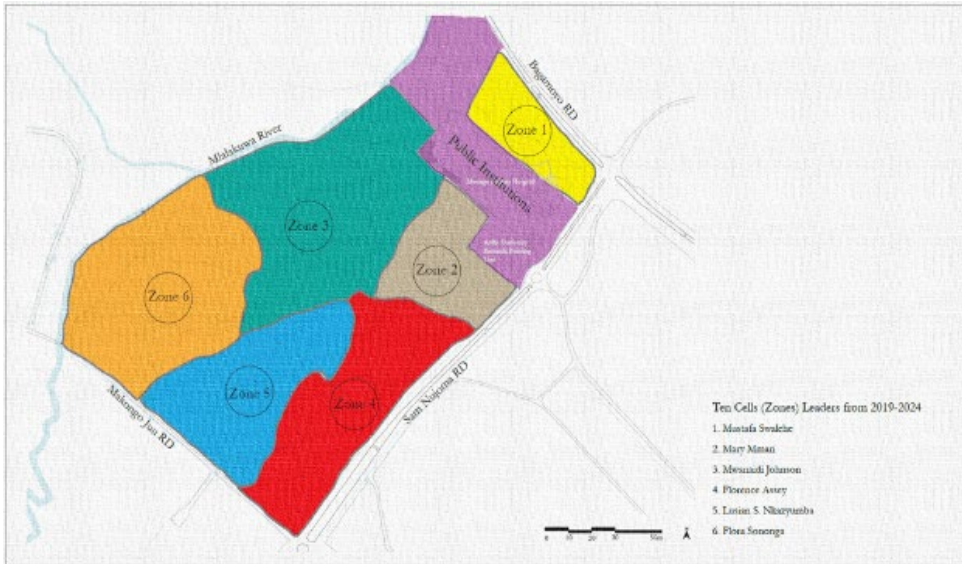
Figure 7
Scheme of the Plan of a Typical Home Arrangement



Note. space highlighted as green and red-dotted oval shapes as spaces for collective use.

Figure 8

The Distribution of Administrative Zones (Ten-Cells Leaders' Areas from Zone One to Zone Six with Respective Current Leaders from the Year 2019 to 2024).



Note. Source. Author Fieldwork (2022) as per information from MEO and Mlalakuwa Ward Leaders.

Figure 9

Examples of Steel and Wood Furniture Workshops in the Mlalakuwa.



Note. Source. KU Leuven summer School- Global Minds-VLIR-OUS project, (2022).

The present functions of buildings that are aligned on the primary streets are commercial ones (Figure 10). Many primary streets are defined by a series of shops with a diversity of commercial activities. During the study, some of the primary streets including Tingisha Street, Mikoroshini Street, Muro Street, CCM Street, Ngotonyingi, Ngalapa Streets, Makongo, and Bagamoyo Roads, were found to have about 388 shops as borders along these primary streets (Figure 11). Often, commercial spaces are extended from the shops towards the street, creating a transition of the urban spatial form of different levels from private, semi-public, to public spaces. Figure 5 shows that the shops are represented by thick red and blue lines like other commercial facilities, such as warehouses for building construction materials and car showrooms, which differ from shop facilities. Shop facilities provide residents and newcomers with new opportunities due to the settlement's proximity to important facilities and job opportunities, even though these spaces are made up of potentially insecure land tenure (Castillo, 2000). This trend has also been revealed in the current study, where shop facilities in streets is among one of the reasons of rapid growth of urban form in informal settlements. Extra tension is being compelled due to the normal rural-urban migration to Mlalakuwa neighbourhood. This resulted in an increased change of urban form.

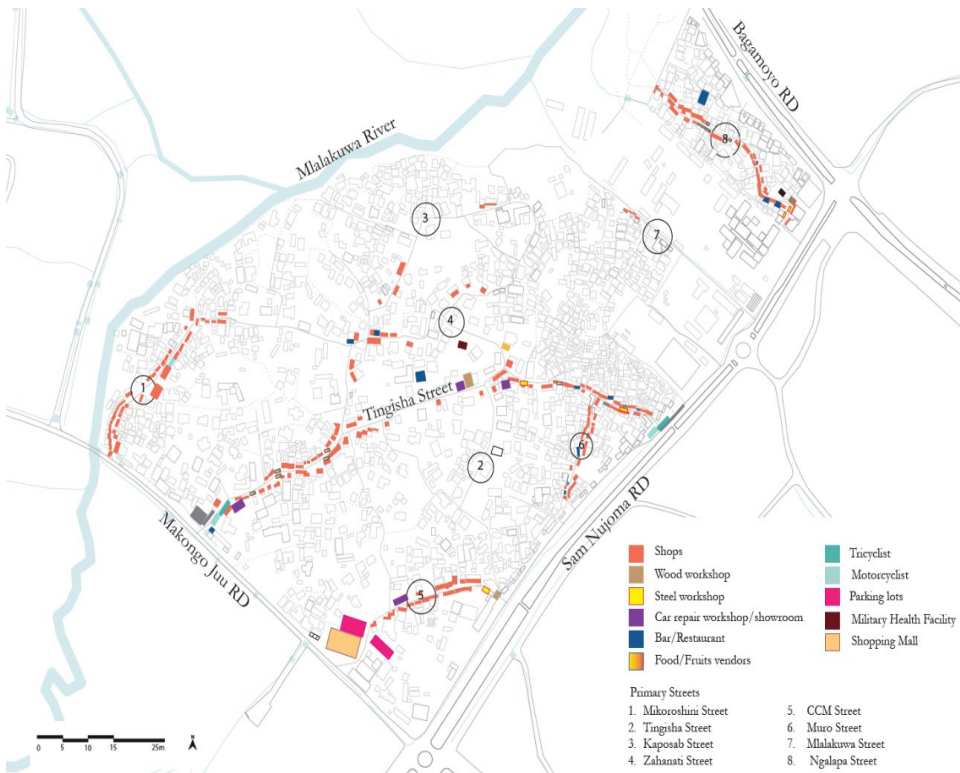
Figure 10

Mikoroshini Street and Tingisha Street in Mlalakuwa, Showing shops' Borders



Note. Source. Author, Fieldwork, 2020 and KU Leuven Summer School – Global Minds – VLIR-OUS project, (2022).

Figure 11
An Edge of Shops along the Interior Streets



Note. Source. KU Leuven Summer School – Global Minds – VLIR-IOUS project, (2022).

In the current state, the physicality and connectivity of spatial forms in the major roads are structured under a general grouping of space types based on some shared features. They are housing, shops (retail trade), bars and restaurants, workshops (vehicle repair, furniture, steel), and fuel stations. It was noticed that new buildings with structures facing the streets were realised to allow for both social and economic activities. The majority of the people from Dar es Salaam's adjacent urban areas, such as Makongo, Changanyikeni, and Kimara, also use these locations to get services before returning to their homes. The spaces are adopted by the residents to maximise the use of scarce plots of land for productivity. Figure 13 shows an example of the transformation of shops and workshop buildings into a new Puma fuel station. It is a place where practicality and

convenience define the location of facilities and economic activities including housing, transporting, manufacturing, warehousing, and service. Figure 14 depicts the distribution of shops and workshops along the primary streets of the Mlalakuwa neighbourhood.

This transformation creates a shift in spaces and their characteristics. It was observed that, domestic streets, with their typical streetscapes and realms were being altered into commercial streets. The organization of these building facilities and activities attracts people to get services, however, they also sometimes use it as a collective space to meet and socialize in the proximity of commercial activities. People hang out, discuss sports, politics, and daily life there (Figure 17 and Figure 12). One of the Mlalakuwa residents reported in an interview:

...As you may have noticed on Mikoroshini Street, a large group of students is hanging out in various shops as they wait for printing services. This is also apparent in a few of the street stores and workshops that have been transformed into community spaces for social gathering where people may meet and obtain services. Residents use shops and workshops as collective areas where they can meet due to the absence of public spaces (U. Rajabu, personal communication, March, 2023).

There is, however, a daily tension between the open spaces that can be used by the community as neighborhood open spaces and the pressure for economic activities. The open spaces offer an opportunity to develop more extensions for commercial functions, making them more flexible and providing the benefit of having more shops that are connected to main streets. Due to its accessibility and proximity to main streets, where there is a high flow of people, the pressure stays high in order to be close to consumers. New streetscapes are occurring that are heavily associated with (forced) consumption and commercialization. This generates novel kinds of spaces where socialization is being generated since many different economic functions also combine with social activities (for the customers). Most of these social spaces emerge after the demolition of existing spaces that foster social cooperation and coexistence among the space users.

The building structures on the main streets are defined by function and the nature of services provided. Although, these structures are situated in

an informal settlement, some of the public buildings, such as bars and supermarkets possess security of tenure, and a few retail shops have building licences. Figure 15 shows the distribution of commercial facilities on the main roads as part of the changes in spatial urban form. The transformation of these spatial structures enables an extensive reading of the space encroachment on the physicality of the main roads in Mlalakuwa, leading to the constant concentration of various commercial activities and distracting spaces that were used for socialisation.

Figure 12

Examples of Socialization Space at a Car Repair Workshop in the Mlalakuwa



Note. Source. Autor Fieldwork (2022).

Figure 13

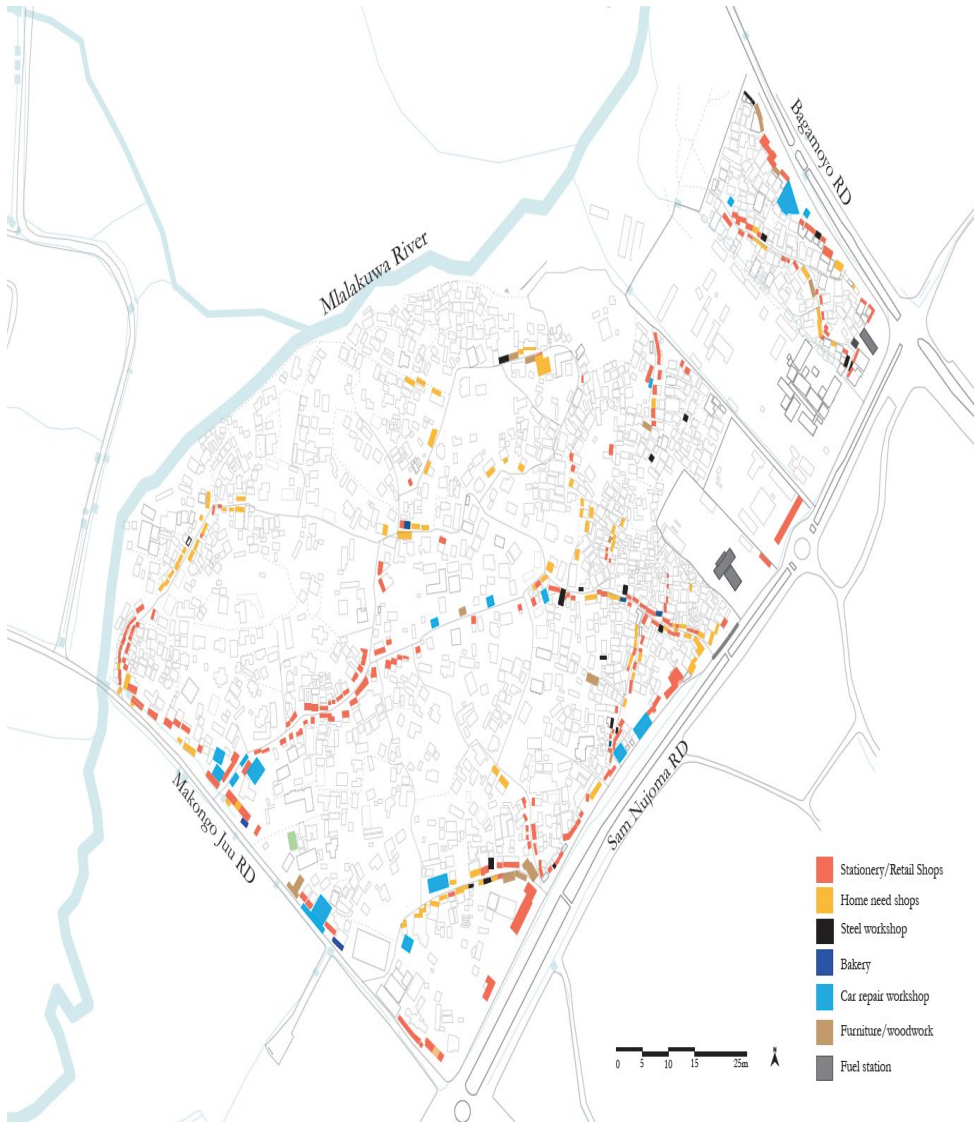
examples of the workshop and shop buildings transformed into a fuel or gas station on the sides of Makongo Juu Road



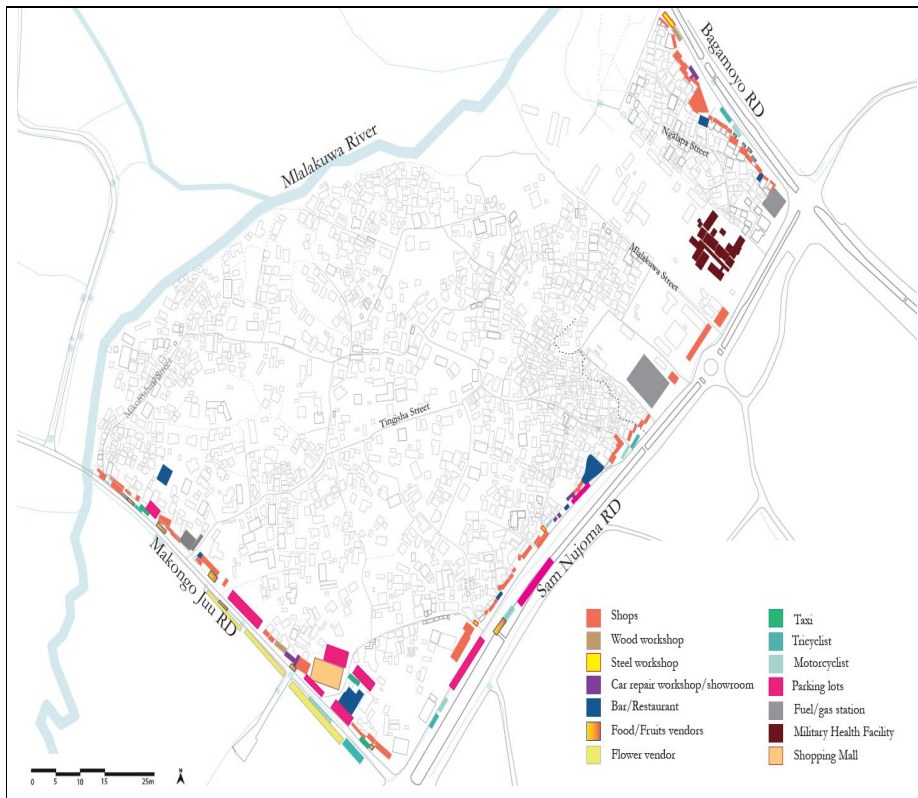
Note. Source. Author Fieldwork (2021) and (2023).

Figure 14

The Distribution of Shops and Workshops in the Mlalakuwa Neighbourhood



Note. Source. Adopted from URT, (2018) and developed by KU Leuven Summer School – Global Minds – VLIR-OUS project (2022).

Figure 15*The Distribution of Economic Activities along the Main Roads*

Note. Source. Adopted from URT (2018), and developed by Author, (2023).

Most buildings along these roads were transformed into economic possibilities to make them more profitable for the property owners.

Densification Trends

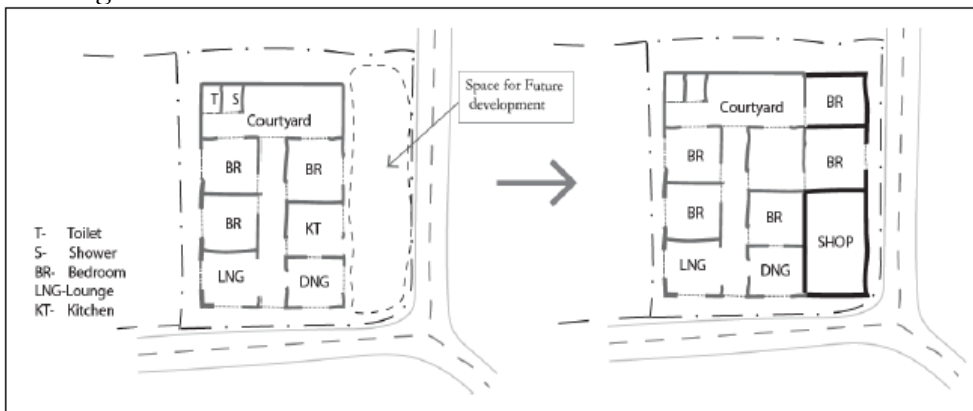
The streetscape is changing due to densification on the one hand, and growing social and commercial activities on the other. Additionally, uncontrolled densification has been happening in the neighborhood over the past few decades due to a lack of land to accommodate the neighborhood's expanding need for housing amenities. This was in tandem with the needs of the urban inhabitants in their search for housing and spaces for social and commercial activities (Nguluma, [2003](#)). It is

noteworthy that the growth of urban people's demand for housing has paralleled the growth of informal settlements. More and more open spaces along the streets were being taken and privately appropriated, which means that there are fewer potential places for socializing and commercialization purposes.

Incremental development of building types is one of the fundamental characteristics in Mlalakuwa's densification. Many houses along the streets are transformed horizontally by extension, as well as vertically where single-storey buildings add extra floors (Figure 16). These actions lead to a denser urban fabric. This was not only realized by the dwellers themselves, however, also by developers from the neighborhood as well as those who took more interest in the settlement and invested in structures for social and commercial purposes (Figure 17). This is often done according to the developer's specifications and the current community's needs. The parameters that govern the extension process and variations are mostly determined by the intended usage, resources, and availability of space. The role of space often relies on accessibility and social inclusion (Madanipour, 2003). These changes in physical shape are necessary due to the constant flux of people who need spaces for various activities. As mentioned earlier, the proximity of Mlalakuwa and its interstitially location between main activity clusters are the main factors which caused the densification of Mlalakuwa streetscapes.

Figure 16

Spatial Densification through Building Extension from the Existing Building





Note. Source. Author Fieldwork (2021) and (2022)

Figure 17

Example of Some of the Social Destinations along the Streets



Note. Source. Author Fieldwork (2023).

To observe the densification process on the streets, a pilot study was conducted on some of the residential buildings aligned along the streets. About 175 out of 211 transformed buildings were found to have new building walls that underwent a transformation process. An interview with a Mlalakuwa resident was conducted to learn more about the densification process:

...The transformation process is carried out incrementally. In my experience, it can take about two to five years to finish. And most landlords demolish the old buildings located along the streets and erect new structures that can sustain our environment. Another reason for making this transformation is to attract tenants easily, especially to the areas located along major roads. If you have self-contained rooms, it's easier to get customers than room spaces located far from the main streets. In some cases, you might find old buildings that were built in the 1970s. These are traditional Swahili houses with low-head roofs and they need to be replaced. Most of them have leaky roofs, and low foundations. The owners don't have enough resources to make improvements to their buildings, though more than 90% of the household economy depends on those old buildings. (Mlalakuwa resident, personal communication, July, 2020)

This type of transformation contributed to the availability of spaces to be rented and also increased the value of many houses located along the main streets in the neighborhood while at the same time increasing spatial densification. Bahendwa, (2013) and Nguluma, (2003), denoted that, the unavailability of open spaces in informal settlements is the result of densification of streetscapes due to the connection that exists between the socioeconomic status of people and their urban locations. The urban transformation and densification have, as a consequence, violated the open, unbuilt space, often adopted for the collectivity of the communities. This transformation of Mlalakuwa neighbourhood also affected many open spaces, particularly the street sides, which were mostly used for social and economic activities.

Growth of Solid Fences

In the last two years, new fences have been erected. Many of the thorny edges have been replaced by modern structures and solid fencing.

This indicates that Mlalakuwa's ever-growing population and limiting green resources are causing solid-fence urbanisation with less regard for vegetation and other open spaces that might be used collectively by Mlalakuwa inhabitants. To comprehend the emerging solid fencing, an interview with a Mlalakuwa resident told that:

...This type of fencing is essential, and many people are attempting to enclose their open spaces to avoid being intruded upon by other dwellers. These solid fences have a negative impact on reducing streets' open spaces and, at some point, causing them to be densified. (The property owners in the Mlalakuwa neighbourhood, personal communication, June, 2022)

One can see that the solid fence sideways of the street, made of cement and sand screed block walling, is marked with thick black lines on the map as shown in Figure 3 above. About 27 out of the 314 building structures along the streets were fenced with solid fences, ranging in height from generally 1.8 to 2 meters. As known, borders create a specific relationship with their surroundings, urban fabrics of open spaces, and urban identities. The block solid lines indicate the steady increase of solid edges, mainly for (so called) security reasons and to mark properties (Figure 18). Due to the increasing population in informal settlements, solid fence areas have become more significant features of streets that establish a hard boundary between private spaces and outdoor spaces. Here, the territorial depth is lost as well excluding permeability and possible liveliness in the open spaces. Additionally, there is scarcely any room for human interaction and a possibility to create a neighborhood sense of place and place attachment.

Figure 18

(a) *Solid Fences at Mlalakuwa* (b) *Solid Edges to Both Sides of a Street*



Note. Source. Author Fieldwork (2022)

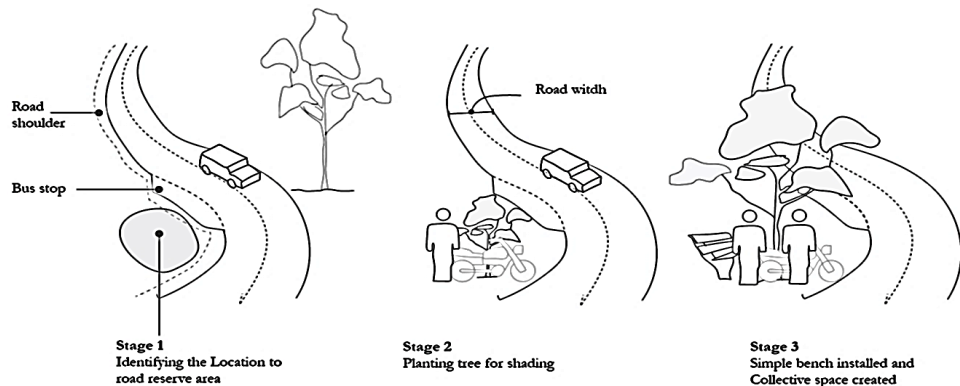
Spatial Appropriation

Appropriation of Roadsides Open Spaces for Socialisation

Open spaces along the street sides, have been converted into multiple uses where motorcyclists, taxi drivers, and tricycle riders use the generated spaces for socialisation. The growth of these areas takes place in three stages. Stage one entails the identification of a location in the road reserve area where someone needs to establish activities. Stage two implies planting trees to provide shade for space users. These operations are carried out by motorcycle operators. Stage three entails making temporary benches for them to sit on. The places are commonly called Vijiwe in Swahili (Figure 19).

Figure 19

Stages of Open Space Transformation on the Roadsides (Main Street) of Makongo Juu Road to Social Spaces by Motorcyclists and Taxi Drivers



Note. Source. Author Fieldwork (2021).

The development of these spaces does' not incur any cost. People are bonding together and petitioning the local authority for permission to establish their businesses. During the interview, one of the participants stated:

...We are occupying areas that do not belong to anyone. We built this area on our dime, and it wasn't too costly. We contributed by purchasing wood and constructing these benches. This is an excellent place for us to wait for passengers from public transportation before bringing them to other destinations. We know practically everywhere in this community, which makes it easier for us to conduct our business. Because trees cannot shield us from rain during the rainy season, it becomes extremely inconvenient. (Business owner in the Mlalakuwa area, personal communication, July, 2020)

Considering they assist people in accessing transportation to different locations, local authorities permitted these folks to run their businesses along roadsides. The authority regards them as taxpayers, however, at some moments also also tries to empower them by providing favorable conditions to carry out their operations.

Appropriation of Roadside Spaces for Vendor Stores

Fruits and food vendors are another type of spatial urban form in the Mlalakuwa neighbourhood edges involving the construction of temporary structures to road reserve areas. The occupiers of these spaces allow other people to rent them, mainly for street food and fruit vendors. These places have been important collective points for the Mlalakuwa residents as meeting points for socialisation (Figure 20). During the interview, one of the users commented:

...We needed to utilise the roadsides as part of the spae, as you can different activities are running here. We can make a simple structures that doesn't need any approval from authorities. It is easier to demolish them any time if they don't want us to use these roadsides. It's a good place and easily accessible. People would rather come here than go to Migombaniand other restaurants in the interior streets. Most of our customers are students from Ardhi the University and University of Dar es Salaam. (Kinondoni resident

from a Middle-income group, personal communication, April, 2023).

The development continues in road reserve areas which have been converted into flower vendors' spaces. The process took some time due to the preparation of the garden and planting trees along the side of roads (Figure 21). Most of these vendors depend on customers from Mlalakuwa, however, also from the neighbourhoods of Makongo, Mbezi, and Kimara due to their location and the way they run businesses along the roadsides. Gardening along the roads contributes to the beauty of the Mlalakuwa landscape. During the interview, the owner of the flower vendor store mentioned that:

...When we started here, we were told by many people that we were wasting our time. I worked in someone's garden before I established my garden here along Makongo Juu road close to Mlimani City Shopping Mall. We are close to big shops here and we are sure in the coming days we will be selling more flowers because we are in a convenient location. I'm proud of my work now that we have changed the environment. Nowadays, the Makongo Juu Road looks different than it was before. You can see the upcoming new commercial facilities close to our place that will make our place of work more attractive. The local authorities appreciate what we are doing now. We get customers mostly during the weekends. During the weekdays, people are so busy that they don't stop by our location since they appear fatigued from work. (Flower vendor, personal communication, June, 2022)

More plant shops were opened on the sides of Makongo Juu Road, making it a green street of flowers. This improvement also attracted other vendors to establish new commercial activities on the sides of the Makongo Juu road.

Figure 20

Spaces on the Roadsides, Transformed into Fruit Vendor Kiosks



Note. Source. Author Fieldwork (2021)

Figure 21

Roadsides Transformed into Flower Vendors Area



Source. Author Fieldwork (2021)

Conclusion

The current study offered a thorough understanding of the growth of urban form in the Mlalakuwa informal settlement by detecting trends in streetscapes. The morphological characteristics, which consider architectural and geographical approaches to the study of urban form, are crucial to understand the processes that produce and modify urban form as well as directing quality design practice. This study also provided an integrated conceptual framework to understand the analytical techniques of the existing streetscapes organisations. Due to the transformation, one can detect a shift in territorial depth in the streetscapes. There is a shift from domesticated streets with a high territorial depth due to the changing of verandas, towards new commercial streets with a high liveliness and a decrease in territorial depth. Through dissecting the notion of urban form into its fundamental components, such as a streetscape, we may ascertain the correlation between urban form by keeping in view the role of streetscapes and how they function in the structure of the urban systems.

Informal settlements are highly vulnerable in changing streetscapes, since there is an absence of formal public spaces defined by the authorities. Open spaces can quickly be taken in, and appropriated by residents themselves and other investors. These cause quick changes in urban form which sometimes has positive effects, such as a better income for the dwellers due to the ongoing commercial activities. However, they can also destroy urban forms that could develop better, long-term, livable community environments. Overall, the study contends that to support future city development, a deeper comprehension of streetscapes, their elements and transformations is required. This will help the development stakeholders including individuals, designers, planners and authorities to make a better spatial planning system that may improve the existing qualities of the streetscapes to ensure better living environments in developing cities, such as Dar es Salaam.

Future Recommendations

Understanding the distinct sizes and shapes of streetscapes in informal settlement seem to be important. This is because it makes them visible for potential interventions that could benefit from the current urbanisation process. An emphasis on urban forms has been placed on the comparative mapping of streetscapes. Identification of streetscape patterns, such as

density and spatial appropriation on the streets, can be aided by mapping. Examples of these patterns include the changes in the streetscape, such as buildings' verandas becoming shops and workshops.

Policy Recommendations

Planning and urban development strategies can benefit from the use of this study. A policy viewpoint emphasizes the importance of integrating several sectors including communities, local leaders, NGOs, Fundi, and the governmental sector. Furthermore, individuals living in informal settlements should be actively involved in creating and carrying out the policies and programs that affect their daily activities. Through the establishment of community-based organizations, the use of participatory budgeting, and the inclusion of local leaders in the decision-making process, are among the strategies that make possible to both empower and involve the community in urbanisation process in informal settlements.

Acknowledgments

We acknowledge the financial support from KU Leuven Global Minds – VLIR-OUS project, and KU Leuven Summer School (2022) as well as the leadership and people of Mlalakuwa where the study took place.

Conflict of Interest

The authors of the manuscript have no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

Data Availability Statement

The data associated with this study will be provided by the corresponding author upon request.

Funding Details

No funding has been received for this research.

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