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**Title:** INFORMALITY IN URBAN AREAS, A CASE OF LAND USE TRANSFORMATION IN MLALAKUWA SETTLEMENT, DAR ES SALAAM.

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**ABSTRACT**

In many developing countries, land use development and transformation in informal settlements have been taking place because informal settlements have been alternative way of providing affordable housing to low income people. Many governments use strict regulations to deny informal settlements from infrastructure services but in Tanzania informal settlements are provided with such services. This paper presents the findings on how land use transformation is taking place in the informal settlements, its context and outcomes hoping that, the knowledge may inform and prompt timely planning intervention to avert disappearance of public spaces resulting from unguided land use transformation in informal settlements. Based on field observation and mapping process, the study analyzed the process and different types of land use transformation where there were horizontal, vertical and horizontal-vertical land use transformation. Also through interviews, observation and documentary review, the study identified context and outcomes of the transformation process. Land use transformation in the study area was prompted by socio-economic and spatial factors and outcomes were socio-economic, spatial and environmental outcomes. Lack of development control on land use transformation and delaying in planning intervention contributed to the disappearing publicly used spaces hence results into high cost of provision of infrastructure facilities in regularization process.

**Keywords:** Informal settlement, Urbanization and Land use transformation

## **1.0 INTRODUCTION**

History shows, types and patterns of land use transformation are controlled by the historical development, the strong influences of technological, social and political alteration and urban development (Richter, 1984). This has impacts on many urbanizing cities where land use transformation has resulted to land use intensification to cater for housing needs of people living in urban areas (Ibid). As urbanization may lead to land use transformation, therefore land use transformation must be accompanied by the development of a dense network of protective and reservation measures so as to help in eradicating poverty by creating new opportunities, increasing earnings and by enhancing the numbers of livelihood opportunities in urban areas (Ibid). Conversely, on the other side, when urbanization and land use transformation are not supported by strong economic growth and effective distributive policies, the consequences of urbanization increases congestion of disadvantaged people living in informal settlements rather than poverty eradication (UN HABITAT, 2010).

Globally, the outcomes of the informal settlements have brought distinct challenges to governments. Many have emerged as squatter camps and repel eviction efforts with vigilance. In some areas due to outcomes and challenges of the informal settlements, removal of people from private and government land can be justified. Often the settlements are at risk of flooding (Ziervogel, Waddell, Smit, & Taylor, 2014) or to any other environmental problem that pose significant lethal or any other perils to residents occupying that particular land. The settlements can also be constraining the use of vital land, blocking the construction of infrastructure for the public use.

In many developing countries, informal land use development and transformation have been taking place because informal settlements have been the alternative way of providing affordable housing to low income people. The past experience shows that, most governments' attitudes toward informal settlement have been either negative or negligent which means they do not recognize the existing advantages of the informal settlement. Some governments used strict regulations to deny informal settlements infrastructure and services where as in Tanzania experience shows that informal settlements are provided with services such as water supply and electricity (Hardoy, 1995).

## **2.0 BACKGROUND**

As early as 1972, Tanzania Government adopted a policy that recognizes informal settlements as urban housing solution by the low income urban residents to cater for their housing needs. Demolition of such settlements would therefore represent not only reduction of affordable housing stock it would also amount to loss of income source in form of house rent payable to land lords. Demolition of the settlements would also socially destruct communities. This recognition and positive attitude towards informal settlements was immediately followed by a progressive policy to improve infrastructure and services in the settlements and ensure security of tenure which was expected to provide confidence to the property owners to improve their housing condition (Nnkya, 2002). As expected, the policy has catalyzed housing improvements as evident in all upgraded settlements (Ibid.) and housing transformation (Nguluma, 2003).

However, as argued by Nnkya (2002) the government’s positive attitude and policy towards informal settlements has amounted to ‘political’ security of tenure so that developers in the informal settlements to build permanent houses from the word go, being confident that their settlement would eventually be regularized and upgraded. This has fueled spatial informality which takes many forms and dimensions, among which is densification of existing informal settlements where land use transformation is normally unregulated and planning intervention are always delayed. The consequence of this process is disappearance of public spaces normally used for circulation, recreation and play grounds for children in particular. The public spaces are used also for various social-cultural activities given their qualities (Mrema, 2008) and different meanings to the residents (Lekule, 2004). Knowledge on how land use transformation is taking place in the informal settlements, its context and outcomes is the focus this research, hoping that the knowledge may inform and prompt timely planning intervention to avert disappearance of public spaces and unlivable housing areas.

## 2.1 Location of the Study Area

Mlalakuwa settlement is located in Kinondoni Municipality in Dar es Salaam. It is boarded by Ardhi University on the Northern part, Sam Nujoma Road on the Southern part, Bagamoyo road on the Eastern part and Mlimani City on the Western part. The surrounding developments around the settlement have made it to be home for low, medium and high income people. The increase of developments in the surrounding areas have created development pressure on the settlement and currently there is observed land use transformations taking place in the settlement including; buildings and spaces transformation.

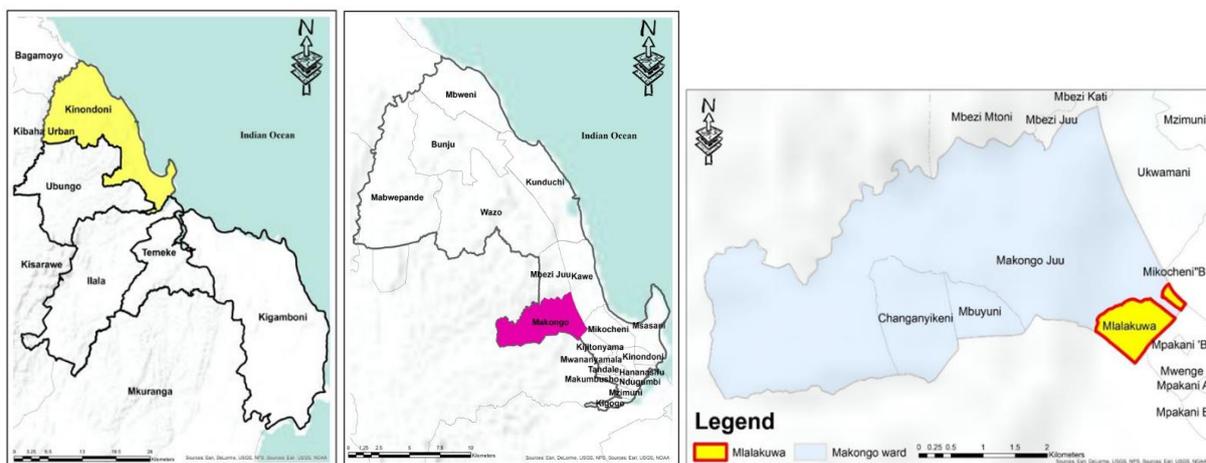


Figure 2.1: Location of the study area in Region, district and Ward level

## 3.0 DATA AND METHODS

Six subcases were introduced in the study area and a mixed approach combining both qualitative and quantitative methods was employed for data collection and analysis. Quantitative data included spatial developments and transformations trend of the settlement from 2005 to 2017. Satellite images were captured through mapping and analyzed by GIS to see the changes resulted from land use transformation. Qualitative data

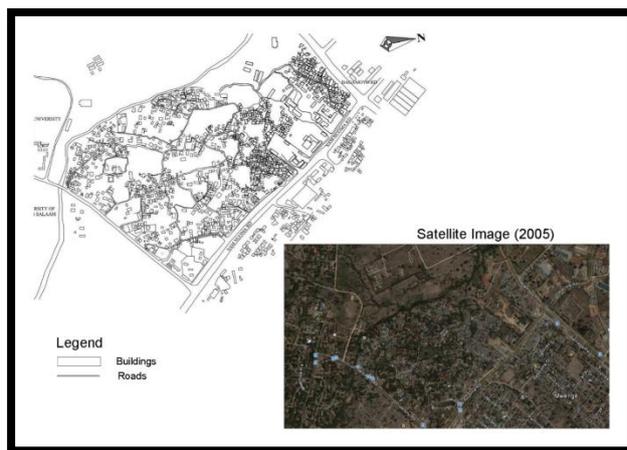
such as land use types, households' socio economic characteristics, factors and processes of land use transformation and their respective outcomes were collected through households' and key informants' interviews with an aid of standard interview guides, one for the latter and another for the former. Key informants included developers and officials from the Mtaa office, Ministry of Land Housing and Human Settlement Development (MLHSSD), Kinondoni Municipal Council and National Environmental Management Council (NEMC). All collected data and information were triangulated through non participant observation and documentary review.

## 4.0 RESULTS AND DISCUSSION

### 4.1 Land use transformation

Google earth images of 2005 and 2017 were used to analyze the general and detailed land use transformations in the study area. The images show the land cover of each specified year and classified those land covers into densely built area where there is dense development of built-up structures, sparsely built area where there is little (scattered) residential development, access roads, footpath, commercial areas and public institutions.

#### 4.1.1 Existing land use in 2005



The image of 2005 shows large part of the study area was undeveloped and other areas were partially developed as seen in figure 4.1. Analysis shows the densely built area was covering 88 acres and sparsely built was covering 62. The unbuilt areas were covered by trees and other parts were used for gardening activities. Most buildings were low rise and few high rise. This was before the expansion of Sam Nujoma road, the opening of Mlimani city shopping mall and other nearby institutions as seen in figure 4.15

Figure 4.1: Existing land use of the study area in 2005

#### 4.1.2 Existing land use in 2017

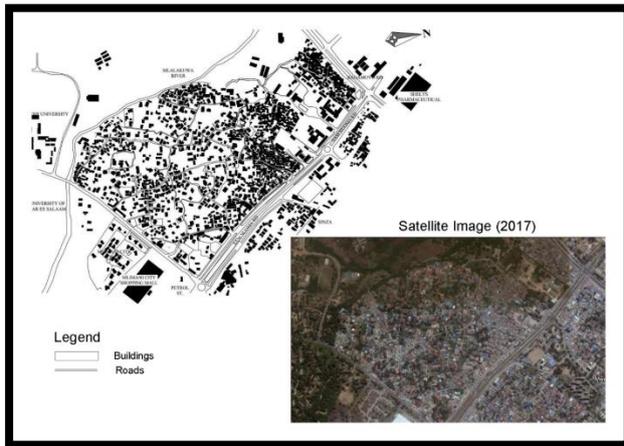


Figure 4.2: Land use in the study area 2017

According to the satellite image and field observation, there is a clear expansion of densely built area as a result of increased buildings as seen in figure 4.2. The undeveloped land has been significantly reduced as the years passed by to 2017. The analysis on the land use transformation in the study area was done basing on the area where the transformation process was observed. The 2017 image shows densely built area was covering 121 acres and sparsely built area 32 acres.

#### 4.2 Selection of transformed areas for detailed study

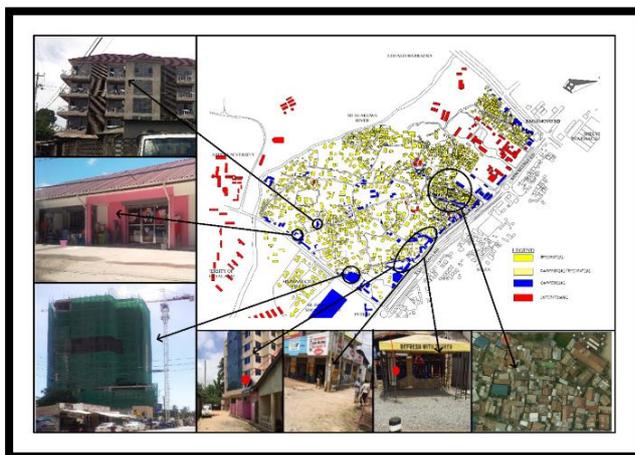


Figure 4.3: Some areas selected for detailed study

Based on field observations and analysis of the satellite image, areas that were observed to have exhibited land use transformation were established as shown in figure 4.3. The different types of transformation were observed on built and unbuilt spaces. In each subcase, the analysis was done to establish what was there in 2005 and compare the same with the image of 2017.

#### 4.3 Types of land use transformation

From the selected subcases, detailed analysis of the satellite images and physical survey in the study area, three main types of land use transformation were observed. These are horizontal land use transformation, vertical land use transformation and horizontal-vertical land use transformation.

##### 4.3.1 Horizontal land use transformation

Different land uses had been transformed or changed from their previous forms and expanded horizontally. Horizontal land use transformation was through total replacement, building extension, addition of new building and new building on unbuilt land.

**Total replacement**

In this type, developer demolished the existing building on a particular plot and replaced it with a new building, which can be either smaller or bigger than the previous one. It was observed that, all transformations falling under this category in the study area involve erection of new structures which are larger than the previous structures thus affecting the spaces which were there for other uses such as walkways and children playfields.

In 2005, the space was occupied by one building. According to developer the space around was used as footpath and children playground.

In 2017, the building had been demolished and new buildings built. The footpath had disappeared while part of the space was used for gardening. One of the building one was used by the owner and the other was rented out for residential purpose.



Figure 4.4: Existing building before demolition and replacement



Figure 4.5: Existing building after transformation and replacement, 2017

**Building extension**

This occurred when the building was extended as a result of additional increase of the new use on the existing building. Addition of other uses reduced the spaces previously used for particular purposes hence creating buildings congestion within the settlement.

As shown in the image of 2005, the plot had only one building that covered 25% of the total plot area. According to developer the rest of the area was used as footpaths, children playfield and animal keeping. Also the open space had trees which protected the environment and provided shade and greenery to beautify the environment.

In 2017, the open space was occupied by the extended building which had blocked the footpaths, reduce children play area and garden. The extended building was used for rental purposes to students and other residents working in the nearby areas.



Figure 4.6: Existing building before extension of the Property, 2005



Figure 4.7: Existing building after extension, 2017

### Addition of a new building

This type of land use transformation occurred when new independent building was erected besides existing buildings, not attached but within the same plot as shown in figure 4.9. Property owners had a tendency of adding. Addition of new rooms was always done in the front side of the main building if it was for commercial use and in the backyard of the main building if it was for rental purpose or serving added family members.

In 2005, the plot had only one building and the rest of the area was covered by trees and other vegetation. The space around the building was used as footpaths, children playing grounds and trees that shaded the environment.

In 2017, several small buildings had been erected as seen in the image. New structures in front and back of the buildings were constructed for rental purposes.



Figure 4.8: Existing building before addition of other units in a compound, 2005



Figure 4.9: Existing building after addition other units within a compound, 2017

## New building on unbuilt land

In this type, addition of new building occurred on the unbuilt area. New development occurred in the area previously used publicly such as roads, children playfield or footpaths. This type of horizontal land use transformation increased buildings' density on the settlement as the study area had 997 buildings in 2007 and 1221 buildings in 2017. Satellite images of 2005 and 2017 show a part of the selected subcase which had transformed through addition of new building on available space.

In 2005, the land in the study area was covered by vegetation and used for farming activities.

In 2017, the area had been transformed into buildings which are used for commercial and residential activities as seen in figure 4.11.



Figure 4.10: Open/vacant land before additional of building structure, 2005



Figure 4.11: Existing building added to vacant land, 2017

### 4.3.2 Vertical land use transformation

Land use transformation in the study area had also changed vertically overtime. Before 2005, According to Mtaa leader, the area had 98 percent of the buildings which were single-story and 2 used for residential purposes. In 2017, 9 percent of the buildings had changed from single story to multi story buildings. These multi-story buildings were used for residential and renting for commercial purposes. Vertical land use transformation in the study area involved total demolition of the previously existing buildings and replaced with a new building. The plot coverage is always the same as the previous building but plot ratio increased due to increase in number of floors.

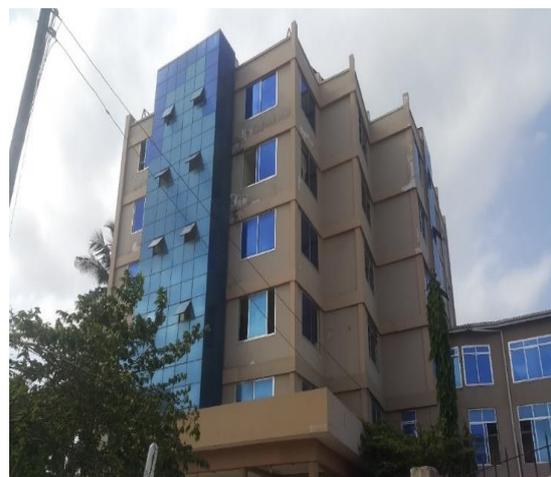


Figure 4.12: One of the multistory buildings used as Students' hostel at the study area

### 4.3.3 Horizontal-vertical land use transformation

It involved both, extension of the spaces horizontally and vertically. The new building acquired more space horizontally and also increased vertically. The horizontal expansion of different uses acquired more spaces hence affected other land uses. 90 percent of building structures with more than two stories in the study area fall under this category as observed in the field and analysed from the satellite images as shown in figure 4.13 and 4.14.

In 2005 the area had single story building which was used as a residential house. The building was covered 50% percent of the total plot area and the other area was used as open space and garden.

During the study in 2017, the area was still under construction to multistory building which replaced the old one. The new building is covering larger space vertically and horizontally than the previous one. Since buildings are congested, construction activities affected neighbors in many ways from dust, noise and falling objects.



Figure 4.13: Existed building in 2005 before transformation



Figure 4.14: Multi-story building which is extended vertically and horizontally, 2017

## 4.4 Factors prompting land use transformation

Land use transformation occurred in the study area is a result of; socio-economic, spatial and topographical factors.

### 4.4.1 Socio-economic factors

One among the major factors prompting land use transformation in the study area was population growth. In 2012 and 2017 the settlement had total population of 19,462 and 23,974 respectively. Rapid increase in the number of people in the study area is a result of immigrants, including students, from other parts of Dar es Salaam and the country. The study area is surrounded by universities, other institutions and shopping mall which employs a large number of people working in different businesses.



Figure 4.15: Adjacent developments along the study area

The interviews conducted with 88 households, 70 percent shows that presence of the above facilities adjacent to the study area had attracted immigrants from other areas to the settlement. The immigrants include; students and employees of Ardhi University, University of Dar es Salaam and Tumaini University.

Income generation; renting of the houses for residential and commercial purposes had been a common practice in the settlement. Landowners transformed their properties to hostels, commercial space and other residential houses for renting purposes. Rental rate per month for a single room without a self-contained bathroom ranged between Tshs. 50,000 and Tshs. 70,000. While rental rate for a room with self-contained bathroom ranged between Tshs. 80,000 and Tshs. 100,000 per month.

#### 4.4.2 Spatial factors

Availability of unbuilt land which is relatively flat has a significant impact on the land use transformation. Interviews with key informants showed that, lack of development control on available unbuilt land occupied by low income persons who couldn't afford to develop them had encouraged informal land subdivision hence unguided land use transformation.

Compared to other informal settlements like Kimara, Mbezi, Tegeta and Bunju, Mlalakuwa settlement is located close to the Central Business district (CBD) (approximately 14 kilometers) and easily accessible by; Bagamoyo road, Sam Nujoma ad University road. That in one way or another had encouraged investors to build multistory buildings for various purposes.

The interviews with developers in all six subcases show that, suitable topography and well drained soils, encouraged land use transformation and real estate investments. Also the fact that the area has an altitude of 30 to 42 meters above the sea level and the presence of the Mlalakuwa River facilitate the draining process of surface water from different parts of the settlement to the Indian Ocean.

### 4.5 Outcomes of the land use transformation

#### 4.5.1 Socio-economic Outcomes

Unguided land use transformation has social, economic and environmental outcomes. These outcomes are of both positive and negative effects to the people and environment.

The transformation process had resulted in income generation to the property owners who transformed their structures for renting and other commercial purposes. Figure 4.12, shows the new students' hostel for income generation.

The transformation process increased number of houses which helped to reduce the housing problem resulted from increased number students in both Ardhi University and

university of Dar es Salaam. In 2007 the number of registered houses was 997 and in 2017 the number of registered houses had reached 1221.

The transformation process had increased properties' value in the study area where the rent levels for the transformed modern houses were quite different with the old houses. The study found that the rent of a modern house with three bedrooms ranged between Tshs 350,000 and 500,000 while the rent for three bedrooms Swahili type house was between Tshs 150,000 and 300,000. Figure 4.16 and 4.17 show single-story building modern house and old Swahili house found in the study area. Both are rental houses but differ in rent due to their condition.



Figure 4.16: Rental modern house



Figure 4.17: Rental Swahili house



Figure 4.18: Modern two stories house adjacent to dilapidated house in the study area.

Transformation and modernization in the study area had brought different people with diverse cultures and backgrounds. The study uncovered that, the presence of people with high difference of income level as shown in figure 4.18 had impacted social ties and cohesion since these people are socially and economically different.

#### 4.5.2 Environmental Outcomes

According to NEMC, environmental challenges in the informal settlement are results of mixed land use which is not planned and regulated. The presence of unplanned and unregulated mixed land use has the following outcomes on the environment.

Problem of solid waste management, where the study observed improper dumping of solid waste as a result of increased number of houses without improved infrastructure facilities (see figure 4.19).



Figure 4.19: Improper solid waste management

Noise pollution is also another challenge of unplanned mixed land use where industries, night clubs, bars and residential areas are located together without proper planning consideration (see figure 4.20).



Figure 4.20: Timber industry adjacent to residential house in the study site.



Figure 4.21: Improper discharging of liquid waste

Central sewer line can no longer support the additional connection of liquid waste generated as a result of increased number of dwelling units. Thus some of the residents were discharging the liquid waste in the Mlalakuwa River and in other improper channels as seen in figure 4.12. This impose the settlement endanger of outbreak diseases such as cholera and typhoid.

### 4.5.3 Spatial Outcomes

The commercial area had expanded (See Figure 4.15) as a result of increasing number of people and buildings hence it provides various opportunities to the residents to engage in different business activities.

Unguided land use transformation has led to excessive densification that is evidenced by the dramatic increase in built up area and buildings' crowding (see figure 4.22). Other negative effects of unguided land use transformation include occupational reduced privacy in residential areas, land use conflicts and reduced accessibility since public spaces such as access roads are either being restricted (see figure 4.23) and some are relocated to other places



Figure 4.22: Buildings crowding reduce vehicular mobility, privacy and impose settlement in danger in case of fire outbreak



Figure 4.23: Extended fence wall that narrowed access.

## 5.0 CONCLUSION

Conclusively, disappearance of public spaces is due to lack of development control in the land use transformation occurring in informal settlements, regularized and upgraded areas. Moreover, upgrading or regularization schemes for such settlements do not adequately take cognizance of such public spaces. They are instead mostly regularized as private spaces or building plots and brings difficult in negotiation in acquisition of land for public use such as circulation.

According to the Urban Planning Act 2007, the permission should be obtained from a planning authority before effecting any development within the planning area, but lack of development control drives many developers in unplanned areas to not seek development consent and building permit and only some who are developing multi-story buildings do so. For example in 2005, the study area had so much publicly used spaces but owned privately. Lack of development control and delaying of planning interventions (as stated in Urban Planning Act 2007 that, for area to be regularized must be substantially developed) had led to disappearance of those spaces and probably resulting to high cost of providing infrastructure facilities during planning intervention.

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