

Urbanising, Socio-Economic and Environmental Impacts of Multistorey Commercial Development in the Capital City of Tanzania

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Abstract:- Urbanisation is a multidimensional concept involving among others physical, demographic and technological factors. These entail variations in the pace of urbanity. Study examined impacts of multistorey commercial building in capital city of Tanzania. It employed qualitative approach and case study design that used purposive sampling procedures using 30 key informant interviews, documentary review and observation methods. Found that public institutions and surrounding community were supportive of the development. Impacts of project include positive and negative such as employment opportunity, revenue generation, noise pollution, liquid and solid waste generation, air pollution, deforestation, occurrence of accidents, attraction of business investments, effects on car park, fire outbreak, spread of HIV/AIDS, opportunity to local entrepreneurs and growth in revenue to government authorities among others. Found that there were possible mitigation measures to address negative impacts and enhancement measures for positive impacts. These were employment of the state of the art technology, provision of protective gears, to workers, sourcing forest products for the project use from legally authorised distributors, and adherence to good constructional and operational standards. Concluded that the then Capital Development Authority (CDA) had designated area for commercial utility. Project's negative impacts will be mitigated while maximizing socio-economic, urbanisation and community benefits. The project was viable given the centrality of its location in central business district of Dodoma city. It was recommended that the developer should effectively implement the proposed environmental management and monitoring plan for the project that will include putting aside human and financial resources to effect the mitigation of impacts to be caused by the project development.

Keywords: Commercial, Environmental, Impact, Multistorey development & Socio-economic

1.INTRODUCTION

Urbanisation is a multifaceted concept involving the physical, technological and demographic issues among others. Its history is marked by development of new methods of construction in the 20th century linked to world wars, modern architecture, and welfare state policies in the United Kingdoms (1). The development of multistorey is dated from 19th century in England (4). In Tanzania, construction industry is still young normally limited by factors such as limited professionals, low level of

technology, and low economy (2). The development of multistorey commercial building in Dodoma Tanzania is an opportunity that addresses some problems related to quality of housing in developing countries (5).

The proposed project will have five storeys to be situated at Plot N0. 6 Block 'O' Uhindini Area in Dodoma town (20). It held the building permit from CDA. The objective of the project is to construct the multistorey building for Commercial residence. The project aims at constructing a business building that will offer various business utilities including coffee shop, let able office spaces and the multipurpose hall to the last floor. The objective of the study was to develop baseline data for operation of the project. The other was to assess the likely environmental, urbanising and socioeconomic impacts of the project with measures.

2.THEORETICAL AND EMPIRICAL FRAMEWORK

The study utilised the central place theory (19) to understand the growth of urbanism in the Dodoma capital city of Tanzania. The theory attempts to describe the spatial arrangement, size and number of settlements by Walter Christaller in 1933 in the context of Germany. It assumes the existence of threshold and range population of goods or services. There is an isotropic surface that experience evenly distributed population and resources as a limitation of this theory. The service users also use the nearest market. The transportation costs will be equal in all directions and proportional to distance. The central place is a settlement that provides one or more services for the population living around. There are varieties of services arranged in high and low order with low and high order settlements respectively. The central place possesses its area of influence so called the sphere of influence. The theory applies to the growth of Dodoma City in terms of settlement patterns and services and goods distributed according to this theorization point of view. The development of multistorey commercial centre in central district of Dodoma places the area under growing high order centre of settlements, goods and services.

Empirically, the paper analysed the relevant policies and laws that are relevant to the project. These involved the National Environmental Policy (8), The National Land

Policy (7), The National Forest Policy (9a), The National Population Policy (15), The National Energy Policy (13a), The Human Settlement Development Policy (11), The National Water Policy (12), and The National Health Policy (13b), Other were The National Strategy for Growth and Reduction of Poverty (NSGRP) (14a), The Tanzania Strategic Cities Project (TSCP) (16a), Small and Medium Enterprises (SMEs) Development Policy (13c), and The Construction Industry Policy (14b). The Acts analysed involved The Mining Act (9b), The Mining Act (17a), The National Land Use Planning Commission Act No. 3 (6), The Land Act No. 4 (10), The Occupation Health and Safety Act (13d), Water Resources Management Act (16b), and The Water Supply and Sanitation Act (16c). The Tanzania Environmental Impact Assessment and Audit Regulations (14c) were also reviewed. Since multistorey development are associated with risks, it was important carry out an assessment process in order to unfold the understanding of the development's impacts over the city's socio-economic, and environmental dimensions.

The project was proposed in the Central Business District of Dodoma city (20). The site is adjacent to the CDA Street in the east, Habibu Street in the south and Tembo road in the north. It is located in the commercial cum residential area of which there is a guest house next in the north, offices and a Mosque in the east, and offices in the West and the Nyerere Square Garden in the south. The project is the Multi Storey intended to operate for commercial purpose. The project holds the building permit from the Capital Development Authority (CDA). The terrain of the area is of gentle gradual slope that is adjacent to roads. The land for the proposed site covers 300 metre squared. The site is flanked with low rising buildings which have been designed to accommodate some residential/ commercial flats. The area is level throughout and has a lower water table as witnessed. The site is adjacent to the CDA Street in the east, Habibu Street in the south and Tembo road in the north. It is located in the commercial cum residential area.

The Construction of the Multi -Storey commercial building was planned to have five storeys. It will include the construction of rentable office spaces from ground to second floor and a coffee bar at a ground floor which has a spacious arcade space around the building. The third floor will accommodate a multipurpose hall. During construction phase, the main materials to be used outside walls will include Brick/masonry blocks, Timber/ weather board, concrete. The main materials of the roof will be tiles, Asbestos sheeting, timber, concrete, metal, and earth.

The current projected population for Dodoma Urban district is 410,956 (199,487) male and (211,469) female with 93,399 households having an average population growth rate of 4.4%. The Urban Division (project area) has 22 wards with a total area of 426 km² and total population of 183,650 inhabitants. The population size of Viwandani ward which is the project area is 4883 having 2437 male and 2446 female with average household size of 3.5 (18). The project area was populated by the people of different ethnic groups although the original ethnicity groups are the Gogo, Rangi and Sandawe. There are many educational

facilities, government, religious, and privately owned. Such facilities include nursery schools, several primary and secondary schools, colleges and two universities in Dodoma: St John's University of Tanzania, owned by the Anglican Church of Tanzania, and the University of Dodoma that was projected to have a total of 40,000 students in three to four years' time. Following trade liberalization, health facilities including dispensaries, health centres and hospitals, as well as government and private facilities, have increased substantially in number. The health facilities are government, religious and privately owned. The status of HIV/AIDS in the Municipality was alarming; the prevalence of the disease for the past three years was as shown below (in percentages): 2005/06-6.7%, 2006/07- 5.4% and 2007/08- 4.5%. The number of people infected by HIV/AIDS in the urban was 305 for male and 615 are females and this was for the year 2006. The most affected age group is between 30 -34 years which are 8.3% (3).

The income generating activities of a bigger part of the municipal population is mainly through petty businesses and farming activities, hence, a majority of the municipal population has low income as established by the household survey. There are three types of housing structures in Dodoma: (i) cement bricks with iron sheet /or tiles (few houses); (ii) stone walls with iron sheet/tiles roofing; and (iii) mud or timber walls with roof from iron sheet roofing or grass thatch. While most of the houses in the centre of the town; are constructed by brick and corrugated iron-sheets, many government offices; and few individual houses; are constructed by bricks and the roofing is by tiles. Kiwanja cha Ndege ward, has houses of high quality indicating that residents and owners of houses in this part of town are of high-income category. New big expensive hotels are also located in this ward; new expensive houses and big hotels are also being constructed in this area meaning that this area is an attraction to medium and high - income people. Whereas the low-income people own/rent mud, wood and iron /grass thatched houses. These are mostly located in the squatter areas or in the outskirts of the municipality. Housing density distribution varies from one area to the other by being determined by kind of activities taking place in that particular ward/area. The central part of municipality has high-density houses because it is the commercial/business area, offices, as well as residential. The Dar-es-Salaam to Dodoma road was surfaced in the 1980s. In 2005, the Government of Tanzania started improving to tarmac level the remaining portion of east west trunk road, feasibility studies for construction of the north south trunk road is in advanced stage. Also, the study and design of the new airport for Dodoma is in progress. The transport network within Dodoma that provides internal access and circulation for all land-use elements in the capital city, such as residential communities and industrial areas has been improved adequately for the growing traffic (3). Yet, the transport sector forms a good source of employment in and outside town. There is a network of water supply connections and sanitation services composed of a central sewer system and septic tank system which empties their septic tanks using

Municipal Sludge emptier. Other houses are not connected to the main sewer and do not have flush toilets with septic tanks; these houses use pit latrines. Most roads are passing through human developments with notable above ground and underground public utilities along the roads such as water supply pipes, telephone lines, electricity poles and transformers. Dodoma Municipality is endowed with underground water resources and geological data reports reveal that the water table is fairly high in most parts of the Municipality which is 6 meters below the ground level. Makutupora artesian basin supplies water for the entire Dodoma urban residents and this water source is part of the famous Great Rift Valley basin extending eastwards and connected with lower Ruvu water Basin emptying its water into the Indian Ocean. The main water sources in the Municipality include: deep wells, shallow wells, springs and dams (17b).

3. MATERIALS AND METHODS

The study was a case study in nature with qualitative approach. It employed purposive and convenience sampling procedures. It used a sample of 30 participants to arrive to results. The methods for data collection were various ranging from observation whereby researcher conducted site visit in order to obtain the required information for the study. It included the direct observation of the site temporal and spatial features. The project conducted key informant interviews by visiting stakeholders relevant to the development including: Ministry of Lands, Housing and Human Settlements Development, Capital Development Authority (CDA), Dodoma Municipal Council (DMC), Dodoma Urban Water and Sewerage Authority (DUWASA), and Viwandani Ward and Tofiki *Mtaa*. To develop the environmental and social management plan that will enable the implementation of the project. The study focused on review of project document and relevant laws, baseline data on project location in Dodoma municipality and administrative framework. The relevant document reviewed included the project documents, policies and legislations, DMC profile. The project proponent was interviewed on the project activities expected during pre-construction, construction and decommissioning phases. The other was interview with the community around the project area. These included Drivers community, Business and Office renters. Data were analysed by expert judgment, theme and content analysis.

4. RESULTS AND DISCUSSION

4.1 Development Stakeholders' Participation Results

This section presents and discusses key issues identified in the study. The first issue was about policy and legal compliance. It was argued that the building will be located in the central business district of Dodoma city. It has to adhere to the government approved master plan including the project height and size consideration standards required. There was concern on the parking space for the proposed project. The second issue was on expectations over urban development. The project will add good scenery

to Dodoma town and assist in accommodation and reduction of squatter settlement due to expansion of Dodoma city. It was explained that the promoter will comply to the building permit of the proposed development. The proposed project was known to the *Mtaa* and Ward administrations. It was considered as an opportunity to the *Mtaa* as it would be one of the greatest contributors in revenue in the large scale housing category. It will be valuable in terms of beautifying the capital business district. The third concern was about urban land use planning. The project will be in accordance with the town plan as per CDA plan.

The fourth issue was about sound pollution. It was explained that the project will have sound proof during operation of Bar compartment. The fifth issue was nearness to the Nyerere Square Garden and Mini stand for taxes and trucks. The project will impact on the status of the land uses. The project will impact on the status of the land uses. The sixth issue was project site relevance to the City Re-development Plan. Regarding this the development holds the building permit CDA/DP/BC-/8014. The plot was designated as Commercial in the Institutional/Commercial land use area planned to have five storeys with lettable office spaces and the conference hall to the top storey. The proposed project was acceptable given its location in the CBD area of Dodoma city. The seventh issue was about water and sewerage infrastructure. The present water and system was adequate to contain the presence of the project operations. The project is located within the Dodoma Urban Water and Sewerage Authority (DUWASA) system of water. It will adhere to sewer and water connection standards of 16 inches pipe size to the sewer system and 4 inches for drinking water at the site. The eighth issue concerned with car park. The project is located at Dodoma CBD, car park space may be problem. The ninth issue was on building underground installations. The installation of tile system requires the understanding of water cum sewer system infrastructure of the site. The developer was advised to seek consultation from DUWASA on the building plan to relate according to the water and sewer system. Need for standby storage tanks in case of water pressure fluctuation. The project is beneficial to DUWASA and town development. Tenth issue was that the project will increase business flow. Its activities will have positive impacts on the locality and drivers community in particular.

4.2 Project Impacts and Measures

The section identifies the project impacts. It goes to the further identification of mitigation and enhancement measures that relate to the phases of the development of the project. The phases of the project include construction, operation and decommissioning phases. Table 1 presents the impacts with corresponding measures to be adopted to promote project objectives and public benefits at large. Table 2 presents the impacts ratings, duration and significance of the impacts

Table 1: Identified Impacts of the Development and Related Measures

S/ N	Project Impacts	Duration	Mitigation/Enhancement Measures
1.	Job creation	C & O	Use of local personnel and protection of workers in social security funds and health insurance systems
2.	Generation of revenue	M	Buying of local products
3.	Production of sound pollution	C	Use of protective gears
4.	Production of noise pollution	C	Use of protective gears
5.	Liquid waste generation	O	Linking the project to main sewer. The promoter should connect to the sewer with standard of 16 inches pipe
6.	Solid waste generation	C	Fencing of the site and managing wastes
7.	Air pollution	C	Fencing of site and use of protective gears
8.	Land degradation	C	Obtaining permit on quarrying site for construction materials
9.	Deforestation	C	Purchasing building woods and timber from permitted distributors
10.	Occurrence of accidents	C	Use of protective gears and adherence to good practices in construction
11.	Attraction of business investment	O	Adherence to state of art construction of the project
12.	Contribution to growth of vertical structures and urbanism	O	Employment of state of the art technology of construction
13.	Effect on car parking spaces	C	Seeking spaces for car park in construction and operation phases
14.	Traffic accidents	C & O	Observation of driving rules and fencing of the site
15.	Spread of HIV/AIDS	O	Management to implement HIV/AIDS policy, and preventive gears such as condoms for the users of services
16.	Facilitation of local trade	C & O	The project promoter to give priority to the local tenderers
17.	Enhanced social interaction in the capital city	O	Adherence to Laws and regulation of the Country in operation phase
18.	Influence on migrant workers	O	The project to put in place procedures for renting of the facility
19.	Opportunity to entrepreneurs	O	The promoter put renting costs that follow national standards
20.	Fire outbreak	O	The project promoter to put firefighting systems that comply to the requirement of housing and multistorey.
21.	Water resources consumption	O	The project promoter to use a connection standard of 4 inches for drinking water of the project. It will also supplement with having the standby water tanks.
22.	Contribution in growth of Dodoma town population size	O	The users of the building will be guided by the laws of Tanzania. The current rate of growth of Dodoma Urban district is 3.3
23.	Obstruction of storm water to site	O	The project promoter to install the storm water system for the project
24.	Growth in revenue of local authority	O	The investment of the project to abide to property tax and revenues regulation of local authorities Viwandani ward and Dodoma Municipal council
25.	Enhanced institutional relations from revenue collection	O	The Project promoter to buildings and operational standards of the project
26.	Unemployment	D	Proper handling of human resources according to Tanzania laws
27.	Cultural effect	O	Adherence to nation regulation and ethics in operation phase

Note: D stands for decommissioning phase, O for operation phase, C for construction phase, and M for mobilization phase of the development.

Table 2: Matrix Showing Impacts Ratings, Duration and Significance

S/N	Environmental impacts	Impacts rating	Duration	Significance
1.	Job creation	V+	LTD	Highly Beneficial
2.	Creation of revenue	V+	LTD	Highly Beneficial
3.	Sound pollution	V-	STD	Low Harmful
4.	Noise pollution	V-	STD	Low Harmful
5.	Liquid Waste generation	V-	LTD	Low Harmful
6.	Solid waste generation	V-	STD	Low Harmful
7.	Air pollution	V-	STD	Low Harmful
8.	Land degradation	V-	STD	Low Harmful
9.	Deforestation	V	STD	Low Harmful
10.	Occurrence of accidents	V-	STD	Highly Harmful
11.	Attraction of business investments	V+	LTD	Highly Beneficial
12.	Contribution o growth vertical structures and urbanism	V+	LTD	Highly beneficial
13.	Effect on car parking spaces	V-	LTD	Low Harmful
14.	Spread of HIV AIDS	V-	LTD	Highly Harmful
15.	Facilitation of local trade	V+	LTI	Highly Beneficial
16.	Enhanced social interactions in the capital city	V+	LTI	Highly beneficial
17.	Influence of migrant workers	V+	LTI	Low beneficial
18.	Enhanced opportunity to local entrepreneurs	V+	LTD	Highly beneficial
19.	Fire outbreak	V-	LTD	Highly Harmful
20.	Increase in water resources consumption	V+	LTI	Highly Beneficial
21.	Contribution to growth of Dodoma town population size	V+	LTI	Highly beneficial
22.	Abstraction of storm water of the site	V-	LTD	Low Harmful
23.	Growth in revenue of local DMC, CDA and DUWASA	V+	LTD	Highly Beneficial
24.	Enhanced institutional relations from revenue collection	V+	LTD	Highly Beneficial
25.	Unemployment at decommissioning and cultural effect	V-	LTD/LTI	Highly/low harmful

Note: V+ stands for positive impact, V- for negative impact, LTD for long term direct impact, STD for short term direct impact and LTI for long term indirect impact related to the project.

4.3 Environmental and Social Management and Monitoring Plan

The section presents the environmental and social, management plan of the project. This will be the tool for dealing with the proposed mitigation measures of the project. The project proponent had commitment to the management of environmental issues of the project. The project will employ the personnel for managing the operations of the project. Among employees there will be the responsible personnel for project environmental issues including the management of mitigation measures of the project. The responsible officer will be recruited to fulfill the following duties: Management of the infrastructure of the building including drinking water, storm, sewerage system facilities, firefighting system, car park and community relations relating to project operations. The project proponent through its staff will oversee the implementation of environmental monitoring and submit monitoring report annually to relevant authorities including DMC and National Environment Management Council (NEMC). The initial environmental audit of the project will follow this study after every three years to confirm the compliance of management of the proposed mitigation measures of this study.

4.4 Cost and Benefit Analysis and Project Alternatives

The development has the costs and benefits. This section provides the likely risk and uncertainty associated with project development, the knowledge gap and consideration of project alternatives. The section contends that the project is beneficial to public and economic development of locality and the nation.

4.4.1 Cost and Benefit Analysis

The project will be located in the designated commercial cum residential area by the CDA in the Dodoma Central Business district. The site is featured by other residential cum business housing. There is the nearby social institution, the Mosque. The proposed project is intended for commercial purpose that will provide lettable office spaces, coffee table and multipurpose hall. The likely impacts will include production of noises, land degradation, liquid waste generation, air pollution, employment creation, impact of migrant workers. Others will involve increased population growth and housing development. The investment in the proposed project will generate more net public benefits compared to its former state. It will contribute to the revenue generation to local and central government directly and indirectly. The potential services sector investment opportunity of the project via its lettable spaces will benefit the locality, Dodoma municipality and beyond visiting different potential offices at the project. The project will use economically the environmental resources of air, land, and water while maximizing the same benefits. It is relevant to the objectives of Tanzania Strategic Cities Project of Dodoma Municipality. Comparing costs to the benefits to be accrued from the project development, the socio-economic, livelihood and ecological benefits override all the costs for the development.

4.4.2 Risk and Uncertainties

The study does not encounter risk and uncertainty from the information and decision on the assessment process. However, the social risks are less predictable.

4.4.3 Knowledge Gape of the Study

The contribution of multistorey commercial building into the economy of the nation is understood. However, it is not well documented into local understanding on its contribution on social and economic wellbeing promotion among livelihoods of communities at the project locality.

4.5 Consideration of Project Alternatives

The proposed project is located in the central business district of Dodoma. It is solely owned by the citizen of Tanzania. The area is one of the potential business centre that is in accordance with the Dodoma Master plan of the city. Tanzania is promoting the investment in real estates' development particularly the establishment of vertical structures that save space in development of urban and cities. The plot is located in the designated business location. Other options for investment on the plot could be assigning for residential purposes. The project site would have other utilities instead of the proposed project including leaving unutilised or setting as an open space or for garden purposes instead of the current proposed project. However this would have been less advantageous comparing to the values of its location. The option for the project development receives much higher values in terms of urban development, employment opportunities, contribution to national income and urban growth. Thus investing in the proposed land use is potential for availing the socio-economic, urbanising and environmental beautifulness.

4.6 Decommissioning Plan

The section states the decommissioning plan. It considers important aspects of planning and management in time of this phase including building infrastructure, unemployment and land issue. When the project comes to an end as the result of any factor, such as need to change the project, the decommissioning plan should be prepared to serve the purpose of closure of the project. This should be approved by the relevant authorities. The erected building of five storeys will be demolished properly and auctioning of the installed element of the building. Site leveled will be the necessary requirement of the site. Unemployment issue, at the end of the project employment will cease to the project personnel. The workers will be prepared for finding alternative jobs. Others will find opportunity to employ themselves. The project promoter in order to prepare well workers should ensure that all workers are members to the social security fund and health insurance schemes. According to the Land Act No. 4 of 199, the land is vested to President of Tanzania. The land should be returned into the state that should be used by others after completion of the project.

5. CONCLUSION

The developer aimed to construct the multistorey building for commercial residence. This will offer various utility spaces including coffee shop, lettable offices and

multipurpose hall. The negative impact to the project includes air pollution, liquid wastes, noise and sound pollution, accidents and fire outbreak. The positive impacts are such that the development of the multistorey will increase the number of vertical structures in Dodoma Capital City and in the central business district in particular. This will attract various offices for promoting economic and social development in Dodoma. The project will add to the government revenues from contributing to local and central government taxes. It will create employment to the direct employees of the project and by the services providers who will use the office facilities. The project is environmentally using space resources economically by investing in the vertical instead of the tradition lateral development of housing. This will add value to the scenery of attractiveness to the CBD in Dodoma.

The project will be located in the designated area for business cum residential purpose making it fit the utility. The project promoter has the capacity to mitigate the negative impacts identified for the project and enhance the positive impacts as well through the management and monitoring plan developed. Therefore the project is important to be implemented due to the shown maximum potential benefits of both the locality and the nation as a whole provided that it observes to the maximum the state of the art technology in all phases and gain benefits while limiting the negative impacts that are shown in this study.

6. RECOMMENDATIONS

It is hereby recommended that the implementation of management plans with the monitoring components is important to making the project sustain economically, socially and ecologically. This will maximise the realization of its intended objectives. Moreover, the periodic environmental audit is the necessary requirement for sustaining the project.

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