

In Search of Urban Recreational Ecosystem Services in Dar es Salaam, Tanzania

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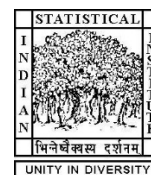
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Abstract

In sub-Saharan Africa, urban recreational ecosystem services are browning and disappearing despite the global recognition of their importance. We study the availability, preference, and determinants of visitations to urban recreational ecosystem services in Dar es Salaam. The results show that, amongst the functioning and publicly owned recreational ecosystem services, there are botanical gardens and other open green spaces with greenery (e.g., trees, grass, or gardens) and sometimes with basic facilities such as benches. We find that the main challenge is limited budget for upkeep, maintenance, and protection of recreational ecosystem services. As a solution, the government is turning to private-public partnerships and community participation. On the private ownership side, there are large urban parks with green features and more facilities (e.g., playgrounds, swimming pools, or restaurants). The main factors that determine visitation to urban recreational ecosystem services include district of residence, distance, education, and income. Residents of Kinondoni and Ilala have higher visitation than those in the Temeke district. We find that although there are few public urban recreational ecosystem services, residents of Dar es Salaam support the government's plans to invest in their development, mainly because private urban parks are not affordable, while the public green spaces lack recreational facilities.

Key Words: parks, urban green recreational spaces, Dar es Salaam, Tanzania

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In Search of Urban Recreational Ecosystem Services in Dar es Salaam, Tanzania

Byela Tibesigwa, Razack Lokina, Fred Kasalirwe, Richard Jacob, Julieth Tibanywana, and Gabriel Makuka*

1. Introduction

Tanzania is an economically poor sub-Saharan African country, but richly endowed in natural resources - game reserves, national parks, and clear and warm beaches located in various urban and rural areas. Because these resources are some of the main tourist attractions and a modest contributor to the GDP, their availability and visitation rates are somewhat documented¹. However, little is documented about urban recreational ecosystem services (i.e., urban parks and other green recreational spaces). Anecdotal evidence suggests that they are progressively browning and disappearing. This raises the following questions: What urban recreational ecosystem services exist in Dar es Salaam? What are residents' preferences and visitation patterns in Dar es Salaam?

The answers are important because urban recreational ecosystem services are important in improving the quality of life and overall health (Maas et al., 2006; Mitchell and Popham, 2008; Lee and Maheswaran, 2011; White et al., 2013; Bertram and Rehndanz, 2014); biodiversity and ecosystem protection and functions (Bolund and Hunhammar 1999; Cornelis and Hermy 2004; Kuhn et al. 2004); and climate change mitigation (Myeong et al. 2006). It is important for Tanzania because both the draft Dar es Salaam 2012 - 2032 master plan and the Five Year Development Plan II² advocate for

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¹ Tanzania is ranked 4th with regards to endowment of tourism-related natural resources. It is the only country with 25% of its total land allocated to national parks, game reserves, and protected areas. Currently, there are 44 game controlled areas, 28 game reserves, 16 national parks, 2 marine parks, and 1 conservation area. Tourism contributes about 17.2% towards GDP (URT 2016).

² The draft Dar es Salaam 2012 - 2032 master plan notes the following: "Increasing the system of green areas: existing urban parks to be preserved, increased and improved; new parks to be realized, especially fluvial parks; a system of district or local parks to be implemented in adequate spaces".

their establishment and expansion; however, they recognise that more information is needed to inform policy. In general, little attention has been placed on urban recreational ecosystem services in either research or policy in sub-Saharan Africa (Cavan et al. 2014), resulting in rapid degradation³ (Busch et al. 2012; Mensah 2014).

To answer these questions, we combine focus group discussions with a stratified random survey in Dar es Salaam to obtain detailed information. Our study finds public and privately owned urban recreational ecosystem services in Dar es Salaam. Among those that are publicly owned, we find botanical gardens and other open green spaces which contain green features such as trees, gardens, and sometimes basic facilities such as benches. These open green spaces, although publicly owned, are often privately managed. That is, the private sector maintains the green garden and, in turn, they are allowed to place advertisements (e.g., billboards) on the spaces. Among privately owned spaces, we identify parks with green features and a variety of facilities which include playgrounds and restaurants.

We also find that spaces along beaches, both private and public, are preferred to green spaces located within the city, mainly because of the presence of the warm ocean waters. Besides the attractive waters, these spaces usually provide security, recreational facilities, and local cuisines. The high preference for beaches, as observed in our study, could explain why most of the private urban parks in Dar es Salaam contain swimming pools. Our regression model shows that district of residence, distance, education, and income are some of the main determinants of visitation to urban parks and other green recreational spaces. Interestingly, the same determinants that influence urban green recreational space visitation also influence visitation to the beaches. Additionally, residents of Dar es Salaam are in support of the government plans to invest in urban recreational ecosystem services, as the existing private parks are not affordable to the average Tanzanian, while the public ones do not provide recreational facilities.

Our study extends the limited evidence on (i) encroachment and browning (Mng'ong'o 2005; Addo-Fordwuor 2014; Mensah 2014; Mosha 2014; Makufwe 2014; Ikawa 2015; Nyambane et al. 2016; Rusadi et al. 2016) and (ii) availability, preference, and visitation to urban recreational ecosystem services (e.g., Gearin and Kahle 2006; Lee et al. 2006; Jim and Chen 2006; Montemurro et al. 2012; Jim and Shan 2013; Aldous

³ In Dar es Salaam Tanzania, only 1.8% (2948.6 ha) of the total area consists of recreational spaces, which include open spaces, beaches, playgrounds, forests, botanical gardens, and public parks. In Lagos, Nigeria, 3% of land contains green spaces, while in Kumasi, Ghana, open spaces cover 10.7% (Mensah 2014).

2013; Saleem and Kamboh 2013; Irvine et al. 2013; Dallimer et al. 2014) in sub-Saharan Africa. Also, urban recreational ecosystem services are not well documented in Tanzania, and preferences and visitation patterns are not well understood.

The rest of the paper is as follows: Section 2 describes the current global literature on urban green recreational spaces and then focuses on Dar es Salaam. Section 3 explains our analytical methods and Section 4 reports the results. Finally, Section 5 provides the conclusion of the study.

2. Urban Recreational Ecosystem Services

2.1. Definition and Past Evidence

Urban ecosystem services provide a range of essential services and have been identified as solutions to some of the urban challenges of reducing climate risks, protecting biodiversity, and improving health and well-being (Davies et al. 2008; Wang et al. 2013; Kabisch et al. 2016; Cilliers et al. 2013; Mensah 2014). They are generally defined as benefits derived from the ecosystem functions (Yli-Pelkonen 2013; Gómez-Baggethun and Barton 2013). There are various classifications which include: water flow regulation and runoff mitigation; food supply; noise reduction; urban temperature regulation; air purification; moderation of environmental extremes; waste treatment; climate regulation; pollination and seed dispersal; recreation and cognitive development; and animal sighting (Gómez-Baggethun and Barton 2013). The urban recreational ecosystem services provide recreational and other related activities (Gómez-Baggethun and Barton 2013; Yli-Pelkonen 2013; Gómez-Baggethun and Barton 2013). Urban green spaces are open areas with some greenery (e.g., grass, gardens, or trees), either publicly or privately owned, located in urban regions (i.e., cities). However, there is no universal definition of green spaces⁴ (Waltert and Schläpfer 2010; Byomkesh et al. 2012; Panduro and Veie 2013), although there is some similarity in the existing definitions. For example, Balram and Dragičević (2005) define urban green spaces as “areas covered with vegetation, natural or maintained, public or private” (Balram and Dragičević 2005:

⁴ Public spaces are often more available to the general public, while private ownership implies that the spaces may have limited access to the public. Note that green infrastructure is a concept used to upgrade urban green spaces by including natural, semi-natural, and artificial structures (Tzoulas et al. 2007). For more information, see Amati and Taylor (2010); Young (2011); and Hostetler et al. (2011).

p.149)⁵. Note that urban green spaces are one type of open space. Francis (1987) defines open spaces as “publicly accessible open places designed and built for human activity and enjoyment” (Francis 1987: p. 72)⁶. De Chiara and Koppelman (1982) provide the following four classifications of urban green spaces: The first consists of parks, golf courses, fairgrounds, green belts, and reserves such as forests. The second includes playgrounds and other recreational facilities (e.g., swimming pools and gymnasias). The third is sports facilities, while the fourth includes water bodies⁷.

So far in sub-Saharan Africa, there is not much literature on urban recreational ecosystem services. The literature that exists is mainly on the browning taking place or documenting visitation. For example, Rabare et al. (2009) analyse the factors influencing the use of urban parks in Kisumu, Kenya. The findings suggest that the lack of adequate facilities and poor maintenance hinder optimal educational, social, environmental, and economic benefits. Addo-Fordwuor (2014) conducted a study on green space depletion in Kumasi, Ghana’s urban settlements and found that depletion is caused by factors such as

⁵ Similarly, Lo and Jim (2010) note that urban green spaces, consisting of greenery in open spaces, contribute notably to a healthy living environment. Baycan-Leven et al. (2009) also define green spaces as “public or private open spaces in urban area, primarily covered by vegetation which are directly (e.g., active or passive recreation) or indirectly (e.g., positive influence on the urban environment) available for the users” (Baycan-Leven et al. 2009: p.3). Similarly, Cilliers et al. (2013) define urban spaces as “the entire urban green infrastructure that includes a network of all natural, semi-natural and artificial ecological systems within, around and between urban areas, at all spatial scales (Cilliers et al. 2013: p.5). For other similar definitions see also Sandstrom (2002); Jim and Chen (2003); Tzoulas et al. (2007).

⁶ Also, van der Valk and van Dijk (2009) define open spaces as “an outdoor environment, undeveloped land with agricultural, natural or recreational types of land use, often having a scenic quality to it” (van der Valk and van Dijk 2009: p.2). There are various types of open spaces, categorized according to their size, location, and services (Byrne and Sipe 2010). Francis (1987) provide the following types of open spaces: public parks, neighborhood parks, playgrounds, plazas, gardens, community open spaces, neighborhood open spaces, undeveloped open spaces, found spaces, school yards, town trails, farmers’ markets, waterfronts, streets, and malls. Also, Swim et al. (2014), classify open spaces into potentially developable and permanently preserved or protected. The latter spaces prevent any developments and protect the natural area (e.g., forests, nature reserves), while examples of potentially developable open spaces are memorial sites and farmlands. Bryne and Sipe (2010) recognize the many ways to classify urban open spaces and suggest a framework that does not provide narrow and rigid categorises. The examples they provide include: parks (pocket/playground parks; neighborhood parks; community park; district park; regional park; nature/wilderness park), plazas, urban trails, streets, cemeteries, rail reserves, and roof-tops.

⁷ Bell et al. (2007) provides eight types of green spaces: parks, lakes, nature, churchyards, sports fields, common areas, agriculture fields, and green buffers. According to Bell et al. (2007), green spaces are not uniform goods with a continuous scale of quantity, but rather hierarchies of distinct goods which provide a range of services that enable different recreational activities. Similarly, Davies et al. (2008) lists the following examples of green spaces: sports fields, gardens, parks, street trees, allotments, waterways, derelict land, and edges of roads and railways. Badiu et al. (2015) outline parks, green spaces, gardens, cemeteries, forests, green roofs, green houses, and arable and vacant land.

laxity in the enforcement of development controls, high land rent for other land uses, and low priority to green spaces by city authorities. Mensah (2014) used a systematic review approach to broaden the discussion on the nature and challenges behind deterioration and poor management of urban green spaces in Africa. Mensah (2014) uncovered the challenges that hinder development of green space include rapid urbanisation, lack of priority to green spaces, political instability, corruption, and low resource base of institutions on green spaces. Mosha (2014) examined the use and misuse of urban green space in Gaborone, Botswana. The findings revealed that open spaces are hardly developed and maintained. Further, illegal land uses have encroached, denying communities enjoyment of the use. The study suggested that local government should give priority to the development of open spaces.

Makufwe (2014) investigated the prospects and challenges of urban green space development in the Kumasi Metropolis in Ghana. The findings indicated the varied differences in managing green space among residents due to inefficiencies in services provision, lack of priority on green space development, and poor attitude toward green space from people. Lategan and Cilliers (2014) examined the impacts of the informal backyard rental sector on green space made available to tenants and landlords in South Africa. They found that informal backyards occupy the open space intended to be used by landlords. Ikawa (2015) analysed the impact of policies on the development and management of recreational space in Nairobi. The findings indicated that private sector arrangements are leading the way in design and management due to large geopolitical neglect. Also, the study revealed that level of education affects the type of space visited, indicating social and political differences in access. Simon (2015) examined the prevalence and uses of open recreational space in Ibadan, Nigeria. The results showed cost, distance, and poor management were significant factors of participating in recreational activities. Nyambane et al. (2016) analysed the tree species distribution in the green spaces of Nairobi City in Kenya and a similar analysis was also done in Nigeria by Okunlola et al. (2016).

2.2. Urban Parks and Other Green Recreational Spaces in Dar es Salaam

Dar es Salaam covers a surface area of 1,628 km. Of this, 235 km is water, mainly the Indian Ocean, while the remaining 1,393 km is land area. The region is a commercial hub, which makes it attractive to migrants from all areas of Tanzania, as well as across the border. The region is divided into 3 districts: Kinondoni, Ilala, and Temeke (see Figure A1 in Appendix A). It is further sub-divided into 8 constituencies, 10 divisions, 90

wards, and 542 streets (see Table 1). The total surface area is highest in Temeke and lowest in Ilala districts as depicted in Table 1. Dar es Salaam has a population of 4,364,541. Kinondoni has the highest population (1,775,049), followed by Temeke (1,368,881), and, lastly, Ilala district (1,220,611). The annual population growth rate for Dar es Salaam region is approximately 5.6%, which represents an increase of about 75% over the 10-year period. This makes Dar es Salaam the most densely populated region with an average of 3,133 persons per square kilometer.

There is little documentation on urban parks and other green open spaces in Dar es Salaam. The draft Dar es Salaam master plan shows that of the 1,628 km², 39.8% is residential, 2.8% is water courses, 4.8% is for office and community facilities, 1.8% is for recreational, 1.6% for industry and harbor, and the remaining 47.9% is for future urban (quarry site, cemetery, urban agriculture, and peri-urban)⁸. Among recreational, 202.5 ha consist of open spaces, 1.3 ha is for public parks, 40.1 ha are playgrounds, 60.2 ha of consist of botanical gardens, 109.1 ha is golf course land, 2501.3 ha is forests, and 34.1 ha is made of beaches (Table 2 provides a detailed breakdown). Similarly, according to CLUVA (2013), there are 11 high-level urban morphology types (UMTs) and 43 detailed UMTs in Dar es Salaam in 2008. The largest is residential UMTs which covers 46.5% of Dar es Salaam, followed by 40.4% from agricultural UMTs. Vegetation UMT is also referred to as perennial green space accounts for 5.1% of the city. Of the total vegetation UMT, 51.5% is bushland, 22.5% is riverine, 18% is marsh/swamp, 6% is mangrove, and 2.3% is mixed forest. Recreational UMT accounts for 0.7% of Dar es Salaam; of the total recreational UMT, 32.5% are open spaces, with parks making up 6.1% of this category (see Figure B1 in Appendix B). Agricultural UMT makes up 40.4% of the city, the majority of which is mixed farming (35.6%), followed by fieldcrops and horticulture. Based on this, it remains unclear as to the number and types of urban green recreational spaces in Dar es Salaam.

The invasion of open spaces has been a subject matter for years. According to the Ministry of Land and Human Settlement, about 30% of green spaces are invaded and the remaining 70% are threatened. Some of the reasons for this include an increase in urban

⁸ Worth noting is the fact that one of the unique features of Dar es Salaam is that close to 20% of the land is used for urban agriculture. The majority of urban agriculture is mixed farming (35.6%), followed by crops and horticulture (Assefa and Mpyanga 2009). Agriculture participation is done by private individuals or institutions. Crops grown include leafy (e.g., spinach, sweet potato leaves, cabbage, and African kale) and non-leafy vegetables (e.g., tomatoes, pepper, okra, cucumber, and carrots). Fruit and banana trees can also be found throughout the city (Assefa and Mpyanga 2009).

population, caused by the high migration from rural to urban areas in search of employment opportunities. Because most of these migrants have low socioeconomic positions, they often erect squatter buildings in open green spaces. This unregulated construction, including unplanned settlements, reduces or destroys green structures. Other reasons for browning are poor management, lack of protection, and institutions - multiplicity, overlapping mandates, and corruption. Recently, the Tanzania government has rekindled and activated the conservation and protection of urban green spaces of Dar es Salaam. However, thus far, these initiatives have not curbed the browning process. The draft Dar es Salaam 2012 - 2032 master plan was developed to guide the developments taking place in the city. In addition, the recently developed FYDP II recognises that green spaces are not well protected and that there are shortages of these spaces in Dar es Salaam; as such, the five-year plan has advocated for the creation of these spaces by 2020.

On studies in Tanzania, Madsen (2014) conducted a study on how to reverse the browning process in Kawe Ukwamani in Dar es Salaam. The findings suggest residents should take good care of and protect open space with certain social and economic values such as central and non-central streets. Hassan (2015) assessed households' awareness and perceptions towards conservation of open spaces in Dar es Salaam, using a structured households' survey questionnaire. The analysis revealed that, regarding awareness of the types of open spaces, 95.8% of households were aware of recreational parks and 96.7% were aware of sports grounds and playing fields. When asked about conservation costs and benefits, 95% and 70.5% agreed that there are conservation costs and conservation benefits of open space, respectively. About conservation quality, 73.3% agreed with conservation quality of open spaces.

3. Methodology

We combine focus group discussions (FGDs) along with a survey and desktop review to obtain detailed information. The advantage of FGDs is that they use unstructured methods to solicit detailed responses from participants, thereby providing informative responses. In general, the use of qualitative methods has increased in land use research and policy (Scott 2011). For instance, McCormack et al. (2010)'s review also finds that previous reviews on quantitative studies of green spaces have called for qualitative methods that can provide a deeper understanding towards designing and planning for these areas. However, FGDs are exploratory in nature and lack statistical validity; despite this disadvantage, qualitative methods can be useful in elucidating

detailed information on green spaces, as recently observed in a review of these methods by McCormack et al. (2010). Because of the disadvantages of FGDs, we combine them with a random stratified household survey, which implies that the findings are representative and can therefore be used to inform policy.

We conducted 4 FGDs with a total of 48 participants. The FGDs were completed in 4 days and on each day, a group of 12 people participated in the discussion. Three of the four FGDs consisted of participants from the general public, each representing the three districts of Dar es Salaam: Kinondoni, Ilala, and Temeke. The individuals were selected from the lists provided by the ward councils⁹. Only individuals fulfilling the criteria (head of household and a resident of the specified district) and willing to participate were scheduled for the FGDs. The fourth FGD consisted of government employees from the three municipal districts in Dar es Salaam. The employees were selected from different departments: cultural departments, town planners, environmental officers, and the Ministry of Lands and Human Settlement, because they are responsible for managing recreational facilities in the City. We sent out an invitation letter to the heads of every department and every department confirmed their availability/presence. The participants were offered refreshments and compensated for their travel costs. In the survey, approximately 705 households were included using three-stage proportionate stratified probability sampling. The stratification used Dar es Salaam geographical boundaries (i.e., three districts which are sub-divided into divisions, and these divisions are further disaggregated into wards). Hence, the first stratum used districts; the second, divisions; and the third, wards. Data was collected using Computer-Aided Personal Interviews (CAPI). In estimating the determinants of visitations to urban parks and other green recreational spaces, we used the discrete-choice probit model. The binary outcome $y = 1$ if visitation to urban parks and other green recreational spaces occurred, and $y = 0$ otherwise. The probit model is given by: $\Pr(y = 1|X) = \Phi(X\beta)$, where $\Phi(\bullet)$ is the cumulative normal probability distribution and is a vector of exogenous regressors that determine visitation.

⁹ Two days were used to recruit participants to participate in FGDs. In every district, 20 people were gathered to be sure that we obtained the required number. In every district, we selected 5 wards randomly, and in each ward, we selected 4 people randomly. The recruitment process was done simultaneously in all districts.

4. Results

4.1. Profile of the Survey Sample

Table 3 shows the descriptive statistics. Considering the socioeconomic characteristics, women constitute 55.1%. The age profile indicates that the young (15-34 years of age) comprise 32.2%, mid-age (35-59 years) constitute 57.8%, and the old (60 years and above) constitute 9.9%. The average age of the respondents is 41.1 years, with the youngest being 15 years old and the oldest being 93 years. The statistics also reveal that 70.5% of the respondents are married, 11.4% have never been married, 6.2% are living together, 1.9% are divorced, 3.8% are separated, and 5.9% are widowed. About education levels, 57.8% attained lower levels of education (0-10 years of schooling), 41.2% attained mid-level education (11-20 years of schooling), and only 0.8% attained advanced/higher level of education (above 20 years of schooling). The average number of years of schooling is 9.7. The average monthly income of the respondents is \$403.69.

4.2. Management of Open Spaces and the Causes of Their Browning and Disappearing

In this section, we provide information on open spaces in Dar es Salaam. Here, the main intention is to identify the roots of the browning of green open spaces and the disappearance of open spaces in general. Recall that one of the FGDs consisted of government employees from different departments responsible for open spaces (i.e., cultural departments, town planners, environmental officers, Ministry of Lands and Human Settlement)¹⁰. Participants raised encroachment or invasion as the biggest challenge causing these spaces to brown and disappear as they are used, sometimes illegally, for other purposes (e.g., construction of car washes, tuck shops (snack shops), and even houses or offices). Verbatim: “The biggest challenge I see is invasion especially from these local garages in streets”. Providing a similar observation, a participant

¹⁰ The cultural office is tasked with monitoring social activities within open spaces and around the city. For instance, they are tasked with handing out permission slips to conduct promotions within the municipalities or issuing permission for groups to film in certain locations. Town planners in each municipality/district have the specific task of setting aside open areas in the city, monitoring their development, and protecting them against encroachment. The environmental offices in each municipality are concerned with upholding environmental laws and cleanliness, as well as refurbishment of these open spaces. For instance, in Temeke Municipality, having noticed that most people use open space areas to dump waste, the Environment Department has provided tools and allocated different groups the task of collecting garbage from homes. The Ministry of Land and Human Settlement works hand in hand with these municipalities and is usually the custodian of original maps and plans of open spaces.

mentioned that "...open spaces have been invaded, with some people building businesses or homes." This challenge in Dar es Salaam has been mentioned in other cities in sub-Saharan Africa – Botswana, Kenya, Nigeria, and Ghana (see Makworo and Mireri 2011; Addo-Fordwuor 2014; Mosha 2014; Mensah 2014). For example, in Gaborone, Botswana, Mosha (2014) found that illegal land uses have encroached on green spaces. There was a consensus that most people do not know the importance of such spaces and hence the invasion. Verbatim: "There is widespread lack of awareness about the indisputable importance of recreational spaces in urban areas, leading to invasion of such social amenities."

The majority of the participants mentioned that invasion usually occurs in spaces that are not developed and have no title deed. As noted, "There is no clear ownership of open spaces despite there being prior knowledge in communities that a piece of land is reserved as an open space and it falls under the jurisdiction of municipalities". Highlighting a similar concern, a participant explained, "The reason for invasion lies in the way one obtains land ownership. There is a traditional way of obtaining land which usually involves a person using land for a long period of time unchallenged, say 10 - 20 years, and then he/she automatically becomes the owner. The other approach is obtaining land legally through a title deed...". Another participant mentioned that "The central government should bear part of the blame for issuing title deeds to private individuals without consulting the respective municipalities in the first place". This finding is similar to Addo-Fordwuor (2014), who discovered that depletion of green spaces in Kumasi, Ghana was caused by lack of enforcement, low priority for green spaces, and high land rents for alternative land use. Similarly, in Lagos, Nigeria, the laws are weak and outdated (Olaleye et al. 2013).

To curb this challenge, most of the participants agreed that there is a need for transparency and outlined various solutions. It was suggested that issuing and proper maintenance of title deeds is key to curbing encroachment. "The municipals should have land titles for these places". In agreement: "...in order for open spaces to be protected effectively, maps that clearly outline these areas should be made available to local leaders at ward and street level." Another noted that "If confronted by the local governments to destroy their buildings, most people produce land titles. The question is, why issue these land titles with full knowledge that people are encroaching in open spaces? So in the end there is confusion between municipals and the Ministry". Another solution that was outlined is that good security is needed to protect these areas; for example, a participant noted that "The reason as to why most open spaces are invaded is due to poor security

around these areas. This is because these municipalities are overwhelmed with duties yet technical personnel are few. I think we should educate local leaders on issues concerning open spaces and encourage them to protect such places”. Another solution that was mentioned is stricter implementation of environmental laws and developing other policies that will ensure protection. As noted, “Most of the open spaces are invaded or destroyed because people don’t fear the law. So there is a need to have better laws in place that are stricter”. Others called for more research: “There is a need to have more research pertaining to communities that live around those places”.

However, participants were aware of budgetary constraints needed to service, maintain, or develop these spaces in Dar es Salaam. As a result of this budgetary constraint, these spaces appear abandoned and, therefore, amenable to encroachment. That is, often the budgets set aside are incapable of making a significant impact on the development and maintenance of such open spaces. As noted, “One of the biggest issues in these open space areas is getting money to finance ownership by municipals of these respective open spaces through the payment of premium, land rights and other things. The financial year budget allocated cannot support this”. A similar finding has been noted by Kabisch et al. (2016). Also, Djibril et al. (2012) state that lack of funds hinders proper management of green spaces in Côte d'Ivoire. This is similarly observed in Lagos, Nigeria (Olaleye et al. 2013).

Because security is key, while resources are limited, a suggestion is that community leaders should be involved and educated on the importance of open spaces so that they may assist the government in guarding and protecting these areas. It was also suggested that community members need to be involved to help the government with protecting these areas, e.g., “The public should be educated and informed about the green areas and open spaces at street levels. The government should strive to build a sense of ownership to these people such that they are more concerned with place”.

Another suggestion that was given to assist with the budgetary constraint is public-private partnership. As noted by a participant, “There is something called PPP (Public Private Partnership) where you have your open space and investors come, funds and develop that place. But if it’s a small project like having a garden, then a company like say a bank can develop it and the municipal allows it to advertise in that premise”. An example of this PPP: “...we have advertised for the development and called for proposals from investors in some open spaces”. The participants also noted that there are more plans underway to attract private investors, as a solution to the budgetary constraint

in the management of open spaces. This was also observed in Nairobi, Kenya, where the private sector manages some green spaces (Ikawa 2015).

Upon discussing green recreational spaces in specific, participants recognized that Dar es Salaam needs more of such areas. It was highlighted that the government has plans to develop as well as to restructure the old and undeveloped open and other green recreational spaces in the various districts of Dar es Salaam. For example, "...we plan to replant and restructure the botanical garden. This place was used back in the days but now it's no longer attractive because its development was ignored. Our plan is for it to be attractable like back in the days". In another example, one noted that "there are plans to further developments..." This discussion helps to confirm the Dar es Salaam master plan, and its mission to develop Dar es Salaam into a green city. However, it is clear from this discussion that financial constraints may impinge on the development of these spaces and that private investors and communities may be solutions to these financial constraints.

4.3. The Number and Types of Urban Green Recreational Spaces in Dar es Salaam

In order to obtain the types of urban green recreational spaces that exist in Dar es Salaam, we first collected information on all documented open spaces, followed by actual visits to some of the areas. It is important to reiterate that this exercise is important because there is limited information. The information was collected from the three district government offices in Dar es Salaam (Kinondoni, Ilala, and Temeke) and lists the number of open spaces; this is provided in Tables C1, C2, and C3 in Appendix C. From the lists, we observed that Kinondoni District has the largest number of open spaces (totaling 111), followed by Ilala (30) and Temeke (6 open spaces). From the lists, it was indeed difficult to tell the type of services offered by the open spaces to the public (Appendix C). Also, some open spaces do not have specific names, which make them difficult to locate.

It is important to note that Dar es Salaam has abundant forest reserves, but currently these forests are not included in the lists of open spaces in Dar es Salaam. We have the Kazimzumbwi Forest Reserve, which is located in the Pugu Hills. The Pugu Hills Forest Reserve is also located in the Pugu Hills and is adjacent to the Kazimzumbwi Forest. Other forests are the Pande Forest Reserve and the Vikindu Forest Reserve. In addition, there are various urban agriculture activities in Dar es Salaam; these are also not currently included in the list of open spaces. However, given the definition of open and

other green spaces, we suggest that forests and urban agriculture needs to be recognized and included as part of Dar es Salaam green spacing.

In identifying urban parks and other green recreational spaces, we began by following the definition of the Tanzanian Ministry of Land and Human Settlement, which defined green urban spaces as “the land that is partly or completely covered with grass, trees, shrubs or other vegetation” (URT 2016). This definition is in agreement with international literature (see Section 2). In following the standard definitions, Tables C1-C3 is reduced to Table 4-6. That is, we had 110, 30, and 12 open spaces in Kinondoni, Ilala, and Temeke respectively; using the above definition, we were left with 5, 15, and 7 green open spaces for Kinondoni, Ilala, and Temeke respectively.

After identifying the green spaces, we realised that not all of them provide the needed recreational activities to the public. The next step was to identify the green spaces that had a recreational element. In doing so, we began by identifying the use and facilities in the spaces (Tables 4-6). We found that most of the green spaces in Dar es Salaam are located within the city and often they do not have recreational facilities, but they do have grass, greenery, and sometimes benches. From Tables 4-6, it is clear that there are currently no functioning public parks in Dar es Salaam, but only private ones. Those privately owned parks have well-conserved vegetation and a variety of recreational activities. We do find one public botanical garden in each district, as shown in Tables 4-6.

These lists were complemented by information from the FGDs. That is, when asked about the parks and other green recreational spaces available in Dar es Salaam, participants provided various responses. The first was about the maintenance and cleanliness of these spaces: “...unsatisfactory cleanliness in botanical gardens, where you would find, for instance, benches filthy with bird’s droppings”. In another comment, “...hooligans or homeless individuals can easily wander in and sit at the benches. There is no way you can sit or go there with such people around because their presence is terrifying. Also, these places are not well taken care of. They are usually dirty, the benches have bird droppings, and so forth”.

Another issue has to do with services. Most of the respondents are of the view that these spaces provide limited services. That is, the spaces are often small with inadequate facilities, as raised by participants: “The smaller open spaces in our neighborhoods should be developed and made attractive”. Another mentioned that “...parks usually lack basic services like snacks and other refreshments. I can go there but it all comes to what I can do and get from there.” This lack of facilities was similarly observed in Kisumu,

Kenya (Rabare et al. 2009), Kumasi, Ghana (Addo-Fordwuor 2014), and Côte d'Ivoire (Djibril et al. 2012). When probed about services or features to include, participants mentioned security, accessibility, enough parking spaces, mixed services for children and adults, good management, food, and greenery. Services such as food and drinks, affordable prices, and parking are the most preferred features mentioned, followed by playgrounds: "Swimming, swings and other many activities". Others mentioned a preference for a "Tuck shop or place to get food and drinks as well as a swimming pool". However, respondents failed to have a common agreement when it came to location of the spaces. That is, some called for these parks to be zonally distributed, while others chose Temeke due to its availability of land and the fact that there is currently limited availability.

Overall, there is a limited number of urban green recreational green spaces in Dar es Salaam. The main types include botanical garden, parks, and open green spaces. In a review of urban green spaces in Africa, Mensah (2014) found semi-private spaces (green spaces in residential, industrial or institutional areas); public green spaces (parks, botanical gardens, outdoor playgrounds); natural forests (nature reserves, national parks, forests); agriculture; and street trees and other trees planted for environmental protection. Tree planting was found to be the most common activity in these African countries.

The Dar es Salaam master plan intends to refurbish, establish, and increase urban green recreational spaces. This idea is indeed welcome, however, there is little trust: "...it's a good plan as long as the government has true intentions of carrying out these plans..." Another participant was quoted saying that "On my part, the government does not execute its plans. Even the gardens that we have, they are not properly managed."

4.4. Perception, Preferences, and Visitation of Urban Parks and Other Green Spaces

Perception and preference of urban green recreational space: In general, most of the participants across the three districts are knowledgeable and aware of the green urban spaces. However, a great number of participants from Temeke District displayed ignorance and this may be due to the distance of such places from Temeke District, as the majority of the spaces are located in the Kinondoni and Ilala districts. To improve the level of awareness, respondents had the following to say: "Advertisement should be carried out in television and other media. If adverts are increased, then so too will the level of awareness" and "Education on environmental issues should be a key aspect as

well as showing the main attractions of these areas through that education”. This high level of awareness is similarly observed in Kisumu, Kenya (Rabare et al. 2009).

Almost every participant agrees that these spaces are of great benefit to society. One participant is quoted saying that “...you can go relax there when you’re stressed. Actually, these places and their green sceneries are like medicine for stress.” This statement is in agreement with the findings of Stein and Lee (1995) in a study conducted in Colorado, US, who report that most respondents from the study cited getting away from daily demands of human life and relieving stress as the key reason for visiting green spaces. Similarly, Heidt and Neef (2008) argued that urban green spaces serve as a nearby resource for relaxation and that they do provide emotional warmth.

Figure 1 shows that overall, 24.9% live near urban green recreational areas. Most of the urban green recreational areas are located far from households. The statistics reveal similar trends across all districts, with only 26.0% of households in Ilala District located close to the urban amenities, 28.9% of households in Kinondoni District located near the urban amenities, and only 18.8% of households in Temeke District located near these urban amenities. The most mentioned reason for not having urban amenities within the vicinities of households is “lack of space” for establishing urban parks in Dar es Salaam (74.8%). This is shown in Figure 2. This factor is mentioned prominently across all districts, with responses being over 70%. The cost of establishing and maintaining urban parks in Dar es Salaam is the second most frequently mentioned reason across all districts, with 10.9% overall, 13.7% in Ilala, 14.0% in Kinondoni, and 5.0% in Temeke. “Problems with the city; my neighborhood does not deserve parks” is the third most often mentioned reason for not having urban parks near people’s homes, with 4.3% of the respondents from the overall sample mentioning this, 7.1% from Ilala, 4.5% from Kinondoni, and 1.6% in Temeke.

With regard to perceptions about the importance of urban green spaces in Dar es Salaam, these are expressed in Table 7. Here, we show the percentage distribution of responses. Also, we use the mean to rank the importance of urban green spaces. The overall mean is 4.35, suggesting that, overall, urban green spaces are viewed as having moderate importance. While it is recognized that green spaces are important in Dar es Salaam, this view is not shared in Abidjan, Côte d’Ivoire, for example, where more emphasis is placed on using urban land for other reasons (e.g., markets, schools, and hospitals) (Djibril et al. 2012). Similarly, Makufwe (2014) revealed poor attitudes toward green spaces in Kumasi, Ghana.

In Dar es Salaam, playgrounds are ranked as number one, followed by nature areas and tree-lined streets. At the district level, Ilala ranks playgrounds as the most important, followed by nature areas and multi-use parks. In Kinondoni, playgrounds are ranked as the most important, followed by tree-lined streets and nature areas. Playgrounds are again ranked as number one in Temeke, followed by nature areas and tree-lined streets. Regarding satisfaction with the maintenance and quality of urban green spaces in Dar es Salaam, overall, the lowest level of dissatisfaction was placed on open green space, followed by nature areas and multi-use parks. At district level, Ilala is dissatisfied with the current maintenance of urban green spaces, while Kinondoni and Temeke appear to be satisfied.

Visitation to urban green recreational spaces and beaches: Figure 3 reveals that 49.2% of respondents went to beaches, whereas only 39.7% visited urban parks. The visitation of green spaces and beaches is highest in Kinondoni and lowest in Temeke. “People like going to beaches for the purpose of swimming; after all the sea is easily accessible in Dar-es-salaam...”. “It is simply a matter of culture that majority of Tanzanians are not like Europeans who can spend much of their time in the park relaxing or reading novels. This is why you would find some of the open spaces turned into garbage disposal areas and rather people preferring to go to the beach and have fun.” Beaches are capable of hosting so many people at a time and are therefore more attractive socially than botanical gardens. “Beaches are places capable of gathering a lot of people at one given time. The disadvantage with botanical gardens is that even hooligans have free access to them. At one point you might find yourself sharing a seat with one of them.”

Table 7 show results of the probit regressions, which reveal that household characteristics such as place of residence (districts), distance, gender, age, education levels, marital status, and income levels are significantly associated with usage of urban green recreational spaces in Dar es Salaam. The results present the marginal effects of the probit regression. From Table 7, respondents who reside in Temeke District are 8% less likely to visit an urban green space in Dar es Salaam; the residents of Temeke District are 14 % less likely to visit than those who reside in Ilala District. Also, residents of Temeke District are 7% less likely to use beaches. Distance from household to the urban green space is a strong determinant of usage of these facilities, and this is significant at the 0.01 level. Households who are in close range to urban recreational spaces are 14% and 8% more likely to visit an urban green park and a beach respectively.

The results in Table 7 also reveal that marital status is a significant determinant of the likelihood to use/visit an urban amenity in Dar es Salaam. Divorced respondents are 31% less likely to visit green spaces in Dar es Salaam compared to those who are never married. Also, the widowed are 17% less likely to visit an urban amenity than those who are never married. Concerning visiting urban green parks, the dummy variables for married and divorced are significant; married respondents in Dar es Salaam are 11% less likely to visit an urban park compared to those who are never married. Also, divorced respondents are 43% less likely to visit an urban park in Dar es Salaam. Similarly, regarding visiting a beach, the results reveal that the dummy for married is significant at conventional levels and that they are 9% less likely to visit a beach compared to their never married counterparts. Also, the divorced are 27% less likely to visit a beach compared to their never married counterparts. The widowed, on the other hand, are 21% less likely to visit a beach compared to their never married counterparts. These observations can be partly explained by the fact that the married, divorced, and widowed respondents are likely to carry household responsibilities such as taking care of children, unlike their never married counterparts who do not have the same responsibilities.

About the levels of education, the results reveal that education is positively and significantly associated with the likelihood of using an urban amenity, an urban park, or a beach in Dar es Salaam. Table 4.6 reports that respondents in the mid-level of education (11-20 years of schooling) are 24% more likely to visit an urban amenity, are 19% more likely to visit an urban green park, and are 24% more likely to visit a beach compared to their less educated counterparts (0-10 years of schooling). Similarly, the results reveal that respondents with more than 20 years of schooling are 37% more likely to use a beach in Dar es Salaam compared to their less educated counterparts.

5. Conclusion

Urban recreational ecosystem services appear to be browning, decaying, or receding in Dar es Salaam. This pattern has been observed in other parts of sub-Saharan Africa (e.g., Botswana, Cote d'Ivoire; Kenya, Nigeria, Ghana) (Makworo and Mireri 2011; Djibril et al. 2012; Addo-Fordwuor 2014; Mosha 2014; Mensah 2014). Urban green spaces in the region generally received less attention in comparison to developed countries. For example, in Tanzania, the Dar es Salaam 2012 - 2032 master plan and the FYDP II recognise that more information is needed to inform policy. In this study, we document the availability of, preferences for, and determinants to visitation to green recreational spaces in Dar es Salaam.

This study contributes to the new body of growing literature in sub-Saharan Africa that seek to improve the limited evidence on (i) encroachment and browning (e.g., Mng'ong'o 2005; Addo-Fordwuor 2014; Mensah 2014; Mosha 2014; Makufwe 2014; Ikawa 2015; Nyambane et al. 2016; Rusadi et al. 2016) and (ii) availability, preference, and visitation of urban green recreational spaces (e.g., Gearin and Kahle 2006; Jim and Chen 2006; Montemurro et al. 2012; Jim and Shan 2013; Aldous 2013; Saleem and Kamboh 2013; Irvine et al. 2013; Dallimer et al. 2014; Lee et al. 2016). Our data is from focus group discussions (FGDs) and randomly selected Computer-Aided Personal Interviews (CAPIs) in Dar es Salaam. Our estimation is based on various estimation strategies.

In determining the availability of green recreational spaces in Dar es Salaam, we find that, among those that are publicly owned, there are botanical gardens, and other open green spaces which contain green features such as trees and gardens, but have limited facilities such as benches. These open green spaces, although publicly owned, are often privately managed. That is, the private sector maintains the green garden and, in turn, they are allowed to place advertisements (e.g., billboards) on the spaces. In the privately owned spaces, we find parks with green features and a variety of facilities, which include playgrounds and restaurants. Additionally, spaces along beaches, both private and publicly owned, are preferred to urban green recreational spaces. This is because of the presence of the warm ocean waters, good security, recreational facilities, and good local cuisines. The high preference for beaches could somewhat explain the availability of swimming pools in private parks in Dar es Salaam. Further, the regressions show that district of residence, distance, education, and income are some of the main determinants of visitation to parks and green recreational spaces. Interestingly, the same determinants that explain urban green recreational space visitation also explain visitation to the beaches.

Overall, we find a lack of publicly owned parks in Dar es Salaam and the botanical gardens that exist are not well maintained. The green open spaces in Dar es Salaam, although well furnished with greenery, only consist of basic facilities such as benches, but their location remains undesirable, in the city centre next to roads. Currently, most of the well-maintained urban green recreational spaces are privately owned. Lastly, although there is lack of publicly owned parks, residents of Dar es Salaam are in support of the government plans to develop such green recreational spaces, as the existing private parks are not affordable to the average Tanzanian and the current public open green spaces do not provide recreational facilities.

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Tables and Figures

Table 1. Subdivision of Dar es Salaam Region

District	Constituencies	Divisions	Wards	Streets	Area (km sq)
Kinondoni	3	4	34	180	501
Ilala	3	3	26	101	208
Temeke	2	3	30	171	684
Total	8	10	90	452	1,393

Source: Dar es Salaam Region Socioeconomic Profile 2014

Table 2. Existing Land Use in Dar es Salaam

TYPE	EXISTING LAND USES	AREA in Ha	%
RESIDENTIAL	Planned Residential	15,491.12	
	Consolidated Informal Housing	8,853.96	
	Scattered Informal Housing	34,049.91	
	Regularized	6,027.73	
Subtotal		64,422.72	39.80%
OFFICE AND COMMUNITY FACILITIES	Commercial/residential	1,230.63	
	Institutional areas and offices	3,032.87	
	Army/Military Land	3,457.87	
Subtotal		7,721.36	4.80%
INDUSTRY AND HARBOR	Heavy Industry	2,033.59	
	Light industry	137.68	
	Service Trade	12.603	
	Ware houses	75.518	
	Harbor	402.769	
Subtotal		2,662.16	1.60%
AIRPORT, TRAIN, AND BUS TERMINAL	Airport terminal	903.39	
	Train terminal	45.646	
	Bus terminal	18.263	
	Substation TANESCO	33.185	
Subtotal		1,000.48	1.30%
WATER COURSES	Valleys, Streams, Rivers	1,123.09	
	Salts pans	96.479	
	Mangroves	318.68	
	Oxidation pond	23.677	
	Hazard area	3,119.198	
Subtotal		4,591.12	2.80%
RECREATIONAL	Open spaces	202.508	
	Public parks	1.311	
	Play ground	40.084	
	Botanical Garden	60.188	
	Golf course	109.076	
	Forests	2501.34	
	Beach	34.079	
Subtotal		2948.586	1.80%
FUTURE URBAN	Quarry site	516.273	
	Cemetery	66.456	
	Urban Agriculture	319.416	
	Peri-Urban	77,547.81	
Subtotal		78,449.95	47.90%
TOTAL AREA		161,796.38	

Source: Dar es Salaam Master Plan 2012-2032

Table 3. Socioeconomic Characteristics

	Overall sample		Ilala		Kinondoni		Temeke	
	Obs.	%	Obs.	%	Obs.	%	Obs.	%
Gender								
Male	316	44.82	100	48.31	164	58.57	118	54.13
Female	389	55.18	107	51.69	116	41.43	100	45.87
Age								
Young (15-34 years)	227	32.2	69	33.33	102	36.43	56	25.69
Mid-Age (35-59 years)	408	57.87	122	58.94	153	54.64	133	61.01
Old (60 year & Above)	70	9.93	16	7.73	25	8.93	29	13.3
Marital Status								
Married	497	70.5	145	70.05	190	67.86	162	74.31
Never Married	81	11.49	29	14.01	34	12.14	18	8.26
Living Together	44	6.24	14	6.76	23	8.21	7	3.21
Divorced	14	1.99	1	0.48	5	1.79	8	3.67
Separated	27	3.83	12	5.8	11	3.93	4	1.83
Widowed	42	5.96	6	2.9	17	6.07	19	8.72
Education Levels								
Lower Level (0-10 years)	408	57.87	129	62.32	118	42.14	161	73.85
Mid-Level (11-20 years)	291	41.28	78	37.68	157	56.07	56	25.69
Advanced level (Above 20 years)	6	0.85	0	0	5	1.79	1	0.46
Income								
Lower quintile	52.91	52.91	119	57.49	112	40	142	65.14
Mid quintile	227	32.2	69	33.33	95	33.93	63	28.9
Upper quintile	105	14.89	19	9.18	73	26.07	13	5.96

Table 4. Ilala District Urban Green Recreational Spaces

Name of Green area	Location	Type
Karimjee	Posta	Botanical garden
In front of NBC Headquarters	Posta	Garden
In front of Exim Bank	Posta	Garden
Samora Avenue & Garden Street	Posta	Trees, rest bench/chairs
Junction of Msikiti Street & Samora	Posta	Garden area
Mbele ya Posta ya Zamani (NBC)	Posta	Planted trees
Club ya Wazee	Ilala	Planted trees
Near Fire Street	Msimbaziroad	Garden
Nyerere Road	Ilala	Garden
Azikiwe	Ilala	Garden
Mnazi mmoja 1	Ilala	Garden
Mnazi mmoja 2	Ilala	Garden
Mnazi mmoja 3	Ilala	Garden
Alley Hassan and Ocean	Kivukoni	Garden
Lumumba Street	Ilala	Garden

Table 5. Temeke District Urban Green Recreational Spaces

Name of Green area	Location	Type
Evereth/ Rungwe Street	Temeke	Trees, recreational and sports area
Sudan Street, Sudan Park	Temeke	Planted trees with brick fence
Mbagala and Kilwa Road	Temeke	Botanical Garden
Fun City, private	Kigamboni	Recreational area
Dar es Salaam zoo, private	Kigamboni	Recreational area
Mtoni, Azizi Alley	Mbagala	Garden
Mwembeyanga	Temeke	Trees, sports area

Table 6. Kinondoni District Urban Green Recreational Spaces

Name of Green area	Location	Type
Mbezi Beach Botanical Garden	Mbezi beach	Botanical Garden
Magomeni	Magomeni	Trees and foot path
Msasani Village	Msasani	Trees and swing
Malanga Street	Mwananyamala	Trees
Mandongwa Road-Kambangwa	Mwananyamala	Planted trees

Table 7. Perception of the Importance of Urban Green Spaces

		Very Important	Moderately Important	Little Important	Not Important	Mean	Rank	
Overall	Neighborhood Parks	59	7	33	1	0	4.24	2
	Large Multi-use Parks	60	11	25	3	0	4.29	3
	Open Green Areas	59	10	27	4	1	4.23	1
	Tree-lined streets	63	11	22	3	1	4.32	4
	Playgrounds for kids	75	6	18	0	0	4.55	6
	Nature areas	61	7	20	1	1	4.38	5
Ilala	Neighborhood Parks	64	8	27	0	0	4.36	2
	Large Multi-use Parks	65	14	14	7	0	4.38	4
	Open Green Areas	65	11	14	6	1	4.37	3
	Tree-lined streets	59	18	18	5	0	4.30	1
	Playgrounds for kids	90	2	7	0	0	4.82	6
	Nature areas	60	4	14	1	2	4.47	5
Kinondoni	Neighborhood Parks	50	8	41	1	0	4.06	2
	Large Multi-use Parks	51	14	32	1	0	4.15	3
	Open Green Areas	48	12	35	4	1	4.03	1
	Tree-lined streets	61	11	22	4	1	4.28	5
	Playgrounds for kids	62	11	26	0	0	4.35	6
	Nature areas	51	13	25	2	1	4.21	4
Temeke	Neighborhood Parks	67	4	28	0	0	4.37	2
	Large Multi-use Parks	67	4	27	1	0	4.38	3
	Open Green Areas	67	5	27	1	1	4.35	1
	Tree-lined streets	68	5	26	0	1	4.39	4
	Playgrounds for kids	77	3	20	0	0	4.56	6
	Nature areas	76	3	19	0	2	4.51	5

Note: 1=not important; 2=little important; 3=important; 4=moderately important; 5=very important

Table 8. Satisfaction with the Current Maintenance of Urban Green Spaces

		Very satisfied	Moderately Satisfied	Satisfied	Dissatisfied	Very dissatisfied	Mean	Rank
Overall	Neighborhood parks	8	30	14	18	8	2.86	4
	Large multi-use parks	8	32	13	15	7	2.75	3
	Open green area	12	31	8	13	7	2.62	1
	Tree-lined streets	8	33	11	20	9	2.88	5
	Playgrounds for kids	11	25	13	23	8	2.89	6
	Nature areas	12	24	6	12	8	2.65	2
Ilala	Neighborhood parks	0	7	12	61	12	2.16	4
	Large multi-use parks	0	6	16	57	14	2.16	4
	Open green area	0	3	4	53	26	1.82	2
	Tree-lined streets	0	7	8	63	17	2.07	3
	Playgrounds for kids	0	15	10	45	25	2.16	4
	Nature areas	0	1	1	36	26	1.65	1
Kinondoni	Neighborhood parks	17	20	19	25	8	3.16	4
	Large multi-use parks	16	17	13	28	8	3.07	3
	Open green area	16	18	14	29	10	3.02	2
	Tree-lined streets	18	27	16	24	6	3.28	6
	Playgrounds for kids	18	24	21	21	9	3.22	5
	Nature areas	15	17	13	26	11	3.00	1
Temeke	Neighborhood parks	5	27	10	8	4	3.37	3
	Large multi-use parks	3	20	10	14	2	3.16	1
	Open green area	3	17	4	13	2	3.17	2
	Tree-lined streets	6	25	6	15	0	3.40	4
	Playgrounds for kids	3	29	6	11	1	3.47	6
	Nature areas	5	15	2	9	1	3.41	5

Note: 1=very dissatisfied; 2=dissatisfied; 3=satisfied; 4=moderately satisfied; 5= very satisfied

Table 9. Marginal Effects of Probit Estimation

Outcome (0/1)	(1) Visit in general	(2) Visit to Green Spaces	(3) Visit to Beach
District			
Kinondoni	0.0572 (-0.0412)	0.0243 (-0.0399)	0.039 (-0.0417)
Temeke	-0.0833** (-0.0414)	-0.148*** (-0.0423)	-0.0793* (-0.0431)
Distance			
Near Home (0-10 km)	0.135*** (-0.0411)	0.145*** (-0.0381)	0.0818** (-0.0408)
Marital Status			
Married	-0.0753 (-0.0565)	-0.117** (-0.0528)	-0.0995* (-0.0568)
Living Together	0.0038 (-0.0848)	-0.0478 (-0.0766)	-0.111 (-0.083)
Divorced	-0.315** (-0.136)	-0.433** (-0.186)	-0.278** (-0.14)
Separated	0.0567 (-0.0988)	-0.00818 (-0.0968)	0.0469 (-0.0992)
Widowed	-0.171* (-0.0914)	-0.11 (-0.093)	-0.217** (-0.0975)
Education Levels			
Mid-level (11-20 years)	0.249*** (-0.0347)	0.194*** (-0.0351)	0.286*** (-0.0341)
Advanced Levels (>20 years)	0.208 (-0.213)	0.32 (-0.209)	0.371* (-0.21)
Age			
Mid-age (35-59 years)	-0.0865** (-0.0393)	0.0574 (-0.0393)	-0.109*** (-0.0395)
Old (60 years and above)	-0.168*** (-0.0641)	-0.143** (-0.0718)	-0.203*** (-0.0668)
Income Levels			
Mid-income quintile	0.0552 (-0.0384)	0.0675* (-0.0382)	0.0207 (-0.0399)
Higher Income quintile	0.0997* (-0.0586)	0.113** (-0.0539)	0.0254 (-0.0571)
Gender			
Male	0.0339 (-0.0349)	0.0629* (-0.0344)	0.0374 (-0.0355)
Observations	705	705	705

Standard errors in parentheses

*** p<0.01, ** p<0.05, *p<0.1

Figure 1. Residents with Green Recreational Spaces Near Home (%)

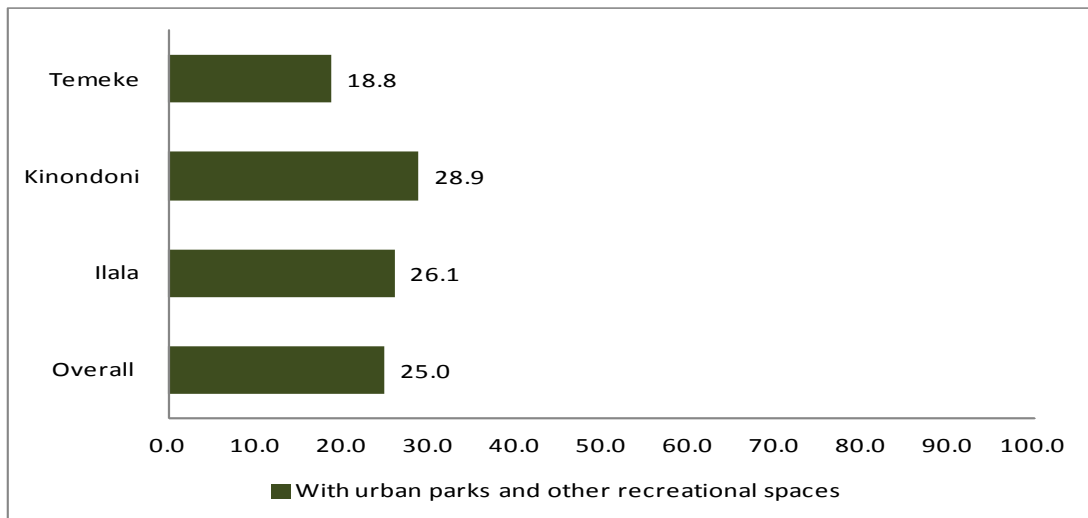


Figure 2. Reasons for Lack of Green Recreational Spaces (%)

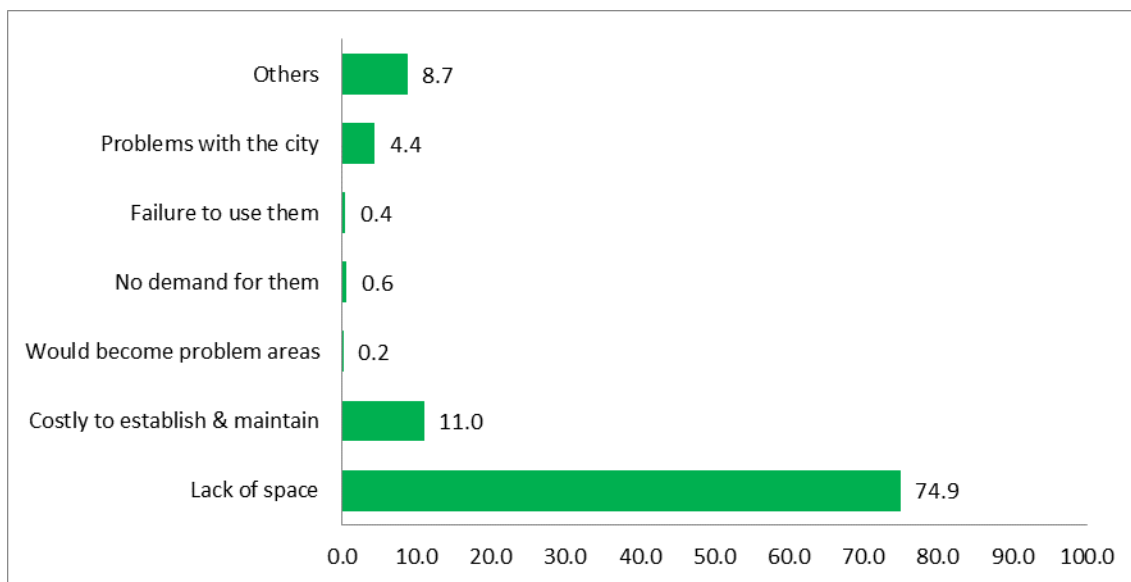
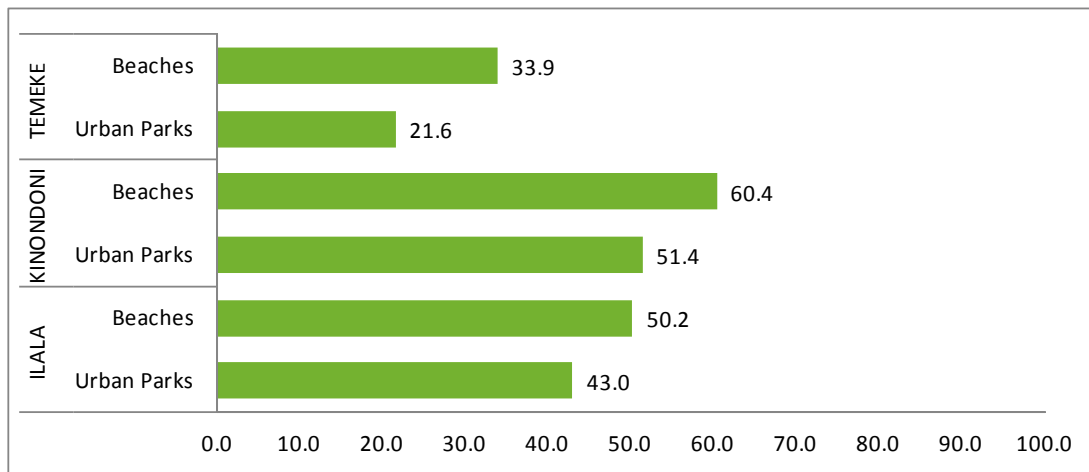


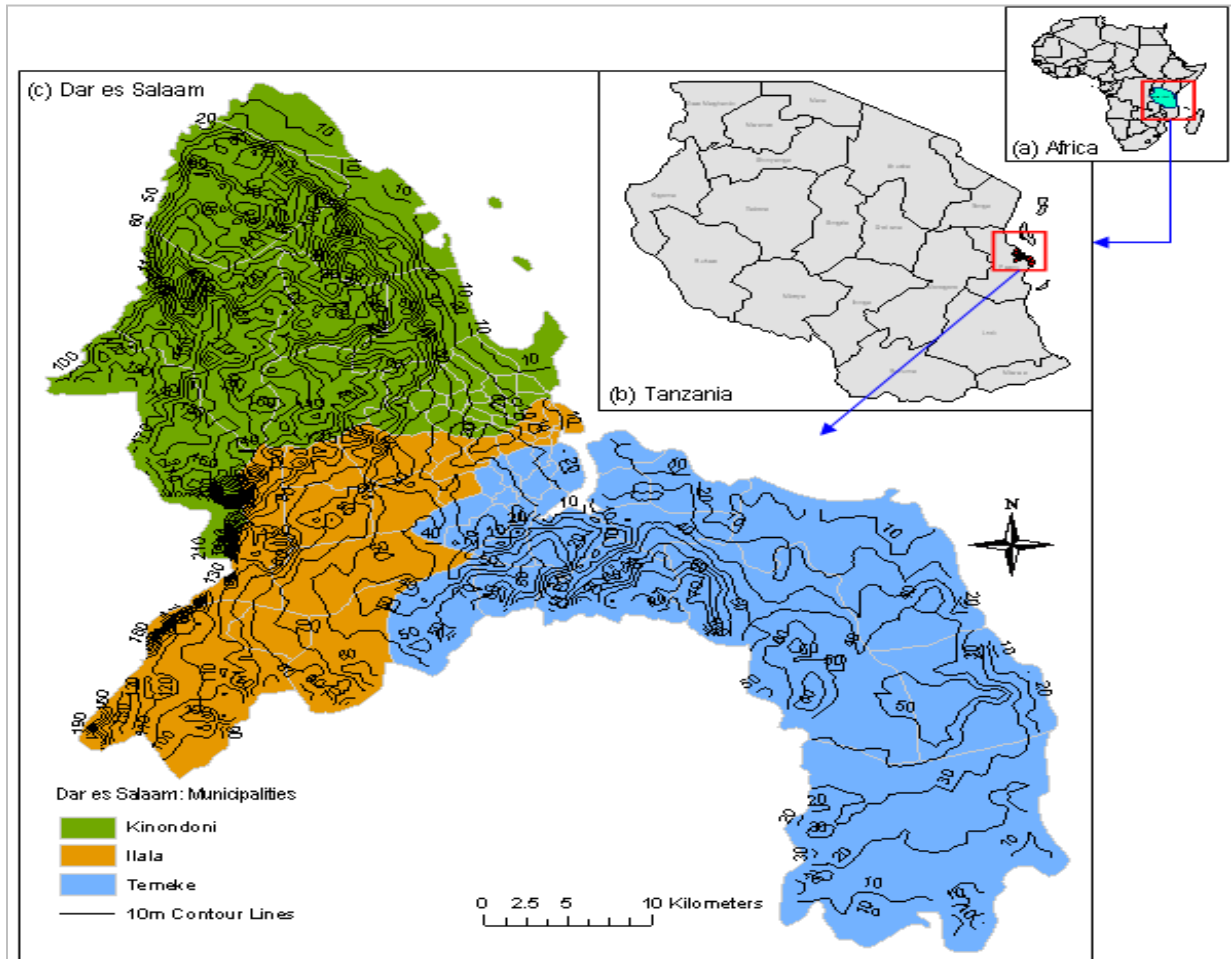
Figure 3. Percentage Visitation to Green Recreational Space & Beaches by District



Appendices

Appendix A. Dar es Salaam Region Administrative Boundaries

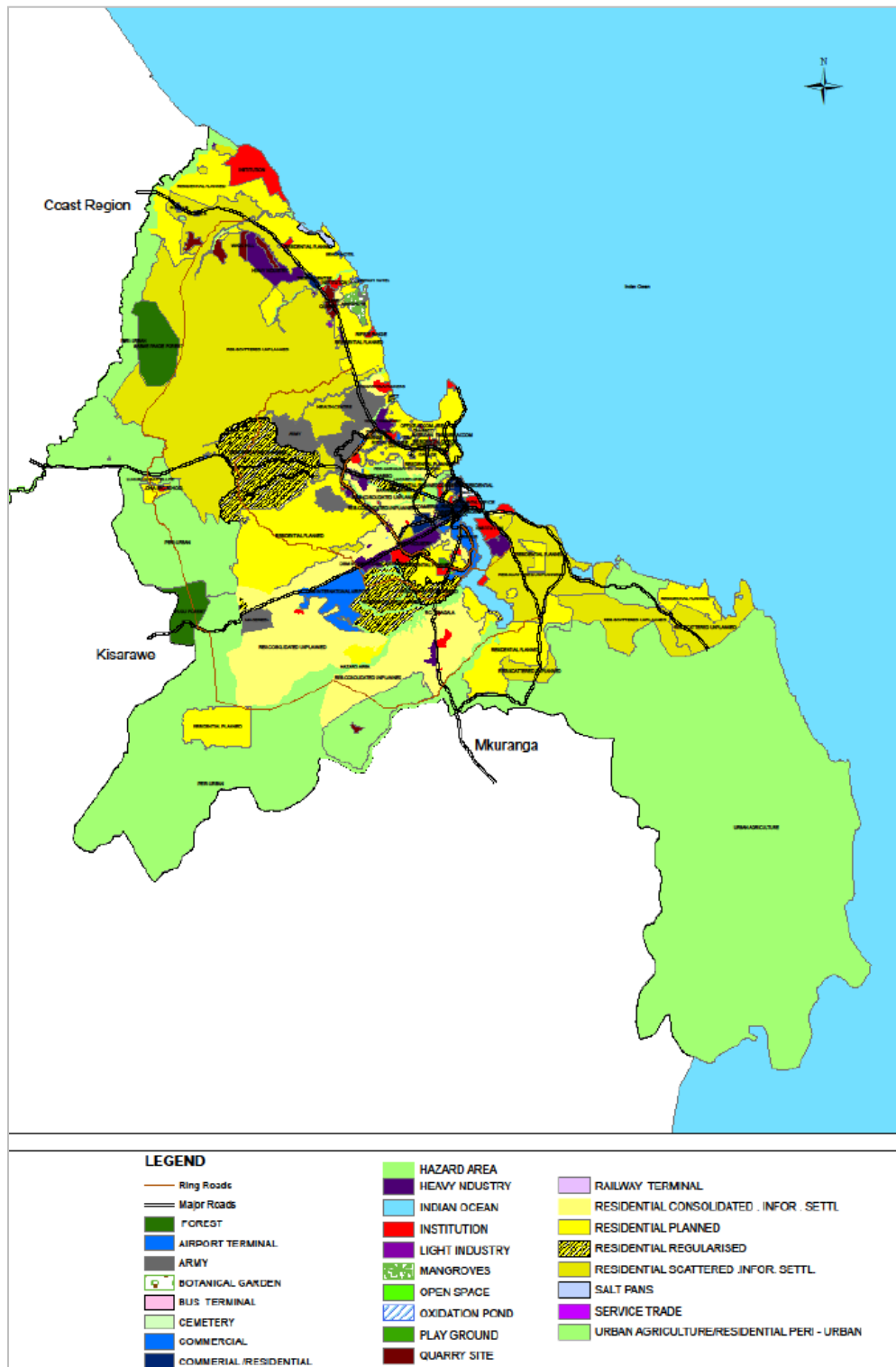
Figure A1. Dar es Salaam Region Administrative Boundaries



Source: Kebede and Nicholls, 2011

Appendix B. Land Use in Dar es Salaam

Figure B1. Existing Land Use in Dar es Salaam



Source: Dar es Salaam Master Plan 2012-2032

Appendix C. Open Spaces in Dar es Salaam by District

Table C1. List of Open Space in Kinondoni Municipality

No.	Name of the area/location	The use/ current status
1	Kajificheni Close	A container, Tanesco machine, and a toilet
2	Mkwawa road	Gym building construction
3	Mawenzi, Kaole and Toure road Between Toure road and Indian	Tanesco offices
4	ocean Between Haileselesie and Toure	Some people's plots
5	road	Substation of Tanesco
6	TPA flats (Chole Road)- Bandarini	A wire fence and some small buildings
7	Msasani Village	Trees are planted, swing, parking for old car
8	Msasani Bondela Mpunga	Housing estates and apartments
9	Msasani Penninsula	Individual house, phone tower, small business
10	Msasani Penninsula	Container
11	Kaole road	Open space
12	Msasani Village	Used as a car wash area, and there is presence of containers
13	Oysterbay police	Open space
14	Lili's garden, Mikocheni	Garden with fence
15	Mikocheni B	A wire fence with house baseline
16	Mikocheni B	Mosque
17	Sinza	Government street office, building with 5 rooms for business, house baseline
18	Sinza	Still open space, but it has been separated into two pieces and someone put some bricks
19	Sinza D	Government office
20	Sinza Block D	Big part of the area is open, public water well
21	Sinza Block D	Residence house
22	Sinza Block D	Open space
23	Sinza Block D	Mosque
24	Sinza Block D	Brick fence
25	Sinza Block D	A church building, nursery school, political party office, garage area
26	Uzuri road , Sinza	Business center
27	Sinza C	Government street office and business buildings
28	Sinza C	Residence house
29	Sinza C	Car parking project and small business room
30	Sinza C	Political party grass root points, garage, coach makers, residence house, shops
31	Sinza C	Political party grass root points
32	Sinza C	Open space
33	Manzese	Court building
34	Sinza B	Open space
35	Sinza B	Government office
36	Sinza B	Container which is used as political party office, car parking project, public water well
37	Sinza B	Political party grass root points, with small rooms Passageway making, shops, container
38	Sinza B	Political party grass root points, business center
39	Sinza E	Residence house, pub/bar, small area is open space

40	Sinza E	Small shops, car parking
41	Sinza A	Residence house, business area
42	Sinza A	They blocked the way to enter the open space around there Residence house and business building are currently under construction
43	Sinza A	
44	Mwenge	A container used as political party office, business room
45	Bahi street, mwananyamala	Open space
46	Bahi street,mwananyamala	Residence house Container for business, car parking project by a political party, a small room
47	Berega street, mwananyamala	
48	Minazini Street, mwananyamala	Open space
49	Minazini street,mwananyamala	Some buildings, business cabin
50	Minazini street,mwananyamala	Mosque building
51	Mwananyamala	Piece club/bar
52	Mwananyamala	4 residence houses
53	Malanga street, mwananyamala	Trees are planted, taxi parking/station
54	Mwananyamala	Political party office, petrol station, car parking
55	Minazini, mwananyamala	Political party office
56	Area surrounded by Garden road, mwananyamala	Residence house, a bar which causes noise, some space still open
57	Mandongwa road-kambangwa, mwananyamala	Garage, trees, brick selling, container
58	Adjacent to Mkwajuni mosque, Kinondoni	Open space
59	Botanical Garden, Kilongawima,mbezi beach	Plots for residence house Plots, bricks are there, sand, container which is used as an office
60	Engen petrol station, mbezi beach	
61	Mchinga makuti, Magomeni	Container which is used as political party office
62	Somanga street,makuti,magomeni	Water well which belongs to a religious center Public water well, brickmaking, political party car parking project
63	Mantare street, makuti, magomeni	
64	Kidugalo street, makuti, magomeni	2 containers, big old car, toilet Police station, residence house, government office, pub, pool table, butcher
65	Bemberu street, makuti, magomeni	
66	Primary school, Magomeni	Large part is occupied by primary school, garage, phone tower
67	Njombe street, Kondo	Mosque
68	Makanya street, Magomeni	Several garages
69	Makanya street, Magomeni	Several garages
70	Makanya street, Magomeni	Several garages Several garages, government street office, residence house, grinding machine
71	Kondo, Magomeni	
72	Lalago street, Kondo	Open space
73	Kondo, Magomeni	Pub Still open space, but there are some tents which are used as a pub area and a guest house
74	Kondo, Magomeni	
75	Kaliua street, Kondo	Still open space, car parking political party project, there is office which blocks the road
76	Kagera, Magomeni	2 pubs, garage, car wash area
77	Gonja street, Kagera,Magomeni	Garage
78	Kagera street, Magomeni	Garage
79	Kimamba street, Magomeni	Garage
80	Kimamba street, Magomeni	Garage

81	Rungwe street, Magomeni	Political party office, garage, pub, shops
82	Rungwe street, Magomeni	Garage, teaching room
83	Kibesa street, Makurumla	Government office
84	Malala street, Makurumla	Garage
85	Mengo Street, Makurumla	Garage
86	Kagera street, Makurumla	Political party office, tents which sell charcoal
87	Mikumi road, Magomeni	Open space
88	Mbweni street, Mikumi, Magomeni	Garage, pub
89	Opposite police line, Magomeni	Government office
90	Mikumi road, Magomeni	Open space
91	Mikumi street, Magomeni	Garage, bricks making project, office for bricks project
92	Msanga street, Magomeni	Open space
93	Msanga street, Magomeni	Open space
94	Mikumi street, Magomeni	Open space but has a fence
95	Mikumi street, Magomeni	Public water well, Political party car parking project
96	Uwarani street, Magomeni Mapipa	Police station, garage, house baseline which belongs to government street leader
97	Mkwawa street, agomeni Mapipa	Garage, church, residence house, business building
98	Mikumi street, Magomeni	Open space
99	Mtambani street, Magomeni	Car parking which are rented, garage, dispensary
100	Ifunda street, Magomeni	Open space
101	Mwananyamala CCM, Msisiri	There are buildings which block a way/road
102	Guta street, Mwananyamala	Open space
103	Gulwe street, Magomeni	Open space
104	Gulwe street, Magomeni Ubungo terminal, railway buffer zone	Police station and government office
105	zone	Pub and rooms for business
106	Adjacent to plot no 146,147	Rooms for business
107	Adjacent to plot no. 148	Permanent residence house
108	Ubungo	Primary school
109	Biafra	Open space
110	Cocobeach	Open space
111	Mbezi beach botanical garden	Botanical garden

Table C 2. List of Open Space in Ilala Municipality

No.	Name of the area/location	The use/ current status
1	Ocean road, Aghakhan	Brick fence, security room made up with bricks
2	Maktaba, bibi titi	Galvanised fence/uzio wa mabati, construction facilities
3	Plot no. 1072	Container and galvanized room
4	Maliki street adjacent to Diamond jubilee	Car parking
5	Botanical Garden, samora avenue and garden street	Well conserved, trees, rest bench/chairs
6	EX-daya, between Bomubomu and Isimila street	Political party office
7	Between Bomubomu and Isimila street	Small business people, small hut
8	Chui street, maeneo matatu	Car parking
9	Bungoni, maeneo mawili	A pub, office baseline (street chairman)
10	Ilala Shariff Shamba	Open space, but before the place had garages
11	Amana hospital nearby	Open space, but before the place had some huts
12	Kibasila, behind Olympio primary school	Public water well
13	Bonde la Jangwani	Residence house, plots for service trade, sports ground, housing estate area
14	Mnazi mmoja, kidongo chekundu	Open space with fence
15	Mnara wa saa, infront of Exim bank	Open space
16	Junction of Msikiti street and Samora	Public toilet, container with internet project, garden area which is well conserved
17	Tabora and Pangani street	Garage
18	Bungoni and Boma street	Still open space, but a small part of the area has been occupied by the mosque
19	EX-daya	Social hall, shops which are political ruling party project
20	Uhuru road, Club ya wazee	Government office, large part is still open
21	Kimanga street, darajani	Container and car parking
22	Jamhuri and Asia street	Police station, government office (mtendaji wa kata)
23	Tabata, Kimanga	Brick fence
24	Tabata, Kimanga	Still open space, but it is used as political party car parking project
25	Tabata adjacent to Swiss Pub	Government car washing area, office, huts for business, bricks making
26	Tabata Kinyerezi	Open space where a petrol station is expected to be built
27	Tabata Kinyerezi	Residence house
28	Tabata	Open space
29	Tabata	Hut
30	Tabata	Hut built by trees, public water well

Table C 3. List of Open Space in Temeke Municipality

No.	Name of the area/location	The use/ current status
1	Evereth/Rungwe street, Temeke Mwembeyanga, between Mbagala and	Open space with planted trees, recreational area and sports area
2	Mahunda road	Open market, government office, waste cage
3	Sudan street	Planted trees with bricks fence
4	Temeke mwisho, bufferzone	Political party office, car parking, garage, petrol station
5	Botanical garden, Mbagala and Kilwa road	A garden which does plantlets, production of different plants
6	Adjacent to National Stadium	Barbed wire fence, government office
7	Adjacent to Minazini Pub, nearby National Stadium	2 containers, car wash
8	Keko B, Adjacent to Miburani primary school	Political party office, shops
9	Keko B Street	A hut which is used for several businesses, charcoal selling included
10	Keko Bora	Government office
11	Fun city	Recreational area
12	Dar es Salaam zoo	Recreational area