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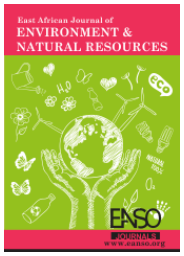

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Original Article

Drivers of Human Activities Carried Out in Urban Green Spaces of Dandora Estates, Nairobi County

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ABSTRACT

Green spaces are becoming a dwindling resource in the urban areas of many developing countries where unprecedented rapid urbanization is taking place. The serene and quite areas of the urban environment are being depleted with ever-increased human interference even in the protected areas. The case of Dandora Estates of Nairobi County, which this paper focuses on, presents an interesting diversity of activities that have invaded the otherwise aesthetic and beautiful scene of the urban space, and the situation could be worsened if drastic actions are not taken. This paper dwells on the human activities that dominate the urban green spaces of Dandora, as well as the drivers of them being undertaken there. It brings out these activities in by engaging with the household heads and those found undertaking activities within the UGS. The results show that 84% of the residents who visit UGS in Dandora were driven by; affordability (absence of entry charges). 16% of the residents who do not visit UGS are driven away by majorly due to the insecurity in the area. The finding established that there are several human activities that are practised in and around green spaces in Dandora. They were categorized into three, social, economic, and environmental activities. The study recommended the following: Development of UGS policy and management plans. There is a need to develop an effective and articulate UGS policy framework and management plans for UGS planning, governance and management that will be reviewed and updated after every 3-5 years; Development of UGS policies, regulations, and standards; The county government in collaboration with the police department should invest in enhancing and providing security through installation of street lights in order to prevent crimes.

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INTRODUCTION

Urban green spaces (UGS) are an important component in a city's development (UN-HABITAT, 2012; Essel, 2017). They not only sustain the urban biodiversity but also provides the dwellers with numerous numbers of ecosystem services. These services could include the increased aesthetic value of the urban environment, space for meditation and relaxation, hosting events and other social interactions, urban agriculture, car parks, a place to conduct environmental projects such as afforestation and many other activities (Jin et al., 2021; Pedrosa et al., 2021; Smith, 2020; FAO, 2012). However, if the human interactions with these spaces are not oversighted then the quality of these spaces could be compromised.

UGS are amongst the major controversies in the urban landscape as a consequence of conflicting interests of conservationists and developers and their depletion is taking place at an alarming rate, especially now that 4.4 billion people live in the world's cities (World Bank, 2021). Various reports have predicted that by 2030, 60% of the world's population will live in cities and the uncontrolled population rise will lead to more UGS being sacrificed for settlements and other human actions (Twumasi & Merem, 2020; World Bank, 2021; Essel, 2017; UN-HABITAT, 2012). At the moment, UGS occupy a small portion of the landmass of several urban areas, especially in Third world countries (Adjei, 2014; Che Khalid, 2014).

This paper is based on a study to investigate the drivers of human activities carried out on UGS in the Dandora estates of Nairobi County in Kenya to capture their status as experienced in a developing country where rapid urbanization has been ongoing. The diversity of the activities is also presented and explained. It is expected the actual activities undertaken in the UGS are identified and especially noted for their management so as to result in a more directed strategy of protecting, conserving, and managing the spaces and wade off unsustainable activities from adversely impacting the spaces. Particularly developing cities and suburbs such as Dandora. The aim of this paper is to identify drivers attracting/ discouraging residents from visiting UGS of Dandora Estates and find out the diverse types of human activities carried out at UGS of Dandora Estates.

The findings of this research paper are expected to contribute significantly to the identification of the diverse types of human activities carried out on UGS in Dandora for the purpose of; protection, conservation, and management of the latter in Dandora and other urban areas with similar characteristics and; upholding of the appropriate policies and legal frameworks for governance and

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maintenance of urban green spaces by relevant institutions.

MATERIALS AND METHODS

The study was conducted in Dandora estates. Dandora is an eastern suburb in Nairobi, Kenya. It is part of the Embakasi North Division. Surrounding neighbourhoods include; Kariobangi, Baba Ndogo, Gitare Marigo and Korogocho. It lies at 1.2483°S, 36.9026°E (LATITUDE, 2018).

Figure 1: Map of Dandora Estates

Source: Researcher 2021

The study was conducted among residents of Dandora and targeted the households as a special respondent group in the study because they have a high likelihood of possessing past and present knowledge of activities carried in and out of the green spaces which surround them. Dandora has a population of 295,5670 residents (KNBS, 2019). The sample size for this research was calculated using the formula by Naissuma (2000) below:

$$n = \frac{N \times Cv^2}{Cv^2 + (N-1)(e)^2}$$

Where; n = sample size, CV = coefficient and variance 50%, N = population size, e = allowed error +5%, 1=the desired level of precision

$$n = \frac{(295{,}670)(0.5)^2}{(0.5)^2+(295{,}670-1)(0.05)^2} = 99.999665 = 100$$

A structured questionnaire designed to contain both open and closed-ended questions was used to collect data randomly from 100 respondents (household heads), proportionally among the 5 strata (wards). The questionnaire was separated into three major segments: i) background/biological information, ii) drivers attracting residents to visit UGS, iii) drivers discouraging residents from visiting UGS iv) diverse types of human activities carried out in the UGS. Data collection was carried out within a span of one month, in August of 2022. Approximately 10 to 20 minutes were given to respondents to allow them to answer the questions. Visits by the researcher on the UGS necessitated interviews with those found undertaking different activities within. Thirty such business people were interviewed. Observation checklists and the use of photography were employed to supplement the questionnaires with more information.

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Table 1: Summary of data matrix (sources, collection methods, analysis and presentation) for the objective

Research objectives	Data needs (Variables)	Data sources	Data collection methods	Data analysis methods	Data presentation methods	Expected outcomes
To determine drivers that influence the use of urban green spaces in Dandora Estates.	• Percentage of residents who visits the UGS and what Drivers to these spaces. • Percentage of residents who do not visit the UGS and what drives them away from these spaces. • Social, economic, and environmental activities practised in USGs in Dandora.	Field survey Key informants	Observation Interviews Photography Questionnaires	Descriptive analysis (SPSS & MS Excel)	Photographs Reports Charts Tables Descriptive report	A descriptive and inferential report indicating the nature and types of activities carried out on UGS.

Source: Author, 2022

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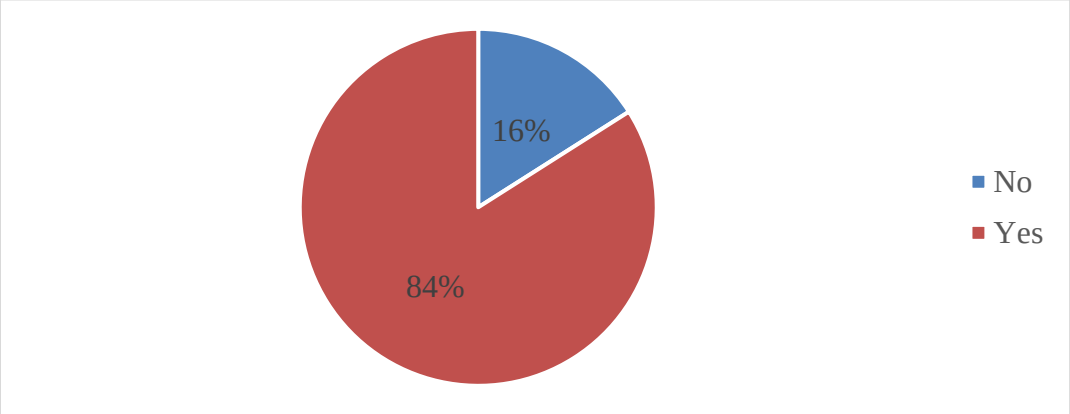
RESULTS AND DISCUSSION

Resident's Visitation to UGS

From the findings in Figure 2 below, 84% of the respondents said that they visit the UGS; on the other hand, 16% of the respondents said that they do not visit UGS majorly because of issues of insecurity, amongst other reasons discussed in *Figure 1*.

Figure 2: Residents who visit/do not visit UGS

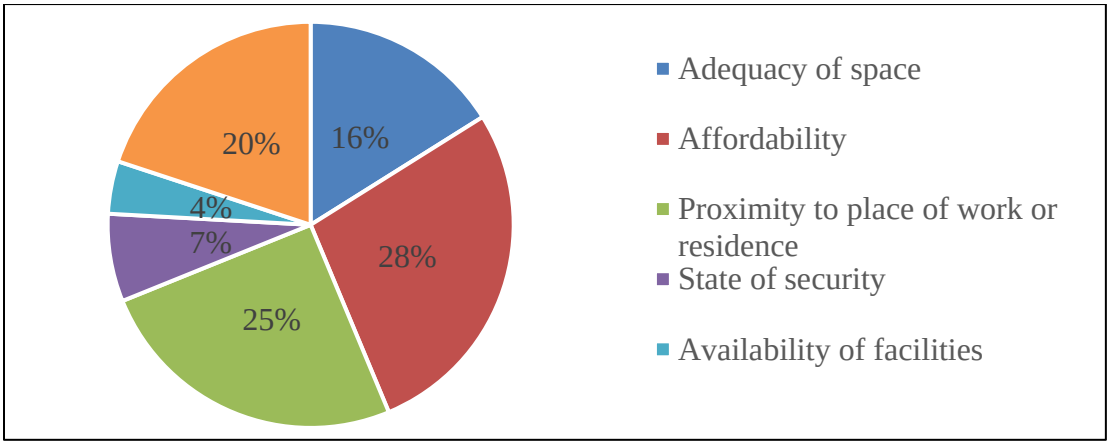


Source: Researcher, 2022

Drivers Attracting/Discouraging Resident in Visiting UGS

From the 84% of the respondents who visit the UGS; 28% said affordability (absence of entry charges) drives them to visit the UGS, 25% are driven by UGS's proximity to the place where they stay and work, 20% are driven by the aesthetics and beauty of these spaces, 16% are motivated to visit theses spaces because of UGS adequacy of spaces, 7% visit the USG because of the state of security present and lastly 4% of the respondents from the above 84% visit the UGS because of availability of facilities. The majority of the respondent said what drove them to visit these UGS was their affordability nature; most of these UGS had no entry charges except for a few which were under community management. This is depicted in *Figure 3* below.

Figure 3: Drivers toward UGS visitation



Source: Researcher, 2022

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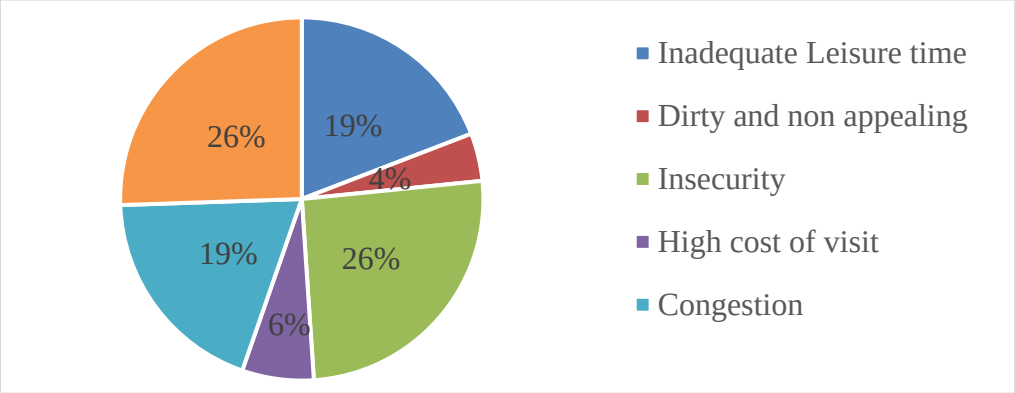
Of the 16% of the respondents who do not visit UGS; 26% said insecurity and inadequacy of space in the UGS drive them away from the visit, 19% are driven away by congestion and inadequate leisure time (high job and family demands), 6% do not visit the spaces because of the high cost of visitation, and lastly 4% of the respondents from the above 16% do not visit the UGS because they find them dirty and non-appealing. The majority of the respondent said what drove them away from visiting UGS was the state of insecurity and inadequacy of space. This is depicted in Figure 4 below.

Figure 4: What drives residents not to visit UGS in Dandora?



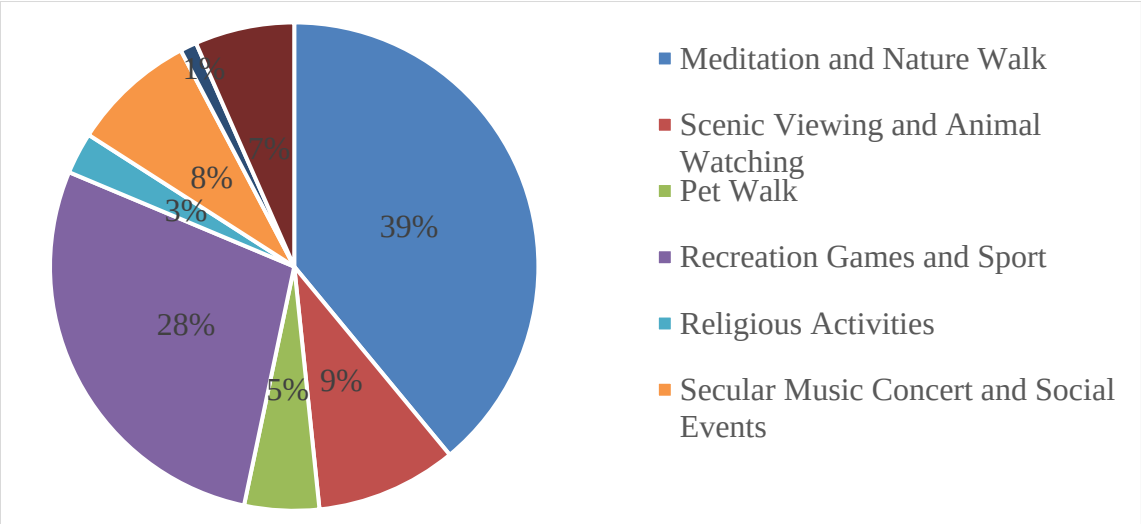
Source: Researcher, 2022

Human Activities that Are Practiced in Or Around UGS

Social Activities Practiced in UGS

From the study findings, 39% of the respondents said that they participate in meditation and nature walks, 28% participate in fitness/games and sport, 9% participate in scenic viewing and animal watching, 8% participate in secular music concerts and social events, 5% said they participate in pet walks, 3% participate in religious activities such as crusades and weddings, 1% said they participate by dumping household wastes in the UGS and lastly 7% said that they do not participate in any of the above social activities. The majority of the respondents participate in meditation and nature walks and games and sports because the latter tends to help them maintain a high state of both physical and mental fitness.

Figure 5: Social activities practised in UGS



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Source: Researcher, 2022

Plate 1: Ajentos-Miami football team playing football during the JaruFriq tournament at Dandora I Stadium

Plate 2: Upcoming birthday celebration setup in Believers Garden Dandora Phase II

The study findings tend to agree with Cities & Inclusive (2017) that the UGS does serve not only an aesthetic and decorative purpose but also a space where the society can conduct its social services and functions. UGS generate a high level of social participation and collaboration among individuals through games and sports. The findings agree with that of the America College Health Association., (2020), WHO & Black (2018), Barton and Rogerson (2017) that UGS give residents a place to meditate and relieve stress from families and after long working hours.

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Relationship between Residents who do not go to UGS and Disposal of Waste in the UGS

From Spearman's correlation results, it is clear that there is a positive correlation between residents who don't go to UGS and the disposal of waste in the UGS; this means that whenever there is a positive change in the disposal of waste in UGS, there is a positive increase in the number of residents who don't go to UGS. Since the p is less than **α=0.01**, this confirms that there is a valid relationship between residents who don't go to UGS and the disposal of waste in the UGS.

The correlation table above reveals that residents who don't go to UGS have a moderate positive correlation (.478) relationship with the disposal of waste in UGS. With this result, it is clear that those with do not visit the UGS have a high chance of waste disposal in the latter.

Table 2: Correlation between residents who don't go to UGS and disposal of waste in the UGS

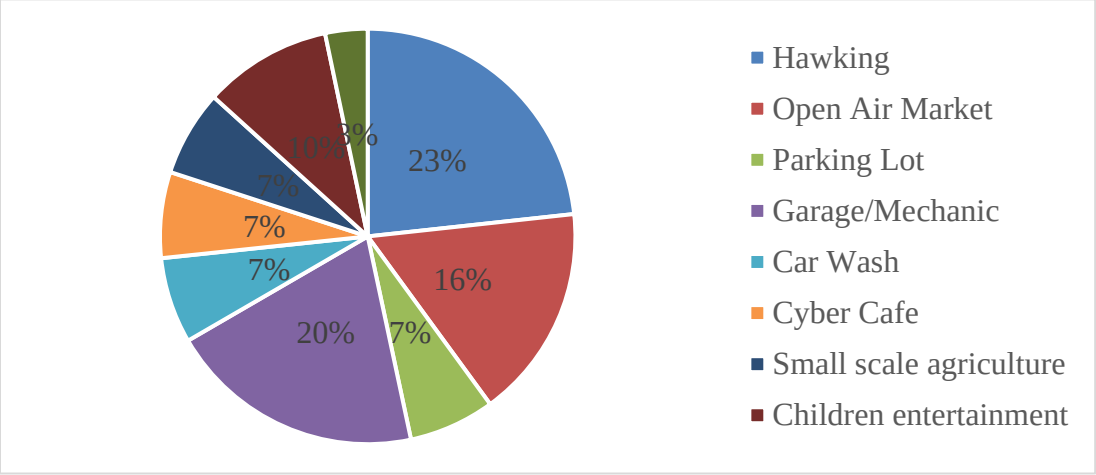
Correlations			
		Residents who do not go to the UGS	**Disposal of waste in UGS**
Residents who do not to the UGS	Spearman's Correlation Coefficient	1	.478
	Sig. (2-tailed)		.006
	N	16	16
Disposal of waste in UGS	Spearman's Correlation Coefficient	.478	1
	Sig. (2-tailed)	.006	
	N	16	16
***. Correlation is significant at the 0.01 level (2-tailed).*			

Source: Researcher, 2022

Economic Activities Practiced in UGS

From the study findings, there are a number of economic activities carried out in and around green spaces. Hawking was the most populous business which was represented by 23%, garage followed by 20%, then open-air market, which was represented by 16%. Children's entertainment was represented by 10%, and 7% represented small-scale agriculture, car wash, cybercafé, and parking lots. Lastly, 3% of the respondent use the UGS as an avenue for selling the hard drug. It is evident that hawking holds the most percentage while drug peddling has the least.

Figure 6: Economic activities carried in and around UGS



Source: Researcher, 2022

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This study confirms Chen (2012) that UGS creates livelihood through the provision of space to host most of the informal economic activities, especially hawking and open-air markets. The study findings also agree with that of Shoup (2018), *Green Parking Lot Resource Guide (2012*) and Shapiro and Arkoosh (n.d). that most of the UGS have been converted to host car parks and garages. This study also confirms Abdul and Mariapan (2010) that UGS could be used in criminal activities such as drug trafficking and peddling.

Plate 3: (right) & (left): Hawking in Dandora I market & Car garage in Phase II

Plate 4: Car parking in Phase II

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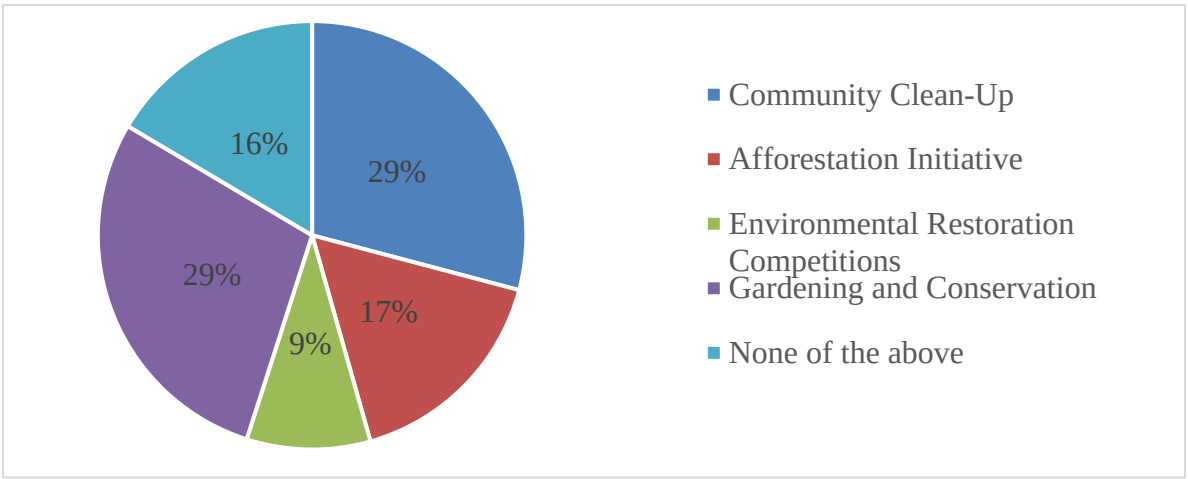
Plate 5: (right) & (left): Open Air Market in Stage 41 in Phase III & Small Agriculture in Phase 5.

Environmental Activities Practiced in UGS

From the study findings, 29% of the respondents said that they have participated in Community Clean Up, 29% have participated in gardening and conservation, 17% have participated in afforestation initiatives, and 9% have participated in environmental restoration competitions. Lastly, 16% said that they have never participated in any of the above environmental activities. It is evident that the majority of the respondents (84%) seemed to have participated in environmental activities. This infers that Dandora residents have an environmental spirit.

Figure 7: Environmental activities practised in UGS in Dandora



Source: Researcher, 2022

These study findings confirm Nations et al. (2012) conclusions that environmental activities such as clean-up events, removal of solid wastes from public areas such as streets, parks, and waterways; purchase and planting of tree seedlings; and holding events, competitions, and exhibitions with environmental purpose, could that take place inside UGS and that residents tend to participate in them.

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Plate 6: Community gardening Dandora Phase IV and III, respectively

Plate 7: Tress planted on roadside greenery in Dandora Phase 5

CONCLUSION AND RECOMMENDATIONS

In conclusion, UGS play an integral part in promoting sustainable living among residents within urban cities and communities. However, with the increasing rates of population growth, urbanization, and economic conditions within the urban areas, UGS is compromised. Numerous human activities (especially social and economic) practised in or around UGS unsustainably and unmanaged would have a high chance of impacting the latter negatively. This is attributed to the ineffective policy and legal framework responsible for the planning and management of the UGS. The

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county government, the chief entity responsible for the management and governance of UGS, is doing so little to manage these spaces.

Recommendations are geared to address and give resolutions to the problems and issues identified from the study. The knowledge gathered from the study findings and literature review informed the study recommendations.

- Development of UGS policy and management plans. There is a need to develop an effective and articulate UGS policy framework and management plans for UGS planning, governance and management that will be reviewed and updated after every 3-5 years.
- Development of UGS regulations and standards.
- The county government in collaboration with the police department should invest in enhancing and providing security through the installation of street lights in order to prevent crimes.
- NEMA should develop a strong enforcement team and stringent sanctions that will be geared to bring down any person, business and industry producing plastic bags.
- The county government in collaboration with the relevant NGOs and CBOs should participate in giving the community teaching and practices of the importance of maintenance and conservation of the current green spaces that they have within their vicinity; these can be done through workshops and seminars.

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