AN INVESTIGATION OF HUMAN ACTIVITIES PRACTISED ON URBAN GREEN SPACES IN DANDORA, NAIROBI COUNTY, KENYA

BY

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A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF NATURAL RESOURCES, TOURISM AND HOSPITALITY IN PARTIAL FULFILMENT OF THE AWARD OF MASTER OF ENVIRONMENTAL PLANNING AND MANAGEMENT OF MAASAI MARA UNIVERSITY.

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DECLARATION

Student's declaration

This report is my original work and has not been presented for the award of any degree in this or any other university. No part of this project may be produced without prior permission of the author and/or Maasai Mara University.

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DEDICATION

With utmost sincerity, I humbly dedicate this exquisite project to the esteemed students of the prestigious Maasai Mara University. In particular, I extend my heartfelt gratitude to all the environmentalists who are resolutely committed to creating a better world for the advancement of both humanity and biodiversity. Your valiant efforts are truly remarkable and deserve our utmost admiration. May this project inspire and invigorate your passion for environmental preservation and conservation.

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ABSTRACT

Urban Green Spaces (UGS) are amongst the major controversies in the urban landscape as a consequence of conflicting interests between 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. The main aim of the study was to investigate the drivers, effects and policy implications of human activities on Urban Green Spaces in Dandora, Nairobi County. The objectives of the study were; to identify the diverse types and drivers of human activities carried out on Urban Green Spaces in Dandora, to determine the effects as a result of human activities in Dandora and to examine the effectiveness of existing institutional, legal and policy frameworks for sustainable management and utilization of Urban Green Spaces in Dandora in relation to the human activities. Survey research design was adopted as a method of investigation using a sample frame of 143. Stratified and simple random sampling technique was used in issuing the household questionnaires. Purposive sampling technique was used to conduct interviews on Key informant; businesses, chiefs, National Environmental Management Authority, Nairobi City Council and Community Based Organizations. The information obtained was analyzed through descriptive and inferential statistics using SPSS and MS Excel and presented using bar graphs, tables and pie charts. The research finding established affordability (absence of entry charges), proximity to place where they stay and work, aesthetics and beauty of these spaces, adequacy of spaces, the state of security present and lastly, availability of facilities (such as sanitary facilities, seating area, children play facilities) were drivers attracting residents to visit UGS. 16% of the residents are driven away from visiting UGS due to the following; insecurity, congestion and inadequate leisure time due to high job and family demands, high cost of visitation, and dirty and non-appealing. The finding established several human activities that are practiced in and around green spaces in Dandora which were categorized in to three, social activities and economic and environmental activities The findings established that there were a number of negative impacts arising from the human activities practiced in and around the green spaces, littering, illegal dumping, and reduced aesthetic being most significant. The study established that Kenya lacks specific policies and regulations dealing specifically with planning and management of UGS. Eighty three percent (83%) of the respondents claimed that they have never been involved in public participation and public awareness initiatives on matter that relate to the management of the UGS by the county government. The challenges in the management and maintenance of UGS included; inadequate funds, land grabbing and encroachment by private developers, increased cases of vandalism of the public facilities such as fences that surrounds the UGS, uncooperative members of the public who litter and dispose solid waste in theses spaces. Some recommendations for the study are: Development of effective and articulate UGS policy framework and management plans for UGS planning, governance and management that will be reviewed and updated after every three to five-year period; 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; NCC should ensure effective and timely waste collection and disposal wastes in the UGS. This study aims to address the lack of research on UGS in African literature, which is currently limited.

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LIST OF ACRONYMS

CBOs	Community Based Organizations
DTL	Dandora Transformational League
EMCA	Environmental Management and Coordination Act
FGD	Focused Group Discussions
KFS	Kenya Forest Service
KPHC	Kenya Population and Housing Census
NCC	Nairobi County Council
NEMA	National Environmental Management Authority
NEC	National Environmental Council
NGOs	Non-Governmental Organizations
NUDP	National Urban Development Plan
OSM	Open Street Map
PLA	Policy, Legal and Administrative frameworks
SDGs	Sustainable Development Goals
SPSS	Statistical Package for Social Sciences
UGS	Urban Green Space(s)
UN	United Nations

CHAPTER ONE

INTRODUCTION

1.0 Background of the study

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

UGS are amongst the major controversies in the urban landscape as a consequence of conflicting interests between 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 sacrificed for settlements and other human actions (Twumasi & Merem, 2020; World Bank, 2021; Essel, 2017; UN-HABITAT, 2012). At the moment green spaces occupy a small portion of the landmass of several urban areas especially in the third world countries (Adjei, 2014; Che Khalid, 2014). In industrialized countries there are rigorous restoration and reclamation actions taken on the available UGS. These have been successful as a result

of active land use-planning and the 'high esteemed management' for these spaces by the urban municipal administration (Koomen & Dekkers, 2013).

A study carried out in 386 European cities on change in land use found a decline in the coverage of UGS and attributed urbanization as a major cause of the problem (Fuller & Gaston, 2001). In Britain, the parks and the community gardens are facing a great danger due to the reduction in their maintenance budget (Benjamin & Aletha, 2016). They are now exploited commercially by the private sector and community associations around them (UK Paliament, 2017). The consequences of these actions have led to the parks becoming shabbier and untidy. In some other parks there is random deforestation of the trees and increase of herbicides usage, which leave the latter compromised and forcing some to be shut down (Kristoffersen, Rask, & Grundy, 2011). Increased commercial activities such as mobile fast-food units are dominant inside these spaces but again with most of them lacking appropriate waste management procedures. The result of indiscriminate solid waste management in Urban Green Spaces results include; decreased ecosystem value, disruption of peace and a compromising health status of both humans and animals that live in the park's vicinity (Moore, 2017).

Newest and largest public green space, Vacaresti National Park in Bucharest, has a bit of anomaly as well; the national park is wild and untamed (Hickman, 2016). The presence of the park in the city and the nature of increased urbanization has led to tradeoffs with investors willing to pay more to get land and erect their premises and naturalists needing the space to be protected and conserved for the benefit of the natural ecosystem and man-made ecologies (Tribillion, 2016). In 2014 the Vacaresti Park was subjected to small-scale

logging and illegal dumping (Hickman, 2016). These unsustainable issues in the park exhibit the failure of the law and policy making and lack of government support.

The situation of UGS degradation in developing nations is more critical than in developed countries. Studies done have shown how green spaces are being converted into spaces fashionable to conduct human developments alone. Fawape and Onyekwelu, (2011); Mpofu, (2013) and Mensah, (2014) carried out studies on urbanization and land use change in some selected African cities; Abidjan, Lagos and Dakar, Accra and Freetown respectively and found that there is conversion of the available UGS lands for infrastructural development to meet the demand of the growing population in the urban areas. This has resulted in low coverage of USG landmass in most of the African cities, and in many occurrences the available UGS could cover less than 10% of the total urban landmass.

In Kenya the issues of increased human activities on the UGS are also common in many towns and the effects have generally been negative (George, 2009). In Kisumu there are a number of UGS parks like the Maendeleo, Taifa, Market and Jamuhuri Park with very poor environmental conditions including littering and illegal dumping of solid waste attributed to economic activities taking place in them (George, 2009). This state has been associated with lack of environmental education programs and failed urban planning and management within the Town (Owino, Hayombe, & Agong', 2014).

In Nairobi, UGS are in great threat from investors who are keen on using them for selfish commercial interests. Many of the playgrounds in schools and other UGS meant for social amenities have been subjected to grabbing (Greenspace-policies-Tobiko, n.d.; Kenya

Alliance of Resident Association, 2017). Poor planning, corruption, non-enforcement of laws and uncoordinated constructions have all contributed to the destruction of public and UGS in Nairobi County (Kenya Alliance of Resident Association, 2017).

1.1 Statement of the Problem

Studies carried out across Africa shows that rapid population growth rates coupled with urbanization are among the major factors that have contributed in the reduction of the numbers and quality of UGS in African cities (Mensah, 2014; Twumasi & Merem, 2020). In Kenya, Nairobi's population stands at 4,397,037 with an estimated projection of 5,958,338 in 2022, Dandora estate is ranked among the most populous slums with 295,670 people in 142,026 household (KNBS, 2019). Increase population within Dandora has put the available UGS in grave danger. Most UGS have been sacrificed to accommodate the surplus populations with extra spaces for settlements and other human activities. This has endangered the UGS in the area.

For sustainability purposes this study intended to assess human activities and their impact on the UGS of Dandora location in Nairobi in order to prescribe appropriate mitigation strategies that would preserve and conserve them while letting their limited use that do not have deleterious impacts on the existing UGS.

1.2 Research objectives

1.2.1 Main objective

To investigate human activities practiced on Urban Green Spaces in Dandora, Nairobi County.

1.2.2 Specific objective

The study was mounted to realize the following specific objectives:

i. To identify the drivers that influence the use of Urban Green Spaces of Dandora.

ii. To determine impacts of human activities carried on Urban Green Spaces in Dandora.

iii. To examine the effectiveness of existing institutional, legal and policy frameworks in/for sustainable management and utilization of Urban Green Spaces in Dandora in relation to the human activities found there.

1.3 Research Questions

The study therefore attempted to answer the following specific questions:

i. What are the drivers that influence the use of Urban Green Spaces in Dandora?

ii. Are resident's demographic characteristics drivers that could influence the use of Urban Green Spaces in Dandora?

iii. What are the impacts realized from human activities on Urban Green Spaces in Dandora?

iv. Are the existing institutional, legal and policy frameworks governing Urban Green Spaces management and their utilization in Dandora effective?

1.4 Research hypothesis

H0: There exists no significant relationship between resident's demographic characteristics and frequency of visitation.

H0; There is no significant relationship between human activities (social, economic, environmental activities) and negative effects on UGS.

1.5 Justification of the study

UNHABITAT is advocating for provision of inclusive, safe, resilient and sustainable cities and human settlements, specified in Sustainable Development Goal number 11, Target 7: Provision of universal access of safe, inclusive and accessible green and public spaces in particular for women, children, older persons and persons with disabilities by the year 2030. Through this study cities and towns will function in an efficient, equitable and in a sustainable manner by ensuring that there is protection and conservation of the green spaces in Dandora and any other urban towns and fringe suburbs around the country. This study hopes to provide relevant information in achieving the desire presented by UN-HABITAT's Target 7 and improve the livable environment of urban areas particularly of Dandora which hosts a significant number of dwellers in the Kenyan Capital city of Nairobi.

This study intends to contribute to the livability of cities by building initiatives and all capacities needed to solve impacts of human activities on the UGS establishments. Kenya's vision 2030 clearly recognizes that clean and sustainable cities will be primary drivers of

the country's ambition to become a middle-class country. This should be achieved by improving the management and governance of the UGS in towns, prevent politicization of these spaces, reduce the negative impacts to green spaces resulting from the social and economic sector of the country.

There is paucity of data on impacts of human activities carried out on UGS within Dandora Ward and this study intended to bridge this gap which could culminate in a larger study of parts of the city on the same objectives and thereby lead to proper management of these areas for the wellbeing of the residents. The researcher is also conversant with the study area having lived there for more than 10 years and therefore, more able to know where and who to approach in order to access the relevant information for the study.

1.6 Significance of the study

The findings of this research are expected to contribute significantly to the protection, conservation and management of UGS in Dandora and other urban areas with similar characteristics. The research will contribute to inform the control measures which could be adopted by the county governments in Kenya on the proper management that would prevent or minimize green space degradation from human activities in their respective towns. The study findings will contribute significantly to the designs and development of strategies to ensure right place and right activities for UGS in urban towns. Nairobi County's Urban planning and design department could use the result of this study designing appropriate plans of green spaces in other growing towns within the county so as to achieve SDG, 11; sustainable settlements of cities and communities. The study also attempts to encourage the upholding of the appropriate policies and legal frameworks for establishment and maintenance of UGS by institutions such as NEMA, UN and other NGOs.

1.7 Scope and limitation of the study

The research was confined in Dandora and was be limited to investigate the impacts of human activities on UGS as a case study. The study aimed at covering variables which were; effectiveness of the existing institutional, policies and legal frameworks surrounding management of UGS, drivers that influence the use of UGS, types of human activities carried out and impacts of the human activities that are carried out in the UGS.

Time allocated for the study was limited to link with the course timelines. Lack of documented information regarding UGS in Dandora that could contain resource materials for desktop review hampered the access to specific secondary materials but research from elsewhere helped in getting a general picture of the management of UGS.

1.8 Operational Definition of Terms and Concepts

Urban Green Spaces (UGS)- An urban green space can be defined as the total of all vegetation (planted and natural trees, shrubs and grass) in or around densely populated human settlements (Pedrosa et al, 2021; Strohbach et al, 2012). For the purpose of this study Urban Green Spaces are any public or private piece of land in an urban area that is undeveloped (has no building or other built structures) and is accessible for the public to use. They includes; open spaces, community gardens and parks; stadia and open squares; school playgrounds; roadside greeneries; vegetation barriers along the rail tracks and streets; riverside trails; and also the public seating area (Pedrosa et al., 2021).

Driver- A driver is a factor which causes a particular phenomenon to happen (Oxford University, 2022). For the purpose of this study, drivers are factors which influence/discourage the use of Urban Green Spaces.

Human activity- A human activity is any intentional, purposive, conscious and subjectively meaningful sequences of actions (Oxford University, 2022). For the purpose this study human activity includes social (recreation and entertainment), economic (hawking, open air market, car park and garages), environmental (cleans ups, restorations, environmental competitions) actions done by humans on the UGS.

Policy implication- Policy implication refers to the consequences or effects that a particular policy is likely to have on various stakeholders and the overall society (Oxford University, 2022). For the purpose of the study policy implication includes important consideration in the policy-making process as they can help determine the success or failure of a policy, as well as its potential unintended consequences.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

As this research tries to investigate the drivers, effects and policy implications of human activities on the Urban Green Spaces, literature related to the subject matter is reviewed through which emphasis can be given to address the knowledge gap of limited concerns given the conservation and management of Urban Green Spaces. This chapter focuses on reviewing; the drivers that influences the use of Urban Green Spaces; the impacts of the human activities on Urban Green Spaces and the existing policy, legal and institutional framework and their effectiveness in governance and management the Urban Green Spaces. This chapter will end with a conceptual framework on which this study is based.

2.1 Drivers that influence the use of Urban Green Spaces.

Dwyer (1988) and More (1989) found out that frequency of visitations made by the residents UGS vary with time of the day, day of the week and season of the year. This could be influenced by factors such as distance from home/work to the UGS, availability, presence of children plays facilities and other important facilities such as sanitary facilities, safety, comfort and mental wellbeing and love for nature (Maingi & Shitindo, 2021; America College Health Association., 2020; Nordbø et al., 2019; Wakaba, 2016; Koomen & Dekkers, 2013). These drivers have been explained below including how they have influenced the use of UGS;

2.1.1 Availability and Accessibility

The relationship between the amount of green spaces and the urban population is referred to green space availability. The dynamics in urban population change is highly likely to

affect the availability of green areas (Gutierrez, 2020). According UN-HABITAT (2012) to UGS depletion is taking place at an alarming rate, especially now that 3.5 billion people live in the world's cities. At the moment green spaces occupy a small portion of the landmass of several urban areas especially in the Third world countries and this has tremendously reduced the availability of green spaces in urban areas (Adjei, 2014; Che Khalid, 2014). In industrialized countries there are rigorous restoration and reclamation actions taken to increase UGS availability. These has been successful as a result of active land use-planning and the 'high esteemed management' for these spaces by the urban municipal administration (Koomen & Dekkers, 2013).

In study done by Aziz (2018) on the recreational use of UGS in Malaysian Cities revealed that green spaces experience high visitations when the accessibility is less that 2km from the residential zones. Wang et al., (2013) and Carr, et al., (1996) adds that children and residents could use green spaces for play if they are located close to their places of residence i.e., within 400m.

2.1.2 Presence of play facilities

According to Cradock and Melly, (2012), sufficient play space and facilities is important in supporting the physical activities in the green spaces. Presence of grassed spaces, waterfronts, see-saw machine, boat riding, swimming pools among other facilities will attract users especially children, to these green spaces and hence increase the frequency of visitation. A study conducted by Nordbø et al. (2019) on relationship between neighborhood green spaces, facilities and population density to participation among eight-year old's, points out that there is a direct association between green space access, available facilities and the participation in activities within the green spaces. After conducting

survey, on 23,043 persons living within 800-5000m radii to the available green spaces are most likely to have higher frequency visitation than those who live far away and the number could increase with the availability of green spaces facilities (Nordbø et al., 2019).

2.1.3 Unifying events

Events such as sport and games are as ancient as the earliest human civilization that promoted unity and cohesion. This is simply because sport form a share of human social cultural events (Maingi & Shitindo, 2021). Games and sport tend to bring people together for various reasons and activities. People from diverse political, economic, cultural and social backgrounds, age groups and ethnicity gather together and relate in equality. Through the community gathering, fun day and other interactions people get to learn about others and hence this will lead to cohesion and unity (Wakaba, 2016).

2.1.4 Safety

Having well maintained, cleaned up and well-lit USG tend to reduce the crime rate on the streets and neighborhood hence providing safety to the vulnerable groups; women, the disabled and children. Highly maintained greens paces give people more confidence and reduce the anti-social behavior hence leading to increased number of visitations by residents to these inspiring environments compared to public spaces which are dirty and poorly maintained. Poorly maintained green spaces increased the vulnerability to people being victims of crime. In such areas there could be curfew imposed to prevent victimization of the public (Wakaba, 2016).

2.1.5 Mental health and well-being

According to WHO and Black (2018) physical activities is a major public health risk. In Australia, nearly half of the entire populations do not meet the recommendation of meeting 30 minutes daily physical activities. One study found that people who use public open spaces are three times more likely to achieve the recommendation on level of physical practice than those who tend not to use the open space. The users prefer nearby, attractive and bigger parks to do their practices.

Green spaces are important in mental health (BJ Psych Int., 2017). There is a good evidence of a positive relationship mental health and well-being of a person and the level of neighborhood green spaces but then urbanization has reduced the access of the public to engage with green spaces. For example, green spaces also give residents a place to relieve stress after long working hours in offices, the green spaces also help for quick recovery from diseases (Haq, 2011). According to survey done by America College Health Association., 2020, majority of the campus students experienced diverse emotional state of irresistible exhaustion, loneliness and sadness in the course of their studies. Furthermore, almost 2/3 of the students testified experiencing extreme anxiety and almost half confirmed that they suffer from depression (America College Health Association., 2020). The finding was of particular interest because these mental issues could adversely affect academic achievement and further compromise the general well-being if left unattended (Blanco, Okuda, & Wright, 2008; Hamaideh, 2011).

2.1.6 Conservationist mindsets, 'love for nature'

UGS provide ecological niches and habitation for the living organisms from simple to the most complex flora and fauna. Most UGS have presence of trees and other plants that coexist with other animals like birds, amphibians and reptiles to form ecosystems. There is a need to protect these spaces because those organisms take them as their only homes. If all human beings could ideally possess conservation mindsets definitely extinction of these organisms could be prevented (Project Evergreen, 2018).

Several research have been done on this topic but apparently no study to date has tackled the drivers that influence the use of UGS in Dandora. Again, most of the literature in this topic regards tend to report drivers that attracts human beings in usage of the UGS but with limited focus in examining drivers that discourages residents and other users in using/ accessing these spaces especially in developing countries. It is through this study all this knowledge gaps were bridged.

2.2 Human activities carried out on the urban open green spaces

2.2.1 Economic activities and their impacts

2.2.1.1 Parking lots

According to Timalsina (2020) there is an emerging argument that green open spaces are in emergency of decline in the capitals of developing countries due to the growing trends of urbanization and migration. Urbanization has increased the usage of vehicles and this has in-turn increased the demand of parking lots. Parking lots are essential in the larger transportation system where at the end of every vehicle trip, the vehicle must be stored. With urbanization automobile travel is primary mode of transportation hence parking lot is abundant almost in every active center (Shoup & Angeles, 2018). Over the past 4 decades in Montgomery County, parking lots has become the leading built-landscape feature (Shapiro & Arkoosh, n.d.). Parking lots offers the urban planners and designers a breakthrough to enhance the character and appearance of urban areas. The main emphasis of the parking lot is on their functionality: how to use the most minimum space and cost to squeeze in highest numbers of vehicles. This has made most traditional parking lots fail to focus on the parking lot designs thus hindering ecological, social and aesthetic objectives (Parks & Fichter, 2004; Shoup & Angeles, 2018). Increasing Impacts of multiple traditional parking lots can have significant effects on the overall quality of life and the more so the environment character (Shapiro & Arkoosh, n.d.). Most of the parking lots in the United States are made of pavement, a combination of concrete, asphalt, sand and gravel. Pavement is a heat absorbing impervious material that collects stormwater on its surface inhibiting the natural water cycle by not allowing percolate into the soil (Parks & Fichter,

2004). Some of the major environmental implications of traditional parking include the following;

As the storm water/runoff flows across the contaminated pavement, the water tends to pick up pollutants/contaminants from the pavement's surface resulting great volumes of polluted runoff entering water bodies and groundwater resources thus harmfully affecting the overall water quality in that location (Parks & Fichter, 2004; Green Parking Lot Resource Guide, 2012). These contaminants in parking lot runoff can come from various sources. Paving materials that are used in the construction of these parking lots are sources of runoff contamination since they contain polycyclic aromatic hydrocarbons (PAH), a renowned toxic carcinogen to aquatic ecosystems (Van Metre et al., 2006). Vehicles forms a part of the source of pollution to the parking lot runoff with the following pollutants; hydrocarbon, nitrous oxide from exhausts, grease, oil, rubber particles from wearing tires among others (Green Parking Lot Resource Guide, 2012).

According to Green Parking Lot Resource Guide (2012) traditional parking lots are made up of large areas of impervious surface that do not allow the percolation of water into the soil. This in-turn inhibits the natural hydrological cycle where underground water recharge is compromised due to the absence of natural conditions where rainwater filtrates into the ground. As a result, this leads to lowering of the water table, reduction of streamflow during dry periods and hence worsening the negative effects of drought.

According to National Research Council (2010), impervious surfaces like pavements will produce 2-6 times more runoff water than the natural surfaces. Additional systems like gutters, pipes and drains assist to speed off the parking lot. These systems are likely to

cause stream flooding on the downstream due the increased run off velocity. During event of storm or rain the sewer systems tend to be overwhelmed by the parking lot runoff, causing them to overflow. These sewer overflows are hence likely to put human health at the risks of contracting diseases. The water bodies are also affected with eutrophication, after algae blossoms on the water surface altering the oxygen demand and levels of the aquatic life (Green Parking Lot Resource Guide, 2012).

Since most of the parking lots are made of asphalt, a dark, heat absorbing paving material then parking lots tend to significantly contribute to urban heat island effect. During night time, the asphalt cools hence releasing into the atmosphere all the heat absorbed during the day. This tends to affects the overall cooling rates at night (Gibbons, 2007; Green Parking Lot Resource Guide, 2012). Urban heat island effect has varied environmental impacts. According to Pomeranz, Melvin, Lawrence Berkeley National Laboratory, (2015) high temperatures can increase more carbon dioxide emissions due to increased energy demand for cooling pavements and building.

Nonetheless, due to increased demand for parking spaces, green spaces have been converted to pedestrian pavement and parking lots. In the US, 30 to 40% of a typical downtown is used for parking spaces (Miramontes, 2001).

Traditional parking lots are seen as sometimes, hostile, sometimes insecure and unappealing areas. In contrast to traditional parking lots, green parking lots with green scaping offers aesthetic and scenic benefits, noise reduction, fresh and cool air among other benefits. These advantages are lost once the conventional parking lot tend to use paving system (Litman, 2016).

2.2.1.2 Informal economic activities

Informal sector refers to the sector where all jobs whose income are not taxable by the government. It's a means of employment for those who are unemployed or cannot find job in the formal settlement (Chino, Tetsuro & Sugino n.d.). These activities include open air market, food vending, car repairs and garages, shoe shining etc. According to Wakaba (2016) many cities around the world have failed in the provision of enough income earning for its population which is ever rising. The markets and other informal economies have emerged as a survival tool to deal with the situation of lacking opportunities in the formal sector. (Chen, 2012) calculated that 62.3% of the global environment create livelihoods from these informal sectors than the formal, thanks to the UGS. The Plaza de Mayo Square and the Manhattans Times Square are an example of such spaces at the international level. Here in Kenya, we have Maasai Market which tends to be functional only on the weekends at the Nairobi's CBD.

Mitullah (2003) argues that these traders tend to choose places with heavy human traffics especially in streets paths, parks, sidewalks/pavements within the shopping centers of urban areas. Since there is usually little regulation of these activities, there is a high likelihood of negative impacts they cause to the green spaces.

Car garages and car wash tend to cause loads of water, air pollution to these spaces. This tends to create sickness to the neighborhood and also makes the environs unbearable to the organisms that lives there. Street food vending is a source of unhygienic conditions to the UGS that they operate at. In most of these spaces there is presence of plastic waste, oil suspension/ emulsions on the aquatic waters, outdoor air pollution is also not left behind especially from those who are using unclean fuel sources. This has not only led to

deterioration of the quality of green spaces but also tampered with human health as well (Chukuezi, 2010).

2.2.1.2 Events and urban green open space

According to Strategy and Committee (2019) events generate openings for public to connect within an area, celebrate time together and share in the experience of diverse cultures and customs among themselves. This assists the host societies and communities to come alive and generate opportunity for a destination to display its tourism experience and in turn this leads to the intensifications of the local economy. Events significantly contribute to the following; lifestyle improvement, community building, increase touristic visitations, fund-raise, cultures and customs enhancement and increased volunteer participation. Most convincingly, events tend to generate sense of vibrancy, liveliness and fun hence this leads to solid sense of connectivity and a sense of belonging.

Around the globe there is an ongoing process of 'eventalisation' act of making cities 'Eventful cities' (Richard & Palmer, 2010). Richards (2017) acknowledges that London is surrounded with open spaces like Greenwich Park, Royal Parks among other parks, have particularly established strong attraction for events and event tourists (Smith, 2014). Through this, parks have been viewed as assets that have been tasked to generate revenue. In 2015 Royal Parks accounts depicts, over 8 million pounds is been made from event and festival fees, after catering for 4 million event tourists (The Royal Parks, 2016). Andrew Smith Review, (n.d) and Bernadette (2021) warns 'eventscape' cities that in their verge on making enormous revenues, marketing brands and also generating income to the local and improving the host communities' image, the environmental quality of these spaces are highly affected. Staged outdoor events located near residential neighborhood are often

associated with issues of noise pollution created by crowd noise and amplified sound systems. This is likely to generate complaints and conflicts with the local residents (Smith, 2020). During event egression, they tend to be more problem. When hundreds and thousands of people instantaneous depart a venue without proper directive the park tuft and lawn are left in bad shape. This leads to the park closed down for months for grass and lawn reconstruction (Smith &Vodicka, 2020). Strategy and Committee (2019) supports Andrew Smith Review, (n.d) by acknowledging that events harm the environment. Strategy and Committee (2019) provides ways on reducing the impacts during an event, which includes; usage of minimal amount of energy especially on lighting; eliminating bottled water through the supply of tap water systems; on-site recycling facility should be provided to cater for different type of waste produced; if the events is using badges, they should be collected at the end of the event for the purpose of re-use and lastly paperless events should be embraced, if it's necessary to print or photocopy then utilize double side of the paper.

2.2.1.3 Mini-shows like acrobat and music bands

UGS is no new places for entertainers; acrobats and bands that entertain the public. Through their talents they tend to get cash from the public and in this sense they are self-employed. In most of the parks and stadia there are people employed to provide services like cleaning, maintenance and security services. Photography is one of the commercial activities performed in USG. Food vendors tends to come in with their food products occasionally to sell to the public who especially come to these spaces to host their events and functions. All these activities make people productive and it's through them they earn a living out of their sweats. (Kiruma, 2014)

2.2.1.4 Urban agriculture

The term urban agriculture/farming was developed to describe both plant gardening and animal keeping majorly for home consumption and revenue generation in cities. Additionally, urban agriculture could include other activities such as; manufacture and trade of agricultural inputs and marketing of agricultural products (Orsini et al., 2013). Food and Agriculture Organization (FAO) describes the main features of urban agriculture as;

i. An informal activity which is hectic to depict with precise data, which involves plant and animal production on a plot or home setting within the urban and peri-urban areas (FAO, 2003). Land in urban areas tends to be costly and very competitive, due to this urban agriculture occupy limited spaces compared to rural agriculture (Orsini et al., 2013).

ii. Not limited to plant production (vegetable and fruit-tree gardening) and small-scale animal rearing (poultry, bees, fish and cattle), urban agriculture also includes cultivation of specialized crops i.e., ornamental and medicinal plants and wood production (FAO, 2001).

iii. Most of the urban agriculture is conducted near markets to ease the cost of transportation and labor that would otherwise been incurred.

iv. Urban farming tends to utilize the water and recycled organic rejects from the city. Through this urban farming is beneficial in nutrient recycling and reduced organic wastes that could otherwise go to the landfills hence creating a sustainable environment. (FAO, 2010)

v. Majority of the farmers practicing urban agricultural activities are middle class and the poor people.

Since early 1990s, urban agriculture has been focusing on competition for non-renewable (like land, soil, water) and its economic viability. Urban agriculture it's an opportunity where rural agriculture, the prime producer of food in cities, has successfully failed in achieving food security in urban areas (Game & Primus, 2015). As at now the urban agriculture complements the rural agriculture in production of milk, eggs, vegetables among other perishable products hence improving food security for city dwellers (Van Veenhuizen, 2006). The following are evidences of growing urban agriculture roles among a few cities: 90% of milk and eggs consumed in Shanghai, China is produced from the city's jurisdiction (Yi-Zhang & Zhangen, 2010); In Philippines, Cagayan de Oro City urban agriculture occupies over 21,000 hectares of land (Potutan, Schnitzler, & Arnado, 2000); about 12 % of total urban land in Havana-Cuba is devoted to agriculture; and in Jakarta, Indonesia more than 11,000 hectares of land is used in conducting agriculture (Orsini et al., 2013). In Harare, Zimbabwe, the production appears to be vastly differentiated including; vegetables, flowers, corn and livestock production within the city (Ghosh, 2004). According to Ratta and Nasr (2011) in Dar es Salaam, Tanzania, about 100,000 tons of food are produced on yearly basis. At worldwide scale 800 million people are estimated to take part in urban farming, 200 million persons produce for the shops and market (Armar-Klemesu, 2006). Apart from food security, (FAO, 2012) estimated more than 100 million people receives direct income from urban agriculture.

Urban agriculture faces lots of challenges which include; understanding how urban farming can be a sustainable constituent of the overall global food system; and determining way on

reducing, monitoring eradicating and controlling risks in the physical, social and economic environment (Game & Primus, 2015). Opposers of the urban agriculture cautions the excess nutrient input with high levels of phosphorous, nitrogen and raw organic matter; and poor manure handling can lead to environmental catastrophes (Huang, Shi, & Yu, 2006; Chen, Liu, & Zhu, 2008; Diogo, Schelcht, & Buerkert, 2012). Other problems that city inhabitants may face are: air pollution (from emissions of methane, nitrogen oxide, nitrogen (I) oxide, carbon (IV) oxide etc.) noxious smell, overuse of chemical spray, veterinary public health awareness from cattle, zoonotic diseases among others (Hendrickson and Porth, 2012).

2.2.1.5 Urban Livestock grazing

In most of the developed countries, problems related of maintenance and management of green spaces is greatly observed (Bromham, n.d.). Urban livestock have been one of the major problems to green spaces in Cape Town, South Africa. Over the years there have been increased degradation and overgrazing of the spaces (Davenport & Gambiza, 2009). Chandre, Soni, and Yadav (2008) points out that people are egoistic because only caring about their livestock wellbeing rather than being neutral by managing the grazing habits on these green spaces as well. Hoffman and Todd (2012) also support Chandre, Soni, and Yadav's idea by stating that livestock can cause severe degradation and damage if the grazing habits are not well managed. UGS were not designed for grazing because most of them are not that big enough to accommodate such big animals. Overgrazing again could lead to disruption and destruction of the normal functions in a natural ecosystem (Chandre, Soni, & Yadav, 2008).

2.2.1.6 Tourist destinations

Most of the cities green spaces and public parks play a big role in tourist destination due to their attractive and alluring nature they possess. Decline in the quantity and deterioration of their qualities would most likely lead to losing of their allure/aesthetics that the latter brings to the cities. This has reduced the number of visitations. There are a number of commemorative squares out there in the world that has brought tremendous amounts of tourism activities to their cities. They include Plaza de Mayo, Argentina; Old town Square, Prague; Times Square, New York etc. (Woolley, 2005). Urban Green Spaces act as a best resource for relaxation and provide emotional warmth. Additionally, in Mexico City, the Chapultepec Park attracts about three million visitors in a week who go there to enjoy various activities. According to findings by Wesley (2010) there is an important link between quality of life and the availability of green spaces.

2.2.2 Social activities and their impacts on green spaces

2.2.2.1 Games and sports

Sporting events are as ancient as the earliest human civilization. This is simply because sport form a share of human social cultural events (Maingi & Shitindo, 2021). Sports were invented by the early humans as a means of engaging fun by changing the activities from usual one to another especially during their leisure time (Işik, 2020). Games and sport tend to bring people together for various reasons and activities. People from diverse political, economic, cultural and social backgrounds, age groups and ethnicity gather together and relate in equality. Through the community gathering, fun day and other interactions people get to learn about others and hence this will lead to cohesion and unity (Wakaba, 2016).

In the olden days, the following are the sport which were being practiced; races, javelin and disk throws, wrestling, triathlon and pentathlon, horse races, long and high jumps among others (Hemingway & Hemingway, 2002). According to Gaitatzes, Dimitrios, and Papaioannou (2005) Greece is the first country known by the world to host the Ancient Olympia sporting events. Again, it is through Greece that the modern Olympic games got its inspiration from. These games must be carried out in venues like open spaces e.g., golf courses and lawn; stadia and arenas. In Kenya, there are over ten renowned, big and classy golf resorts, to name a few; Karen Country club, Muthaiga golf course, Limuru country club and Royal Nairobi golf club. These clubs are well maintained and managed by the rules and regulations of the club's management and international golf federation (IGF). Stadiums and arena are totally different from golf courses since they tend to have high demand of large space for paved surface. Most of the stadia in Kenya were constructed to attract Federation International Football Association (FIFA) consideration in hosting international sports events like World Cup and African Cup of Nation (Maingi & Shitindo, 2021).

Sporting events like marathon, triathlon, pentathlon and safari rally tends to take place on outdoor occasions like city or at countryside because their nature demands more space. For instance, the Standard Chartered Marathon, usually happens within Nairobi City while others like WRC (World Rally Championship) Safari Rally Kenya event happened in the on the country sides of Naivasha away from town.

It is without doubt that sport is an indispensable activity for human development, that provides opportunity for physical activities which are vital for mental and physical well-being (Maingi & Shitindo, 2021). With similar fashion, sport have caused significant

destruction and disturbance of the environment where they tend operate in (Schmidt, 2006). For instance, safari rallies are usually directed to virgin lands away from residential. These lands are in turn heavily impacted due to the fact that the safari rally sporting event opens these places for other activities such as business and farming (Chernushenko, 1994). According to Martínková and Parry (2011) most of the sporting events tend to use enormous amounts of non-green energy fuel which ends up emitting voluminous amounts of greenhouse gases. In the event of a football match, large crowds of spectators tend to carry food, drinks and other refreshments with them. Lack of adequate trash cans and poor waste management attitudes can aggravate the issues of solid waste management within then stadia and arenas (Maingi & Shitindo, 2021).

2.2.2.2 Cardio vascular exercises

According to Jennings et al., n.d. over half of the earth's human populations now lives in the urban areas and this numbers is likely expected to increase up to 2/3 by 2050. Other postulations have it that within the next decades, the number of people living in the urban setting will be with 3 billion more people, leaving the rural settlement less populated. Rapid urbanization has led to shrinking of the UGS each and every day to accommodate the surplus population. There are studies done on the relationship between green spaces and human health, the two show a positive correlation. Chino, Tetsuro and Sugino, *n.d* and Payne-Sturges and Gee, 2006 argues green spaces are vital for not only physical exercise but also for stress and mental illness management.

WHO (2001) and Pretty et al. (2005) notes that physically active people tend to have low risks of dying from coronary heart disease, type II diabetes, hypertension, obesity and colon cancer. The above physical health challenges can be connected with sedentary and indoor

lifestyles. Physical exercise not only assist in avoidance of the lifestyle diseases but also play a greater role in mental health. Department of Health (2004) indicates that physical activities help people feel much better with improved moods and decreased anxiety.

Without environmental education and poor attitudes towards the environments for self-reflection and physical exercise tend to leave these green spaces dilapidated with solid waste such as plastic water bottles and other variety of wastes (Abdul et al., 2019). This littering affects the green spaces aesthetics and also affects the animals and plants (Ojedokun, 2009).

2.2.2.3 Human well-being and mental health

According to WHO and Black (2018) physical activities is a major public health risk. In Australia, nearly half of the entire populations do not meet the recommendation of meeting 30 minutes daily physical activities. One study found that people who use public open spaces are three times more likely to achieve the recommendation on level of physical practice than those who tend not to use the open space. The users prefer nearby, attractive and bigger parks to do their practices.

Parks also create conducive and energy efficient cities that slow the global warming activities created by the industrial and domestic air pollution. Every tree in a given green space helps in fighting greenhouse effect by reducing the amount of greenhouse gases in the atmosphere. Additionally, fresh air services that are provided by the green spaces reduces respiratory illnesses (Haq, 2011). These gardens give people a space for special interaction and also can help people to supplement their diet with fruits. According to Keeler (2008) these green spaces can shape development of children since it provides

children with an open space to play in outdoor space that gives them with experiences and improve their skills.

Green spaces are important in mental health (BJ Psych Int., 2017). There is a good evidence of a positive relationship mental health and well-being of a person and the level of neighborhood green spaces but then urbanization has reduced the access of the public to engage with green spaces. For example, green spaces also give residents a place to relieve stress after long working hours in offices, the green spaces also help for quick recovery from diseases (Haq, 2011). According to survey done by America College Health Association., 2020 and C and A, 2020, majority of the campus students experienced diverse emotional state of irresistible exhaustion, loneliness and sadness in the course of their studies. Furthermore, almost 2/3 of the students testified experiencing extreme anxiety and almost half confirmed that they suffer from depression (America College Health Association., 2020). The finding was of particular interest because these mental issues could adversely affect academic achievement and further compromise the general well-being if left unattended (Blanco, Okuda, & Wright, 2008; Hamaideh, 2011). Jed Foundation (2017) states that many colleges, campus and their partner institutions are actively developing strategies to promote and prioritize the mental health of their students. Several studies indicate that interaction with nature tends to reduce mood disturbances and stress levels (Barton & Pretty, 2010; Bratman & Hamilton, 2012; Tyrv€ainen, Ojala, & Korpela, 2014; Bratman, Hamilton, & Hahn, 2015). Bratman and Hamilton (2012) found decrease of cases of stress and heightened moods from students who took prolonged interaction in the wilderness. Later on in another study, Bratman and Colleagues found out that 90 minutes-stroll in a natural area increased meditation more than strolling in an urban

built environment (Bratman, Hamilton, & Hahn, 2015). Park, Tsunetsugu, and Kasetani (2010), Joye and Bolderdijk (2014) and Van den Berg, Maas , and Muller (2015) indicate exposure to green spaces tends have positive impacts on moods, immense reduction of stress and restoration of mental health. Change in mood and reduction of stress levels goes together with reductions in blood pressure, heart rate, increase in brain activity and immunity (Aspinall et al., 2015).

2.2.2.4 Urban Green Spaces and children

At the 5th WHO Ministerial Conference on Environment and Health held in Parma, Italy 2010, member countries made a pledge

'...to make available each child by 2020 with access to healthy and safe environments and settings of daily life in which they can walk and cycle to kindergartens and schools, and to green spaces in which to play and undertake physical activity' (WHO, 2010).

The UN Sustainable Development Goal 11.7, *"Provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities by 2030* (Cities and Inclusive, 2017)*"*; and the New Urban Agenda which *'...commits to promote safe, inclusive, accessible, green and quality public spaces that are multifunctional areas for social interaction and inclusion, human health and well-being* (UN-HABITAT, 2016)*;* are geared to make the Urban Green Spaces accessible to children and all. With reference to these commitments, different studies and reports have been done to check the accessibility and adequacy of the green spaces within urban areas (UNFPA, 2011: UN, 2012; Wang et al., 2013). The results of these studies estimates that there is an approximately over 75% of human population living in the urban

areas. This urbanization fact has tremendously reduced number of green spaces and resident's accessibility to these spaces especially in developing urban cities. Similarly, cities like Mexico City have prioritized the idea of increasing the resident's accessibility especially children, to the available urban green and open spaces not only to create healthier sustainable existence but also providing, conserving and maintaining adequate number of green spaces (UNFPA, 2011; World Health Organisation, 2017).

Studies shows that spending time in natural environment, like green spaces during childhood, is related to pro-environmental behaviors in adulthood (Pedrosa et al., 2021). Green spaces tend to foster unity and relations between children. Tillmann and Clark, 2018 adds that kids social-emotional, physical and cognitive health are positively impacted and developed with frequent exposure to nature, including green spaces. People are mostly satisfied with their children's recreational needs especially within the place they live. Blake and Nicol (2000) states that more than 80% of the UK's people reside in urban areas simply because green spaces in urban areas provides a sustainable percentage of total outdoor recreational opportunities.

2.2.3 Environmental activities and their impacts

2.2.3.1 Afforestation

Urban Green Spaces include; area of trees, grasses shrubs or other vegetated lands (Jin et al., 2021). These urban trees and forest are significant not only for human livability within the city but also for the environment as well. The following are benefits of having trees on Urban Green Spaces;

Lowry (1967) points out that there has been increase in the bare surface and reduction in the percentage of green land cover in most of the urban areas and this has dramatically led to the urban heat island effect, a condition created when there is an increase in the temperature. This is attributed by increase in use of concrete as building materials and paving in the cities. The UGS come in the picture by correcting the temperature imbalances by provision of shades, cool breeze and superb air circulation (Project Evergreen, 2018).

Vegetation reduces the temperatures of town. Therefore, this reduces the cost of energy required for cooling building in towns. Plants provide shade, increase circulation of the air in areas near the green spaces. This provides a cooling effect and assist in regulating and lowering air temperatures. A study in Chicago shows that increasing trees covers in the town by about 10% may reduce the total energy for heating and cooling by about 6% to 10%. Research have also identified that green spaces have economic gains. The economic benefits generated by the green spaces include promotion of tourism, reducing environmental impacts such as carbon sinks and flood control, green spaces within towns also are responsible for pollution reduction through decreasing on dependency on vehicles when moving to short distances since these green spaces provide alternative transportation corridors and cutting off expenses that would be used in medication (Haq, 2011).

Residents and investors are attracted and pleased with areas in town with large greenery for example, in Singapore and Malaysia, foreign investors were attracted to these countries because of the green spaces. This led to fast growth of economy (Haq, 2011). Moreover, indicators show that landscaping and green spaces increase the value of a property and financial return for land developers. Green spaces that are integrated to urban environment

prevent the long-term effects of climate change such as flood, increase in temperatures, thus provision of long-term benefits (Ridder, 2004).

In countries like Denmark and the Netherlands there have been various measures and policies put in place to make the city more appealing to residents and cyclists. Integrating the cyclist lane in the road systems, street paths and parks. This increased the number of cycling of the population of cyclists by 60% in Denmark. This has therefore halted the resilience of the motorized modes of transport hence improving the air quality (Wakaba, 2016). Project Evergreen, (2018) points out that the trees and other plants found in these UGS, remove smoke, dust and other pollutants from the air and also increase the carbon sequestration process that reduce amount of carbon in the atmosphere.

For our urban settings to perform at their peak, there should be spaces set up for removing the excess surface runoffs that might otherwise cause havoc, during period of heavy rains the risks of flash floods is usually high putting resident's lives, business and commerce and homes at risk. This would most likely affect the areas that lack open spaces left for flood plains establishments. UGS in this case they have permeable soil which allow for percolation of the excess runoffs and hence recharging the underground aquifers. There should be a need of the investing on all forms of UGS for sustainable urban drainage in which in this case it will minimize the cost that could have been otherwise get used in engineering of complex drainage systems (Wakaba, 2016).

According to Project Evergreen (2018) UGS tends to act as dense cover and mulch hold soil in place acting as wind breaker thus keeping sediments out of lakes, streams and roads and reduce flooding and mudslides. In this sense UGS act against soil erosion.

UGS provide ecological niches and habitation for the living organisms from simple to the most complex flora and fauna. Most UGS have presence of trees and other plants that coexist with other animals like birds, amphibians and reptiles to form ecosystems. There is a need to protect these spaces because those organisms take them as their only homes. USG Protection and conservation will prevent extinction of these organisms. (Project Evergreen, 2018)

Unfortunately, urbanization and successive population growth coupled up with major change in land use and cover has bring about in rapid deforestation both local, regional and global levels (Nagendra & Southworth, 2010; Sapart, Monteil, & Prokopiou, 2013; United Nations; Department of Economic and Social Affairs; Population Division, 2016). Deforestation has threatened the extinction of urban biological diversity (Yemshanov et al., 2012), ecosystem values and services and the health and well-being of humans and wildlife (Boerema, 2016). Other damaging impacts also include impacts on urban water, soil and atmosphere, resulting in flooding, soil erosion and urban heat islands respectively (Nastran, Kobal, & Eler, 2019).

According to Nagendra, (2007) and Zanchi, Thiel, and Green (2017), afforestation is one of the practices used by city officials for city's environmental restoration and conservation through the conversion of non-vegetated areas to forested lands. Planting trees play a vital role in mitigating the adverse effects of environmental degradation (Sapart, Monteil, and Prokopiou, 2013) through; increasing the spaces for Urban Green Spaces and hence improving soil productiveness, rise in number of habitats for the urban biodiversity and regulation of urban climates (Zanchi, Thiel & Green, 2017). More than 40 countries globally, have capitalized 15% of their total government revenue in reafforestation,

afforestation, and forest conservation (Rosenbaum & Lindsay, 2001). Due to this in recent years, researchers have widely reported regional intensification of vegetation indices such as Normalized Difference Vegetation Index (Boerema, 2016; Zanchi, Thiel, & Green, 2017). China is one of the rapidly urbanizing in the world, with a whopping 19% of the world's population and an average gross domestic product of 9.71% every year, encounters serious environmental and ecological problems such land degradation, water and air pollution (Yang, 2013; National Bureau of Statistics, 2017). This made China launch several environmental programs like afforestation so as to combat this ecological issue. On yearly basis these programs planted over 4 million hectares of trees. Examples of the program launched included; Nature Forest Conservation Program, Shelterbelts Program of the 'Three North', Beijing-Tianjin Shelterbelt programs (Xu, 2012). These afforestation programs improved the proportion of vegetation and by this the following benefits has been received; reduced greenhouse gas emissions, local surface temperature cooling hence boosting cities livability level, habitat restoration enhancing biodiversity among others (Forman, 2016).

2.2.3.2 Deforestation

Forest coves almost a third, 31% of the total earth's surface providing vast environmental benefits which includes soil conservation, hydrological cycle, carbon storage hence climate change prevention, preservation of biological diversity (Sheram, 2000). Forest provides long-term economic benefits, through wood making and lumbering. However, there are loads evidences around the world that intense deforestation activities are taking place causing reduction of tropical rain forests in spite of the hard work put in environmental activism and awareness creation (Chakravarty et al., 2011). According to Rainforestinfo

(2020) between the year 1990 and 2020 more than 20 million acres of forest were lost. Without doubt, agriculture is the most paramount economic activity practiced in the world based on the fact that it's the primary source of food and industrial raw materials (Adetunberu, 2000). Large scale and small-scale crops growing, rearing of livestock, fishery, lumbering is few of the agricultural activities practiced by farmers around the world. Over years man has impacted the forests and other natural settings so as to pave way for food production. Between 1900 and 2000, EPA (2016) reveals that an estimate of five million hectares of forest in Africa were lost. A report published by United Nation Food and Agriculture Organization in 2001 estimates that the human actions around the world is the major cause of rainforest degradation, occurring at a rate of 40 million hectares per years. Agriculture is not only taking place in the place in the rural areas, currently urban open spaces are encroached as well to accommodate these activities. Animals and plant native in these spaces are always living under pressure, facing threats such as; niche loss as a result from land clearance to usher in agriculture activities and grazing/herding for food gains (Peter, 2002; WWF Global, 2012). Other consequences resulting from of deforestation may include; soil erosion, desertification, reduction in capabilities of the tree for air purification and increased air pollution from greenhouse gases (Oroka, 2009).

2.2.3.3 Green grabbing

According to Rafiee and Stenberg (2018) land grabbing could be defined as the control through ownership or lease where by an amount of land is acquired through legal or illegal means for the purpose of extraction, resource control at the expense of the human rights. Nowhere in the world is land considered crucial to matter pertaining livelihood as in Africa. Land is not only important for agricultural and economic benefits but there is some social,

cultural and environmental identity associated with land. Globalization of capital and neoliberal views of development through economic growth are justifying the current land grabbing trends while undermining the crucial environmental and social aspects. Cotula et al. (2009) argues that the trends of overlooking environmental issues and people traditions and connections to their lands in favor of economic property have to be criticized and stopped.

In the contemporary world we have green grabbing which tends to acknowledge the sustainability, tradition and connections of both the environment with its people. Supporters of nature conservancy and the African Wildlife Foundation developed an initiative called 'Adopt an acre' for the purpose of protecting valuable wildlife heritage from induced degradation of the human beings (Bromham, n.d.). In Kenya the KFS have deliberately reclaimed major parts of the Mau Forest through the evictions of over 300 Ogiek families. The reason for all this grabbing is to conserve and protect the Mau Complex (Human Rights Watch, 2019).

2.2.3.4 Clean up and Urban Green Spaces

Clean up campaigns involves mobilizing and bringing together volunteers together to clean, repair and improve public open spaces (like green corridors, schoolyards, playgrounds, parking lots, stadia, community garden, riverbanks and etc.) or other areas including abandon and vacant lots, that have been ignored, wrecked and misused (U.S. Department of Justice, 1999; Nations et al., 2012). During a cleanup campaign all the members of public, communities, organization, businesses, churches, schools among others are advised to join and engage in vast number of environmental activities and plans that will significantly improve the local surround (Nations et al., 2012). The environmental

activities that take place during clean up events includes; removal of solid wastes from the public areas such as streets, parks and waterways; capacity building and creation of environmental awareness; collection and assortment of recyclable materials that can be sold to local resource recovery centres; purchase and planting of tree seedlings; and holding events, competitions and exhibitions with environmental purpose.

Having well maintained, cleaned up and well-lit USG tend to reduce the crime rate on the streets and neighborhood hence providing safety to the vulnerable groups; women, the disabled and children. Highly maintained greens paces give people more confidence and reduce the anti-social behavior hence leading to increased number of visitations by residents to these inspiring environments compared to public spaces which are dirty and poorly maintained. Poorly maintained green spaces increased the vulnerability to people being victims of crime. In such areas there could be curfew imposed to prevent victimization of the public. (Wakaba, 2016)

Among all gaps, studies done on UGS show that they are critically endangered and deteriorating in not only Kenya but also Africa in general. Among these studies a greater majority are concentrated in North America, Asia and Europe as compared to Africa due to priorities vested on UGS matters and agenda in these continents. This has in turn created a dearth of literature on Africa's UGS.

In Dandora there is little published researches which have been done concerning any matter related to UGS degradation whatsoever. This has made it difficult to access literature and by undertaking this research, knowledge on UGS existing in Dandora will be added in to the scientific world.

Most of the studies done on the UGS in general have failed to put adequate focus and emphasis on the types of human activities and their effects on UGS. Instead, theme focus such as importance and contribution of these spaces, impacts of theses spaces to human wellbeing remain leading in UGS' literature Study done in Kenya that was almost addressing this gap was only concentrated on effects of human activities carried out in rural forests (Kiprotich, 2016). It failed to account on different type of human activities carried out in UGS. The current study sought to determine types of human activities and their impacts on the UGS.

2.3 World's situation on management and governance of UGS.

Historically urban planners have tried to create urban spaces that also integrate element of nature (Mac Harg, 1971). Novel Model advocating for greeneries such as; 'Ecotopia' from Utopian advocates, like Charles Fourier's and the 'Garden City' from Ebenezer Howard (Howard, 1902); with increased concept of 'Sustainable development' harnessed the concept of green cities. The concept of sustainability plays an important role in urban planning and policy development that has constituted in shaping and improving the general wellbeing of the build environments (Baycan & Leeuwen, 2002). According to NAT GEO (2019) in the world as it stands now Singapore could be Garden city due its unique green spaces infrastructures made of breathtaking technological designs coming into play in bringing the urban green theme alive. All this has been made possible due to the fact that as a country they have a sense of national direction in beating all odds and emerging as *the world's greenest* and also the policies and legal framework revolving around green spaces are taken serious with stringent measures by their urban planners, government and all the enabling institutions (NAT GEO, 2019).

England saves 2.1 billion Euros each year in investing on provision of sustainable green spaces, due to increased physical activities which saves on health costs (England, 2020). In Sheffield, for every 1 euro spent in maintaining parks, there is a benefit on 34 euros in health costs saved. The local authorities in England plays a vigorous role in making sure that their green spaces are improved, maintained, and protected. England (2020) indicates that, this has been achieved through implementation of the local policies and strategies such as Local Strategic Needs Assessment (JSNA) and Joint Health and Wellbeing Strategies (JHWS). The latter has shown how the green spaces can be used to achieve balance and meet the current health needs of the population. The JSNA and JHWS have been used in developing; Local Strategic Plan, Neighborhood plans and other supplementary planning documents (SPD); to support the decisions on protection and improvement of green infrastructure (England, 2020). A study done by Baycan and Nijkamp (2004) on policy relevance on the planning and management of Urban Green Spaces in European cities revealed that policies have greater impacts on the performance and success levels of sustainable urban green.

The success of European nations such as England in UGS management doesn't mean that other nations are successful (Kwartnik-pruc & Trembecka, 2021). Poland, a country in Europe is up to date still stressed and cannot get over with its post-socialist legacy. Theses struggles include; tolerance to inequality, lack of solidarity within the communities and lack of government responsibility to community interests (Kronenberg et al., 2020). Parks and other green spaces are not protected due to the fact that the municipal authorities needed to implement these rules and policies are reluctant and has not prioritized them in their budgets (Feltynowski, Kronenberg, & Bergier, 2018). Due to this challenge the parks

look disheveled and shabby (Sikorska, Łaszkiewicz, & Krauze, 2020). In Bogota, Colombia there have been challenges with institutional capacities in the making, implementing and enforcement of policies and legal framework that surrounds protection and management of UGS. The decentralization idea of the government has made the federal, state and local authorities to experience scrambled coordination which has made their environmental responsibilities unclear and confusing. This has resulted to the national government having a challenge in provision of policy and legal guidance for planning, managing and monitoring of the available UGS (Env-, 2014). In Brazil such situation has led to cases where individuals, some from the government grabbing these spaces meant for urban greening despite having stringent environmental laws (Zulauf, 2012).

In Africa, planning of cities is laid down by regulations which are often made by local and national government. African states have splendid policies and regulation framework covering the USG but studies have found that issues with regards to implementation and enforcement have been problematic (Mensah, 2015). Other issues regarding the failure of most African policies and regulation could include;

The use of outdated urban regulations to address current developmental project in urban areas. Studies reveals that most of the countries in Africa are operating their urban areas using urban plan regulations and policies made 60 years ago, most of these plans being adopted from their colonial masters at that era (Awuah et al., 2010). For example, the 1948 Town Planning Act of Malawi, and the 1946 Town Planning Ordinance of Nigeria are still operational up to now. Some were slightly improved, like in Kenya the 1948 Town Planning Memorandum (Master Plan for colonial capital) was improved to Nairobi Area Town Memorandum in 1973. These master plans cannot address comprehensively the

status quo problems that most of these UGS are facing especially pressure from rapid urbanization of these African cities (Victor et al., 2015).

Lastly, there have been delays in issuance of development permits by the planning authorities and the relevant agencies with this being associated with bureaucratic procedures. This have caused the available UGS in Africa to suffer. In Tanzania it takes a developer more than three years to get all the needed requirements such as the building permits, detailed plan etc. approved by the relevant authorities (Kironde, 2009). Similarly, studies done in Cameroun, Ghana and Nigeria Egbu, O, and Gameson (2011) indicates that bureaucratic procedures which are long have to be followed. These long processes have influenced development of unauthorized land projects from developers who either want to evade these lengthy processes or run out of patience (Awuah et al., 2010).

Kenya has a number of planning policy and regulations in place but they have completely failed to deliver their mandates and promote sustainable urban development of green spaces. Studies and reports carried out since 1990s till date have revealed that weak urban planning laws, policy regulations are responsible for current hostile environmental condition to its residents, including the reduction in parcels of lands allocated for Urban Green Spaces (Kimani, 2021; Nation Media, 2020; Kenya Alliance of Resident Association, 2017; Nduku, 2017; Muiruri, 2003; National Environmental Action Plan , 1996; Lamba, 1994).

With increase in land grabbing within Nairobi, the CS Environment Keriako Tobiko raises concerns with regards to the importance of UGS. According to Greenspace-Policies-Tobiko, *2021*. the CS wishes to liaise with the Nairobi Metropolitan Service (NMS) in the

provision of policies regarding the sustainable use of green spaces which are currently lacking in Kenya. All this came after the COVID-19 pandemic uncovered the dire need for having quality UGS.

Several research have been done on this topic but apparently no study to date has tackled the effectiveness of the existing policy, legal and institutional framework in Dandora. Again, there are loads and loads of literature on the PLA framework in management of UGS but with limited focus in examining their levels of effectiveness in the management of UGS, especially in developing countries. It is through this study all this knowledge gaps were bridged.

2.4 Policy and legal framework related to the management of Urban Green Spaces in Kenya

Kenya in general has a number of policies and legal framework that exist to govern not only the green spaces alone but also the whole environment. They include;

2.4.1 The Constitution of Kenya, 2010

The constitution of Kenya 2010 has some several aspects indirectly related to UGS establishments. The first aspect is mentioned on the preamble where respect of the environment and people's heritage are to be achieved thus sustaining the environment for benefits of both the present and future generations. In chapter 4, Bill of Rights; article 42 provides that everyone has the right to a clean and healthy environment and also to have it protected for the sake of both the future and present generation's benefits. Article 60 directs that, land in Kenya shall be held and managed in a prospect that is effective, productive, equitable and sustainable in accordance with principle such as: sustainable and productive

management of land resources, sound conservation and protection of ecologically sensitive areas. Article 69 states that the state shall work to achieve a tree cover of at least 10% of the total land, protect and enhance intellectual property and indigenous knowledge of genetic resources and biodiversity, eliminating the activities and processes that are likely hazardous to the environment and human health (Government of Kenya, 2010).

2.4.2 The Physical and Land Use Planning Act, 2019

In the Physical and Land Use Planning Act of 2019, the Director of physical planning shall be the chief government adviser on all matters relating to physical planning. The director shall formulate national, regional and special area physical development policies, guidelines and projects with the approval of his/her team of Liaison Committee. The director of physical planning will advise on the relevant matters which include land use management, change of user, extension of leases, and extension of user and subdivision of land. The director of physical planning also requires the local authority to ensure proper implementation of the physical development control and preservation orders. The Physical and Land Use Planning Act Cap 286 makes provision of the preparation of physical development plan of local, regional or special area. Section 30(1) directs that none will be allowed to conduct developmental activities within the area of a local authority without permission of development from the local authority (GoK, 2019).

2.4.3 Environmental Management and Coordination Act of 1999 (Rev. 2015)

Section 7, of the Environment Management and Coordination Act (EMCA) of 1999, there are some legal and institutional frameworks that that helps in the act to achieve management and coordination of the environment. These institutions include; the National Environmental Council (NEC), National Environment Management Authority (NEMA),

County Environmental Committee (CEC), National Environmental Action Plan Committee, Public Complaint Committee (PCC) and others. NEMA has the mandate for the execution of any required stipulation in relation to policies related to the environment. Section 58 provides that every developmental activity which are have high likelihood of imposing significant impacts on the environment must undergo an environmental impact assessment before hitting out. EMCA have some provisions which also tend to protect and conserve the environment through protection of traditional interest, identification of hilly and mountainous areas, reforestation and afforestation of hill tops, hill tops and mountainous areas, protection of the natural and artificial forests, conservation of biological diversity, conservation of biological resource in-situ/ex-situ and protection of environmentally significant area (Government of Kenya, 2012).

2.4.4 Urban Areas and cities Act, 2012

In the Cities and Urban area Act 2012, Section 13, the Board of Cities/Municipality shall control land development and zoning by public and private sector for purpose including markets, transport, open and green parks, entertainment, agriculture and other land users within the framework of master plans of the city/municipality. Section 3 of this act also ensures the classification of areas as urban cities or areas, governance and management of urban areas and cities and residential participation in the governance of the urban/cities area (Spirits, 2012).

2.4.5 Land Act of 2012

The land act of 2012 also affects matters pertaining green spaces. In section 4 this act includes the functions of the land management and administration institutions which include: facilitate the implementation of land policy and reforms, coordination of the

management of the National Data Infrastructure, regulate the professional; including the valuers, surveyors, physical planners and other professionals. They again enhance quality control and also monitors and evaluate land sector performance. Section 8 of the land act include general provisions of management of public land by the National Land Commission (NLC) on behave of the national and county governments. This commission identifies the public land and prepares and again keeps a database of all public land and the statutory body responsible for survey will geo-reference and authenticate the public land. The commission will also evaluate all parcels of land based on the land classification, land resources, overall use potential and resource evaluation data for land use planning. And lastly this commission shall share the data with relevant institution (LandAct 2012, n.d.). Other acts that have effect to the environment include forest act of 2015, Water Act of 2012 and Wildlife Act.

2.4.6 The National Urban Development Policy

The National Urban Development policy was formulated for the purpose of the urban areas around the country. This policy is to address some important areas such as the urban: economy, finance, governance, management and also planning. It also looked at the environment and also the infrastructure for provision of social services, housing, safety and emerging risks from disasters within the urban areas (Government of Kenya, n.d.).

2.4.7 The Nairobi 2030 Metro Spatial Draft Plans

It is through the Strategic Plan 2008 – 2012, and the Draft Spatial Concept delivered in April 2011 through which the Ministry and Metro 2030 vision (A World Class African Metropolis) was created in relation to the Kenya Vision 2030. This draft plan was developed to promote the metropolitan image of Nairobi and its neighboring towns. To

achieve all this, the plan was set to undertake projects such as tourism enhancements and environmental sustainability, infrastructural development. Some of the projects proposed in the plan in ass far as UGS in general is concerned includes; crime reduction in the public spaces and parks through setting up of CCTV cameras and streetlights; Design UGS in a way that it could enhance the overall communal utility of the spaces through setting up of public facilities such as public furniture, bins and toilet.

2.4.8 Vision 2030

In Vision 2030 the environment the does not feature as a pillar, the national government have put in place a wide range of institutional policy and legal framework to combat the causes of environmental degradation and negative impacts on ecosystems caused by the industrial and economic development programs. The aims of the vision were to increase the forest cover and lessen the environmental diseases. This vision strategies include; promoting environmental conservation in order to provide better support to the economic pillar and also for the purpose of achieving the Millennium Development Goals. The flagship projects for the environment include; solid wastes management systems initiatives, it also calls up for the relocation of the Dandora dumpsite and reclaim the area by setting up an urban green space, the plastic bag policy which will limit production and use of environmentally friendly options such as the khaki bags, land core and land use mapping projects. It also take the initiative of rehabilitation of the water towers through water catchment management programs (Government of Kenya, 2007).

2.4.9 Agenda 21

Kenya adopted Agenda 21, in 1992 after the United Nation Conference on Environment and Development in Rio De Janeiro, Brazil. The conference provided the world with

solutions to the problems of environment and development. Kenya ratified most of the international protocols, treaties, agreement and convections as a result of the first Rio conference. The international treaties that Kenya has ratified and had most significance outcome include; The United Nation Framework Convention on Climate Change, whose aim was to reduce the limits climate change that is reduce the global temperatures increase; the United Nations Convention of Biological Diversity and United Nations to Combat Desertification (UNDP, 2012).

2.4.10 Sustainable Development Goals

Sustainable Development Goals of 2015 displays important aspects on green spaces on the Goal number 11:7 which by 2030, tends to advocate for access of safe and inclusive public spaces in particular for vulnerable groups of the society such as the women, children, persons with disabilities and older persons. Through this goal cities and towns will function in an efficient, equitable and in a sustainable manner by ensuring that there is protection and conservation of the green spaces of any urban towns and fringe suburbs around the globe. Through this goal, public green space will generate equality between the environment and urban development, not like at the moment where the equality is missing because what the society think of is developing its economy rather than protecting its environment (No Title, n.d.).

Secondly most of the studies done on the UGS in general have failed to put adequate focus and emphasis on the diverse types of human activities and their effects of UGS. Instead, theme focus such as types, PLA framework, benefits, importance and contribution of these spaces remain leading in UGS' literature. Study done in Kenya that was almost addressing

this gap was only concentrated on effects human activities carried out in rural forest (Kiprotich, 2016). It failed to account on human activities carried out in UGS.

Lastly, there are loads and loads of literature on the PLA framework in management of UGS but again with limited focus in examining the levels of effectiveness of these frameworks in the management of UGS, especially in developing countries. It is through this study all this knowledge gaps were bridged.

2.5 Theoretical Background

The study has been of interest to scholars for many years, and a significant body of literature has been devoted to understanding its various aspects. This section provides a critical review of 3 key theories and concepts (Place theory, Green Urbanism, Smart Growth, and New Urbanism) that form the foundation of our understanding of human activities practiced on UGS. The purpose of this review is to provide a comprehensive understanding of the existing knowledge in the field, and to provide a theoretical framework for the current study.

2.5.1 Place theory

A place is a space with a distinguishing character, created through a synthesis of the components of the total environment and socioeconomic aspects. Place theory advocates incorporating unique features and components of human needs, natural and cultural contexts to the physical space of an urban setting. In place theory cultural and social values, visual perception of the city dweller and control on the environment as the principle of enclosure and linkage. The main difference of place theory with other theories is the human

and cultural features of physical space. The aim of this theory is to find the best contours to fit in the physical and cultural context and the user's needs.

Kelvin Lynch looked at cities in parts in the attempt to define place theory where he mapped physical elements of the environment and socioeconomic activities of individuals in the city. He put rules of designing city spaces (Lynch, n.d.);

a. Legibility/Visual Quality: the mental map of the area which held by the city dwellers.
b. Imageability: the users' perception in motion and how people experience the space of the city.
c. Structure and identity: the recognizable, rational pattern of urban solid and voids.

According to Lynch, synergy between the rules in urban designing and the elements of urban forms as paths, edges, districts, nodes and landmarks is when 'successful urban city' is born. This theory tends to support the integration of UGS infrastructures to enhance the visual quality and experiences of the city dwellers as a means to positively affect their livability within cities and towns (Lynch, n.d.).

2.5.2 Green Urbanism

Green urbanism is a lifestyle concept that tends to create communities that brings benefits and balance to both the environment and the human beings (Wells, 2012). Wells, breaks down the concept further and stresses that the term 'green' means a clean and sound environment while 'urbanism' being the art of developing new areas. Green urbanism aims in developing new urban areas through guiding projects and policies that are geared to protecting the natural urban environs. According to Karlenzig (2009), green urbanism

concepts started in the US in around 1980s but in the early 1990s it picked attention to the world where most of the cities started to implement most of its principles. Green urbanism involves not only green building principles but also green technologies and processes at all planning level starting from the neighborhood level (Wells, 2012).

Green urbanism concept is drive to achieve the following goals which include; facilitate the creation of sustainable cities that encourages healthy lifestyles among its residence; building cities that will not compromise the integrity of nature's functions but that will function in a way similar to nature's; and designing and developing cities that will live within its ecological bounds. So as to achieve this goals protection and conservation of the cities greeneries is key. Emerging urban environmental issues such as effects of urban heat island, air pollution, global warming among other issues will be mitigated if urban plans recommend the integration of more Urban Green Spaces, such as forests, gardens, parks, road side greeneries and green roofs. Green urbanism tends to support the integration of UGS into urban landscape as a means to protect and conserve the urban natural environment.

2.5.3 Smart growth theory and new urbanism

US. Environmental Protection Agency, (2002), defined smart growth as a kind of urban growth that exhibit the following features; compact building design, different types of land uses; walkable streets with diverse transportation options; participatory decision making in urban planning to preserve and uphold the existing urban settlements. Alternately, smart growth could also be viewed as a set of development strategies, plans and principle that could lead to a well-organized land use pattern (Litman, 2012). Smart growth concepts emerged in the US, almost the same time during the early 1990s when the green urbanism

did. Large administrative actors responsible in urban development especially in the US started to encourage alternate form of development that embraced order opposed to the existing urban sprawl development at time (Goetz, 2005).

According to Ye et al. (2005) study on Works undertaken by Smart Growth Network found out that smart growth covers six key dimensions. These dimensions include; housing, planning, community development, planning, natural resource preservation and economic development. The importance of green spaces lies in preservation of natural resources which is among the key dimensions to smart growth. Smart growth tends to support the protection, conservation, restoration and integration of UGS into the urban landscape. The following are strategies provided by the smart growth in preservation of UGS and enhancing the livability of cities; stringent regulation and laws on land use, incorporating landscape designs, principles and plans into public and private property, and utilization of market-based mechanisms such as purchase of, transfer of and donation of development rights (Ye et al., 2005). Urban growth and development guided with smart growth concepts will tend to provide the divergent benefits that supports development of UGS and sustainability of urban cities. The benefits include lessening of air and water pollution, cleans up and reclamations of waste lands and brownfields, preservation of the urban greeneries, improve accessibility within the streets and lastly increase energy conservation (Geller, 2003; Burchell, Downs, & MaCann, 2005; Litman, 2012).

New urbanism is closely connected to smart growth theory. Its key objectives are to diminish the automobiles dependency and create walkable streets with compact arrays of commercial sites, housing and jobs (Briney, 2012). New urbanism is not only good in providing cities' design but also provides blends in with planning goals which could

include environmental protection and management as well as urban regeneration. This blend acknowledges protection of UGS as one of its chief principles as a mean to bring balance in the conservation of natural ecosystems and physical development. Smart growth like new urbanism put focus to promote mixed land use, developing compact cities with diverse housing and a transit-friendly environment. However new urbanism differs from smart growth by giving much attention to physical land form (Knaap & Talen, 2013).

2.6 Conceptual framework on human activities practiced on the Urban Green Spaces.

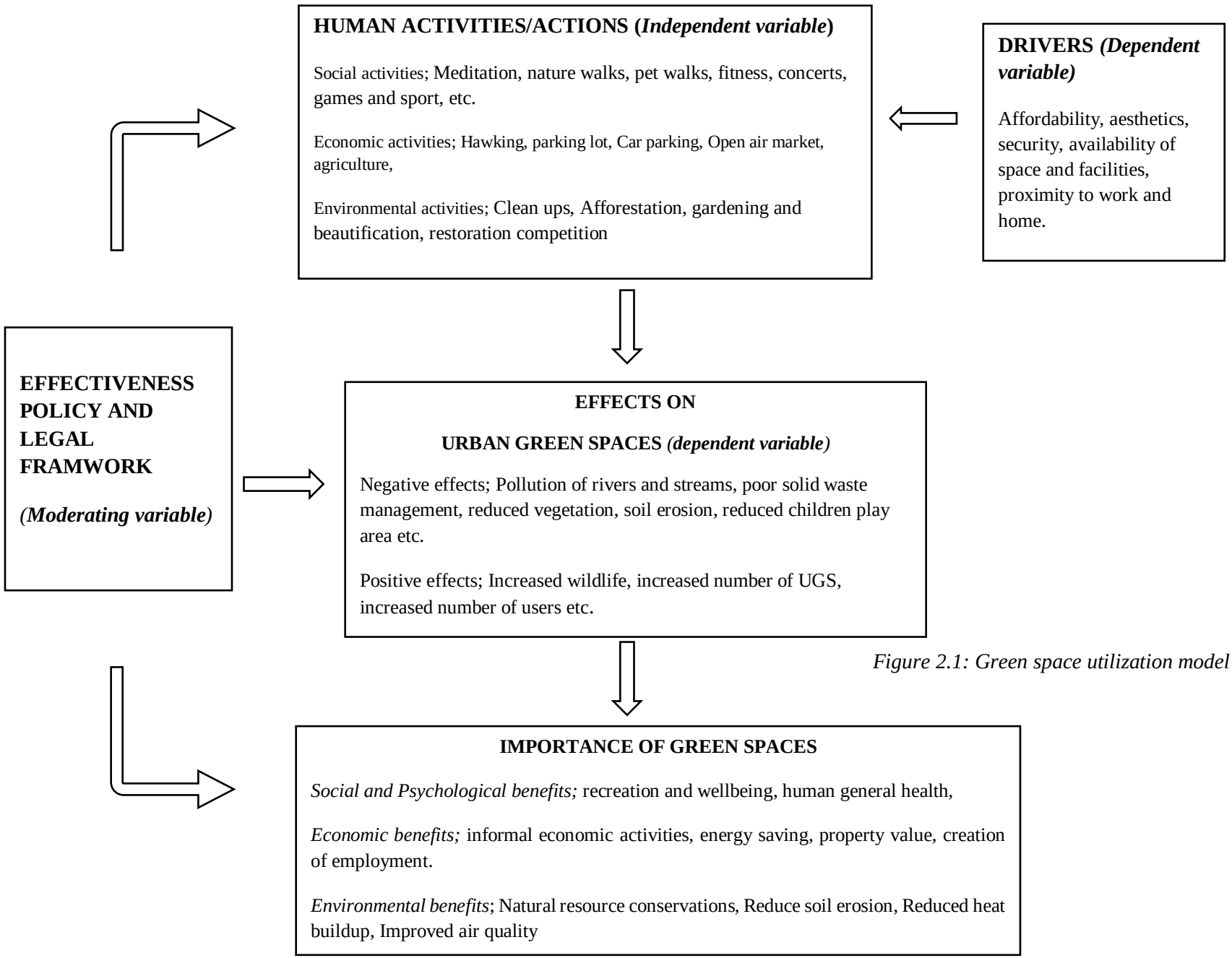

Figure 2.1: Green space utilization model

The conceptual framework shows interaction of diverse key elements that affects the UGS of any urban areas. The framework identifies human activities as one of the elements that's affecting UGS establishment. These human activities include; social activities, economic activities and environmental. Depending on their nature, diversity and numerosity these activities could impact the UGS positively or negatively. By this virtue the human activities will be the independent variable and the UGS being the dependent variable.

Another element that affects the UGS is the Policy, Legal and Administrative Framework. Factors such as; policy and law enforcement mechanism, up-to-date UGS laws, stringent sanctions, diversified and clear institutional mandate, budgeting and governance can help attribute the effects of human actions on the green spaces in Dandora. Weak policy, legal and administrative framework will encourage unsustainable urban development and other uncontrolled human actions which will in turn leave the green spaces negatively impacted. On the other hand, strong policy, legal and administrative framework will tend to govern and control human activities in a manner that will not compromise the health of the green spaces. In this case the policy, legal and administrative framework acts as the mediator variable.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

In this section a description of the appropriate character of the study area is presented. Then an explanation of the methodology used in the study including the research design, sampling techniques, data collection instrument, reliability and validity of the instrument and the data analysis and presentation methods is provided.

3.1 Study area

The research was conducted in Dandora, an eastern suburb of Nairobi County, Kenya. It is part of the Embakasi North Division surrounded by; Kariobangi, Baba Ndogo, Gitare Marigo and Korogocho. It lies 1.2483°S, 36.9026°E (Latitude, 2018).

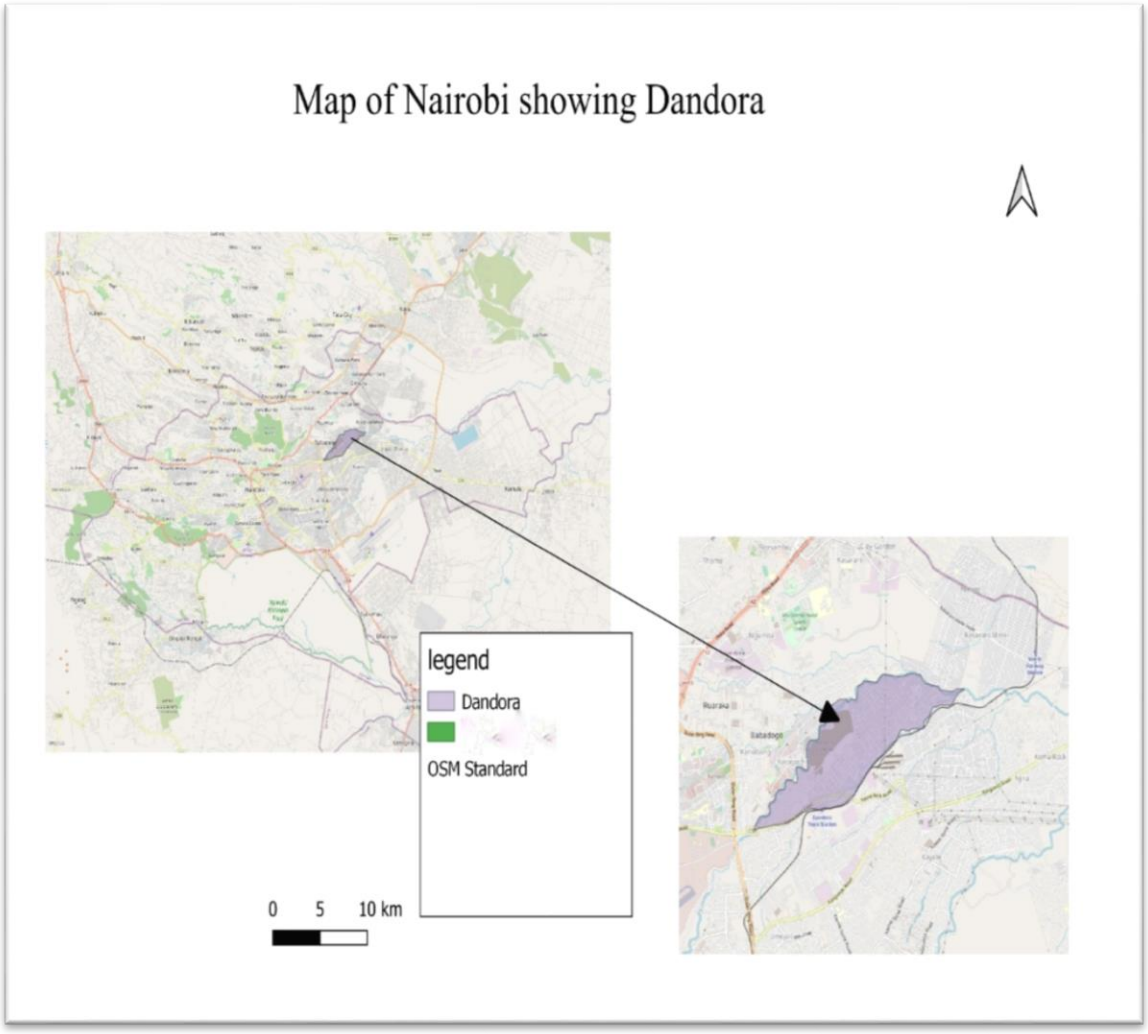

Figure 3.1: Map of Nairobi County Showing Dandora

Source: Google Earth GIS, 2022

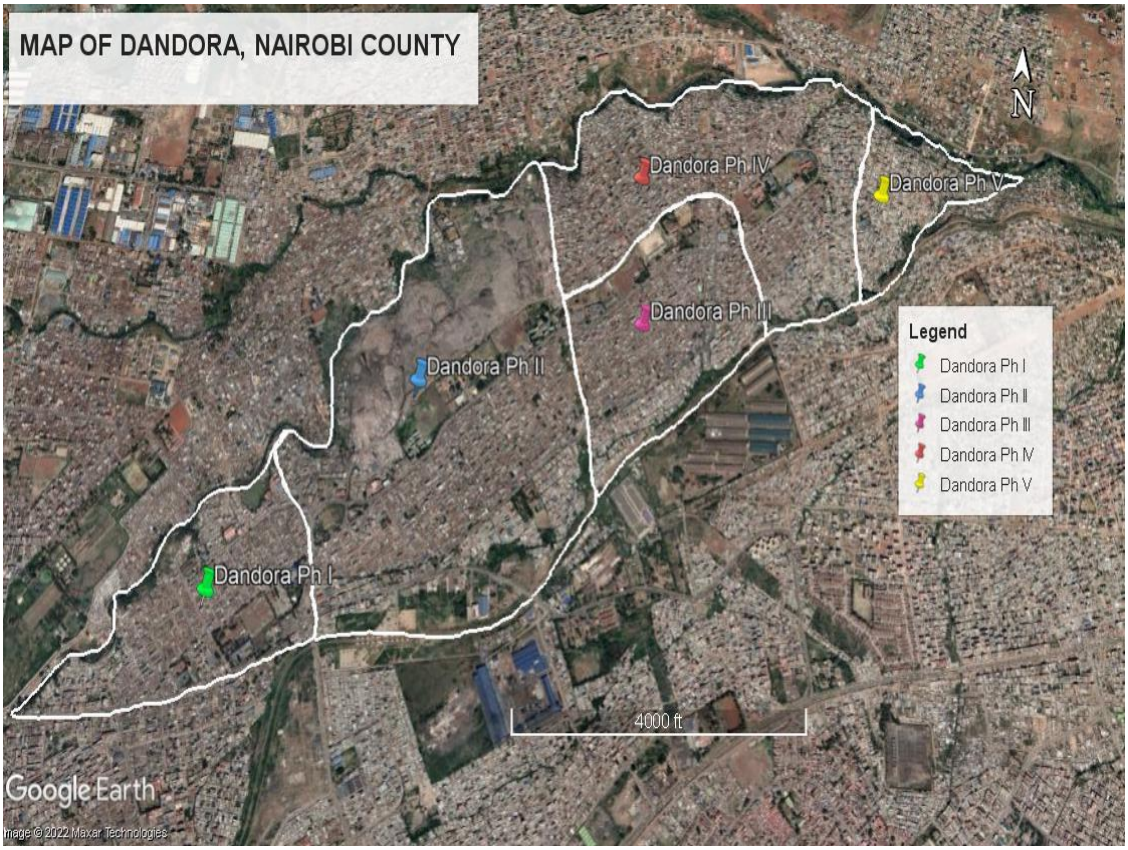

Figure 3.2: Wards of Dandora

Source: OSM Google Earth, 2022

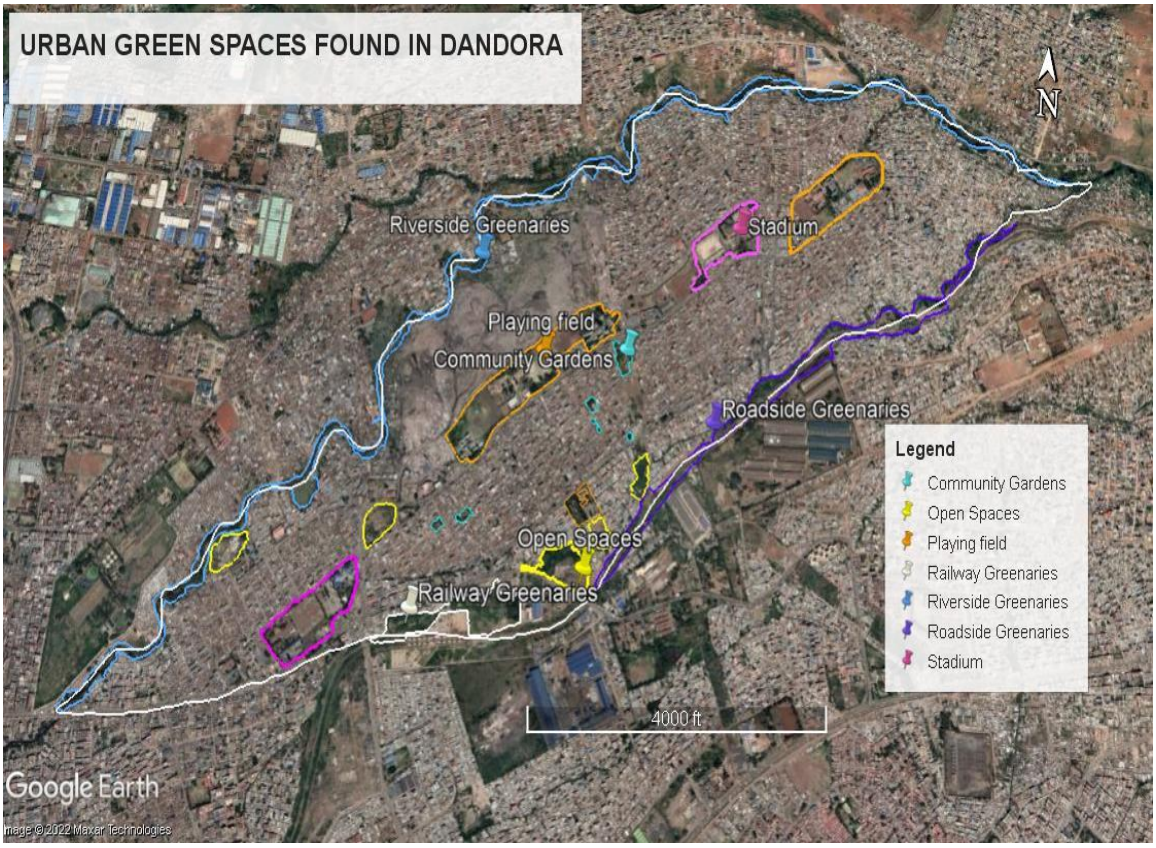

Figure 3.3: UGS in Dandora

Source: OSM Google Earth, 2022

3.1.1 History of the Study area

Dandora was established in 1977 by the World Bank and Nairobi City Council to cater and provide an area for the less fortunate and rapid growing population to stay in and it continued to grow and expand into a slum. One peculiar aspect about Dandora is that it is famous for hosting the largest dumpsite in not only Kenya but also East Africa at large (Moore, 2022). Due to high population pressures, it's now a challenge to manage the solid wastes from these areas due to the expansion of industrial and domestic sector across Nairobi. This major problem in the site has been poor solid wastes disposal and management. The Dandora dumpsite located in the study area was declared full decades

ago but dumping of wastes is still on-going. This has increased the issue of indiscriminate dumping all over the vicinity including in the UGS.

3.1.2 Population

Dandora' population has experienced an exponential growth since 1977. According to Kenya Population Housing Census (KPHC) reports 1980 and 2019 the household population grew from 22,672 in 1979 to 142,046 by 2019. Current people's population stands at 295,670 (KNBS, 2019). The population influx in Dandora is mainly attributed to high urbanization, coupled with factors as low rent charged in the area compared with other places in Nairobi. High population densities and high unemployment level have resulted in large percent of Nairobi's population living in poor conditions.

3.1.3 Climatic conditions

The climate is warm and temperate in Dandora and whole of Nairobi. The climate is considered to be Cfb according to the Koppen-Geiger climate classification the average annual rainfall is 869mm. The driest month is July, with 14mm of rainfall an average of 191mm, the most precipitation fall in April. The difference in precipitation between the driest month and the wettest month is 177mm. During the year the average temperature varies by 4.0°C. The wind blows at 16mph which is equivalent to 4km/h N. The humidity of the area is about 72.8 (Climate Data Org., 2018).

3.1.5 Vegetation

Nairobi County having black cotton soils with moderate rainfall makes it favorable for high growth of vegetation but Dandora has little vegetation. Though there exist numerous trees and shrubs along the Nairobi River Riparian Reserves in the Gitara Area.

3.2 Research Design

The study involved both a qualitative and quantitative research that sought to explore drivers that influence the use of UGS, effects of human activities on UGS and lastly find out the effectiveness of the existing legislative and institutional policy frameworks for governance of green spaces. The qualitative aspect helped to describe the variation and diversity of the human activities and their drivers and impacts on the UGS and also the perceptions and attitudes of key informants towards the latter. The quantitative aspect assisted in quantifying the diverse types of human actions and their impacts on the UGS, opinions and responses of the topic under study. Quantitative data helped gauge the numbers and frequencies of the responses from the questionnaires filled by the sample population and finally conclusion drawn.

Sample survey design was adopted for this particular study. In survey design (Mugenda & Mugenda, 2003), the researcher selects a sample of respondents from a population and administers a standardized survey tools and instruments to them. This study design was convenient because the researcher collected information and data using questionnaires and key informant interview schedules.

3.3 Nature and source of data

The primary data from the field gave first hand data about the general outlook on the drivers and types of human activities on UGS in the study area and also the impacts of these human activities on the UGS in this area. The secondary source of data on the other hand was collected from documented information, which included writings by other authors about

the topic of the study as literature on the legislative and institutional policy framework on the green spaces governance of the area.

3.3.1 Primary source of data

The primary data was obtained from sampled questionnaires, Focus Group Discussions, field observation, photography and interviews.

3.3.2 Secondary source of data

This involved identification, collection and analysis of published and unpublished information about the study area, the concepts of impacts on human activities on green spaces, the subject of the study and with much reference on; legislative and institutional policy framework for the governance of green spaces establishments. This was accessed from the relevant libraries at the university, journals, magazines, internet sources and from published and unpublished reports on Urban Green Spaces generally and Nairobi in particular.

3.4 Target population

The target population was the Dandora residents who are the users of these green spaces and the commercial business adjacent to green spaces. Households majorly formed a special respondent group in the study because they have high likelihood of possessing past and present knowledge of activities carried in and out of the green spaces which surrounds them and how the spaces have been affected overtime. Other respondent groups included; The Nairobi County Council, NEMA officials, Ministry of Land, Housing and Infrastructure, Local opinion leaders (Chiefs), Community Based Organizations (CBO).

Through opinions on existing policy, legal and administrative framework governing green spaces and their level of effectiveness were collected.

3.5 Sample size

According to 2019 Census KBS, (2019) Dandora has a population of 295,670, therefore the sample size for resident selection in this research was calculated using the Naissuma, (2000) formula below:

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

Where;

n = sample size

Cv = coefficient of variance 0.5

N = population size

e = allowed error +5%

1=the desired level of precision

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

n = 99.9665

n = 100

100 residents (household heads) were selected from the respective administrative wards to participate in the research.

A total of 30 business units were randomly selected to participate across all wards. In descriptive survey study according to Gay (1981), Mugenda and Mugenda (2013), 30 cases

or more or 10% percent of the accessible population is enough to determine the sample size of a particular target population.

3.6 Sampling Procedure

3.6.1 Probabilistic sampling methods

Stratified and simple random sampling and were used for probability sampling. They were used to describe the current state of the UGS in Dandora and understand the diverse types of activities taking place within these spaces and determine their drivers and impacts that they pose on UGS and the opinions of the households in regards to the current status of the green open spaces. Since the study area has 5 administrative ward (phase I, phase II, phase III, phase IV and phase V), firstly, the study area was divided into 5 strata where each administrative ward represents a stratum. Then secondly, depending on the population size of each administrative stratum, 12 (Dandora Phase 1), 24 (Dandora Phase 2), 14 (Dandora Phase 3), 29 (Dandora Phase 4), 22(Dandora Phase 5) respondents were randomly selected in each of the administrative strata to participate in questionnaire hence reducing biasness.

Since the total number of businesses within Dandora's UGS is not documented, a total of 30 business units were randomly selected to participate across all wards (6 per every ward) to participate in the study through interviews (a justification on why 30 business unit were interviewed is provided in pg.58).

Table 3.1; Number of respondents per administrative ward to participating in the household questionnaire

Stata	**Population**	**Number of respondents to be picked per stratum**	**Number respondents participate in the household questionnaires to be issued**
1.Dandora Phase I	34,971	$\frac{34,971}{295,670} \times 100 = 12$	12
2. Dandora phase II	69,923	$\frac{69,923}{295,670} \times 100 = 24$	24
3. Dandora phase III	40,239	$\frac{40,239}{295,670} \times 100 = 14$	14
4. Dandora phase IV	85,146	$\frac{85,146}{295,670} \times 100 = 29$	29
5. Dandora phase V	65,391	$\frac{65,391}{295,670} \times 100 = 22$	22
Total	**295,670**	**100**	**100**

3.6.2 Non probabilistic sampling method

Purposive sampling was utilized as well for this study. In purposive sampling technique the researcher partakes in the judgmental selection of participant to the study by taking into consideration their importance and the overall needs of the study (Mills, Dureps, & Wiebe, 2010). Purposive sampling was used to select, NCC officials, relevant non-governmental institutions associated with green spaces management, operating in the study area to obtain respective information on the subject of the study. Structured interviews were carried out on these institutions.

Table 3.2: Summary of the Sampling frame

Category	Sample Size	Sampling Technique
Household heads	100	Stratified Sampling
Business	30	Random Sampling
Chiefs	5	Census
NCC	1	Purposive Sampling
Ministry of land official	1	Purposive Sampling
NEMA	1	Purposive Sampling
CBOs	5	Purposive Sampling
TOTAL	**143**	

3.7 Data collection techniques

3.7.1 Questionnaire

Written questionnaire, both open and closed ended in nature were used in the collection of data from the households and business communities. The household questionnaire captured the view of the households with regard to get information about what drives them to go to the UGS, diversity of social activities they engage in and the impacts the latter possess on the available green spaces in the area. Therefore, the researcher prepared the questionnaires for the sampled population to gauge their understanding on topic under study. A total of 100 household questionnaires were used to gather the information from all the phases. The household heads from each household were targeted to fill the household questionnaires.

3.7.2 Interviews

Interviews with 30 business unit within UGS, 1 NCC official, 1 NEMA official, 1 civil service in ministry of Lands, 5 chiefs and 5 CBOs working on green open spaces related activities within Dandora were conducted. These interviews helped the researcher understand their mandates in the management of these spaces within Dandora.

3.7.3 Observation

Observations were made through a structured observation checklist which gathered information on the status of the green spaces in the study area. The real situation on the ground and the facial expressions, attitudes and body language were also noted. Through observation this research was able to observe the diverse types of human activities and their impacts on these spaces. The study utilized an observation checklist to provide information about the actual conditions and activities to be observed on these UGS.

3.7.4 Photography

The photographs were used to capture the general conditions of the study area, types of human activities and their impacts on green spaces in Dandora.

3.7.5 Review of documented information

This involved desktop review which focused mainly on both published and unpublished literature relevant to the project. The documents reviewed included acts of parliament and relevant policy documents, relevant writing by various authority on the study topic. The documented information assisted a lot in the realizing the objectives of the study.

3.8 Data validity and reliability

3.8.1 Data validity

Validity is the measurement of the degree of accuracy of a data collection instrument under construction (Mugenda & Mugenda, 2003). Before the actual study, the data collection instrument underwent face validity, where; the researcher, supervisors had a discussion that helped modify the research instrument.

3.8.2 Reliability of the research instrument

Reliability is the measurement of the degree of a consistency of data collection instrument yielding similar results over and over through time. A pilot test was conducted by administering the questionnaire among 10 respondents who ensured that the questionnaire is appropriate and the aspects investigated were generally understandable. In order to check the reliability of the results, the study used Cronbach's alpha methodology, which was based on internal consistency. The reliability coefficient alpha is gotten by applying the Cronbach's formula.

$$\alpha = \frac{N * C}{v + (N - 1) * C}$$

Where:

N= number of questions in the instrument

C= mean covariance between items

V= mean item variance

Overall scales' reliability of the present situation and the desired situation was tested by Cronbach's alpha, which should be above the acceptable level of 0.70 (Mugenda & Mugenda, 2003; Hair et al., 1998).

Table 3.3: Reliability Results

Variable	**Cronbach Alpha coefficient score**	**No. of Items**	**Comment**
Drivers influencing the use of UGS	0.763	2	Reliable
Human activities practiced in UGS	0.801	3	Reliable
Effects of human activities on UGS	0.748	3	Reliable
Effectiveness of the PLA on UGS	0.935	5	Reliable
Overall			Reliable

Source: Pilot study data (2022)

Cronbach alpha was established for every objective which formed a scale. The table 3.3 shows that effectiveness of the PLA on UGS had the highest reliability (α= 0.935), followed human activities practiced in UGS (α=0.801), then drivers influencing the use of UGS (α=0.763) and finally the effects of human activities on UGS (α=0.748). This illustrates that all the variables were reliable as their overall reliability values exceeded the prescribed mark, 0.7.

3.9 Data analysis and presentation

The data collected was analyzed and presented using descriptive statistics and qualitative method depending on their nature. The data was first subjected to computation of descriptive statistics which include; frequencies, averages, percentages, tabulations and ranking. Hypotheses were tested using Multinomial logistic regression analysis and the spearman's correlation analysis done at 5% level of significance. MS Excel and SPSS were

used for these purposes. Data was presented in the forms of tables, pie-charts, bar graphs, tables etc.

Multinomial logistic regression

The Multinomial logistic regression model is used on data set that has multiple nominal variables.

The study used the multinomial logistic regression to determine the amount of change in the dependent variable (frequency of visitation) accounted for by change in the independent variables (Place of residence, Gender, Age, Level of education, Occupation, Length of stay).

$$Logit\,[P(Y=1)] = \alpha + \beta 1X_1 + \beta 2X_2 + \beta 3X_3 + \beta 4X_4 + \beta 5X_5 + \beta 6X_6$$

Where by Y=1 is Frequency of visitation

$X_1 =$ Place of residence, $X_2 =$ Gender, $X_3 =$ Age, $X_4 =$ Level of education, $X_5 =$ Occupation, $X_6 =$ Length of stay.

Regression constant$_2$ and β1, ^{1} β2…. β6^1 are^1 $_2$coefficients of$^1{}_2$ determination.

The following assumptions were tested. Multicollinearity diagnostic test was done to establish if the predictors are highly correlated with one another. A Spearman's correlation was done to check correlation between predictors. If the correlation is above Coefficient 0.7, then the multinomial logistic regression cannot be done. The spearman correlation coefficient was below 0.7 among the predictors correlated, this meant the test met the threshold.

Linearity of independent variable and logit was done using the visual inspection of the scatter diagram to establish the relationship between each predictor and the logit variable.

The assumption on linearity was met after visualizing the dots running parallel with the diagonal line on the scatter diagram.

Spearman's Rank Correlation Analysis

The study used the spearman's rank correlation efficient to measure the association between human activities and the negative impacts. The Spearman's rank order formular states:

$$r_s = 1 - \frac{6\sum d^2}{n(n-1)(n+1)}$$

Where:

d= Difference in rank between the items in a pair

n= number of items

$\sum$ =sum of differences

Table 3.4; Summary of data matrix (sources, collection methods, analysis and presentation) for each objective.

Research objectives	**Data needs (Variables)**	**Data sources**	**Data collection methods**	**Data analysis methods**	**Data presentation methods**	**Expected outcomes**
1. To identify the drivers that influence the use of Urban Green Spaces in Dandora.	-Percentage of residents who visits the UGS and what drives them to these spaces. - Percentage of residents who don't visit the UGS and what drives them away from these spaces. -Social, economic and environmental activities practiced in USGs in Dandora.	Field survey Key informants FGDs	Observation Interviews Photography Questionnaires	Descriptive analysis (SPSS and MS Excel)	Photographs Reports Charts Tables Descriptive report	A descriptive and inferential report indicating drivers that influence the use of UGS and types of activities carry on UGS.
2. To determine impacts resulting from human activities on Urban Green Spaces in Dandora.	-Positive effects on the UGS observed by the residents resulting from human activities carried in UGS -Negative effects on UGS observed by residents resulting from human activities carried in UGS -Overall impression of the UGS	Field Survey	Observation Questionnaires Photography	Descriptive analysis (SPSS and MS Excel)	Photographs Charts Tables Descriptive report	A detailed descriptive report indicating effects resulting from human activities carried on the UGS.

	- Current pictures on status of UGS					
3.To evaluate the effectiveness of existing institutional, legal and policy frameworks in management of Urban Green Spaces in Dandora.	Review of existing institutional policies and legal framework Level of effectiveness and compliance of these institutional, policy and legal frameworks in Dandora Awareness of the existence of these institutional policy and legal framework by the public Who manages Dandora' Green Spaces? Management challenges encountered in managing green spaces	Publications and journals Key informant in Chief, NCC, NEMA, CBOs, the business communities operating within the green spaces	Literature review Interviews Questionnaire	Desktop and content analysis Descriptive analysis (SPSS and MS Excel)	Reports Charts Tables	Comprehensive descriptive report on effectiveness of institutional, policy and legal frameworks.
H0; There exist no significant relationship between resident's socio demographic characteristics and their frequency of visitation in UGS.	Relationship between socio-demographic characteristics and Resident's frequency of visitation	Field survey	Questionnaire	Multinomial Logistic Regression analysis	Tables	Comprehensive inferential report to disapprove or to agree with this null hypothesis.

H0; There is no relationship between human activities (social, economic, environmental activities) and the negative effects on UGS.	Relationship between social, economic, environmental activities and negative effects on UGS.	Field survey	Questionnaire	Spearman's Correlation Analysis	Tables	Comprehensive inferential report to disapprove or to agree with this null hypothesis.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Introduction

The chapter presents interpretations and analysis of the results for the study on an investigation on drivers, effects and policy implications of human activities on Urban Green Spaces in Dandora, Nairobi County. The generated data is presented in different ways such as table, pie charts, and graphs. This chapter also explains the represented data and discussion so as to explain the findings further based on the objectives. This chapter presents the results, analysis and interpretation of data realized from the research undertaken. This is presented in tandem with the objectives and questions set at the beginning of the study. The results are displayed in tables, figures and plate form, and detailed description made to show out the responses as given by the interviewees in Dandora. First the demographics of the respondents are presented.

4.1 Demographic Information

4.1.1 Gender of Respondent

Gender balance was taken into consideration with the number of male and female respondents who filled the questionnaires with a slightly higher figure for the female (52%).

4.1.2 Age of the respondents

From the findings it was seen that most respondents were between ages of 30-40 at 41% followed by those between the ages of 20-30 at 32%, then those between ages of 40-50 and below 20 had percentages of 13% and 12% and the remaining 2% were those aged above

51 years as showed in **Fig 4.1**. This demonstrated that majority of the respondents were youth.

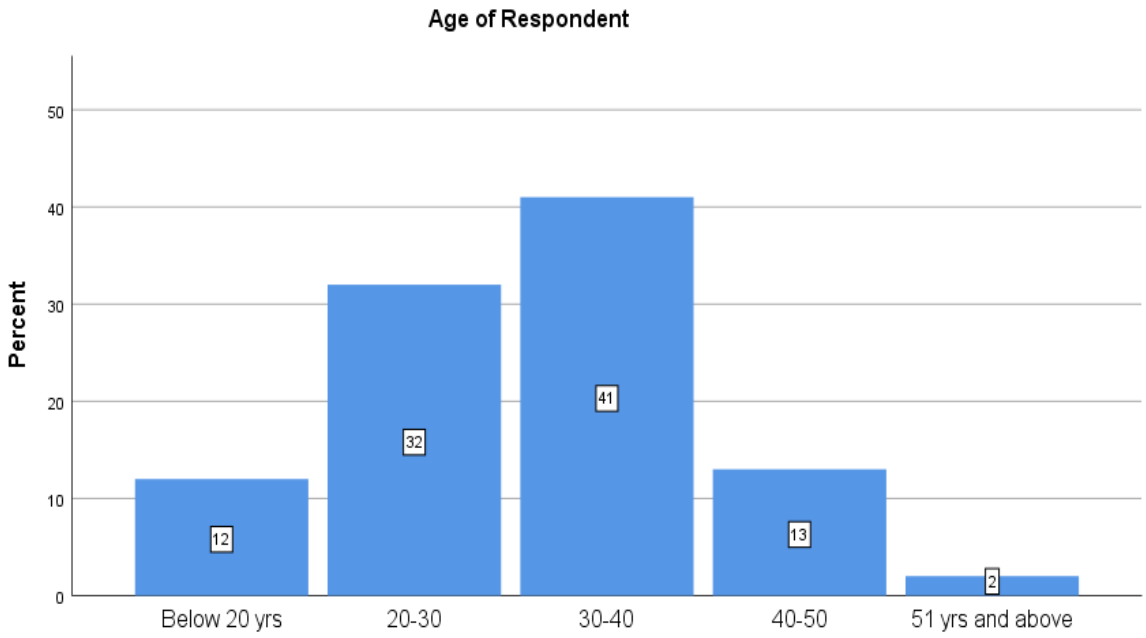

Figure 4.1: Age of the Respondents

4.1.3 Level of education

Twenty one percent (21%) of the respondents had gone through primary education. 62% had gone through secondary. 17% of the respondents had reached tertiary level of education, as shown in. The result demonstrated that most of the inhabitants do not have education beyond the secondary level.

4.1.4 Occupational Status

Majority (56%) of the respondents were self-employed while 24% were employed. 20% were unemployed. This shows that majority of the residents are self-employed commonly known as 'Jua Kali' sector.

4.1.5 Period of stay

Fifty percent (50%) of the respondents who participated in the study had stayed in Dandora for a period between 1-10 yrs. 32% had stayed for a period between 11-20 yrs. 10% had stayed for a period of 21 yrs. and above. Lastly 8% of the respondents had stayed below 1year as shown in **Tab 4.1**. From the study it is was established that most of the inhabitants have the history of the area and their opinions are very important for the study.

Table 3.1: Period of stay

	Percent (%)
Below 1yr	8
1-10	50
11-20	32
21 yrs. and above	10
Total	**100**

4.1.6 The locality of the respondents

12% of the respondents who participated in the study were from Phase I, 24% were from Phase II, 14% were from Phase III, 29% were from Phase IV. Lastly 21% of the respondents were from V as shown in **Fig 4.2**. Majority of the respondent were from Phase II and IV because these areas host high populations than the rest of the other localities (see **Tab 3.1**).

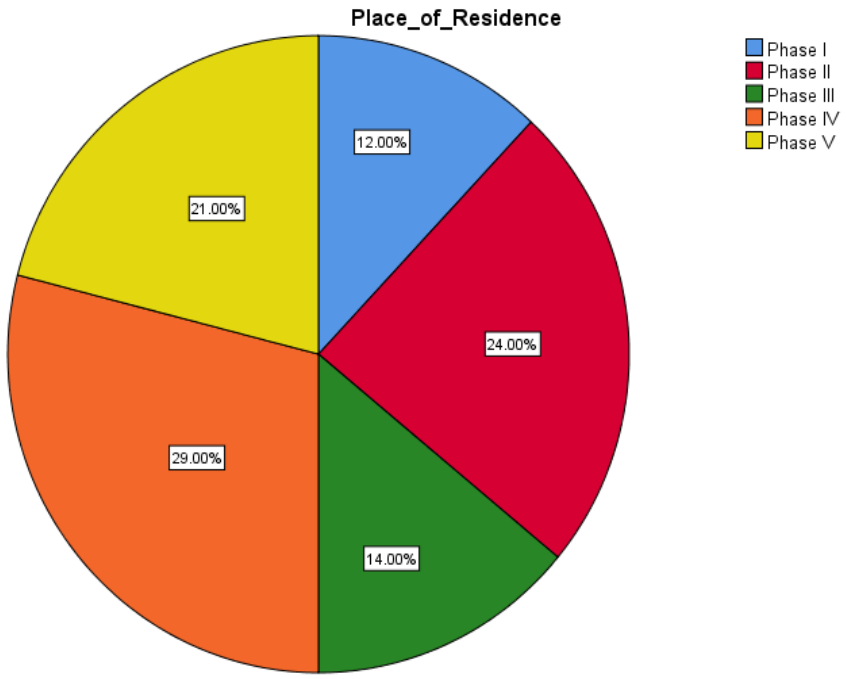

Figure 4.2: Place of Residence

4.2 Drivers influencing the use of Urban Green Spaces in Dandora.

4.2.1 Resident's visitation and frequency to UGS

From the findings, 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 **Fig 4.5**.

Fig 4.3 below shows the residents frequency of visitation to UGS in Dandora. Majority of the respondents (41%) visit UGS on weekly basis (once or twice mostly on weekends). 34% visit on daily basis. 9% visit UGS on monthly basis due to the fact that they are employed or busy running business. Lastly 16% of the respondents said they never visit UGS at all at any point in time.

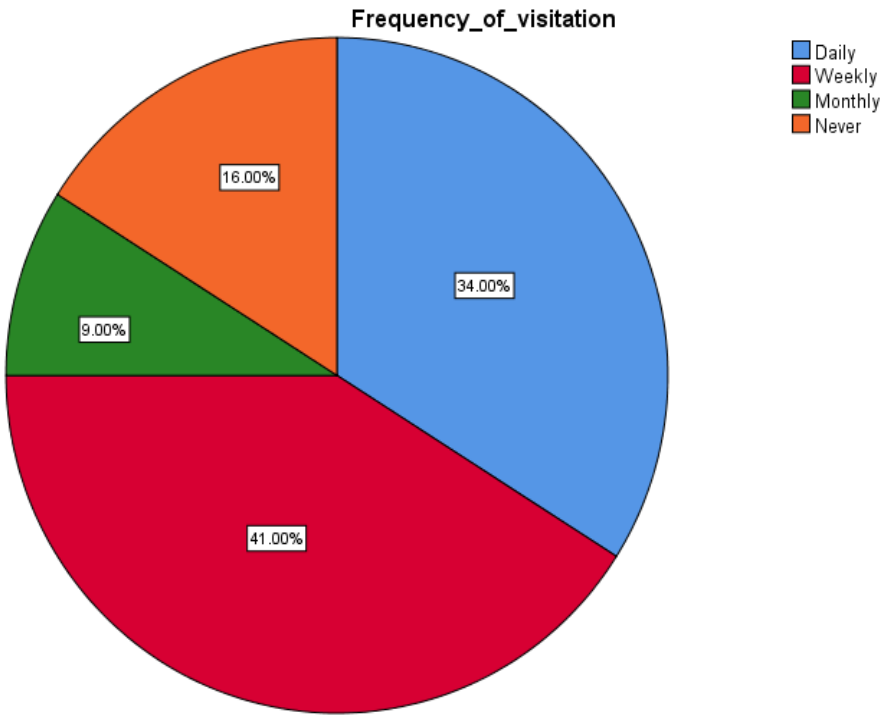

Figure 4.3: Frequency of UGS visitation

4.2.2 Driving factors that attracts resident to use 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 proximity to 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. Majority of the respondent said what drives 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 by **Fig 4.4** below.

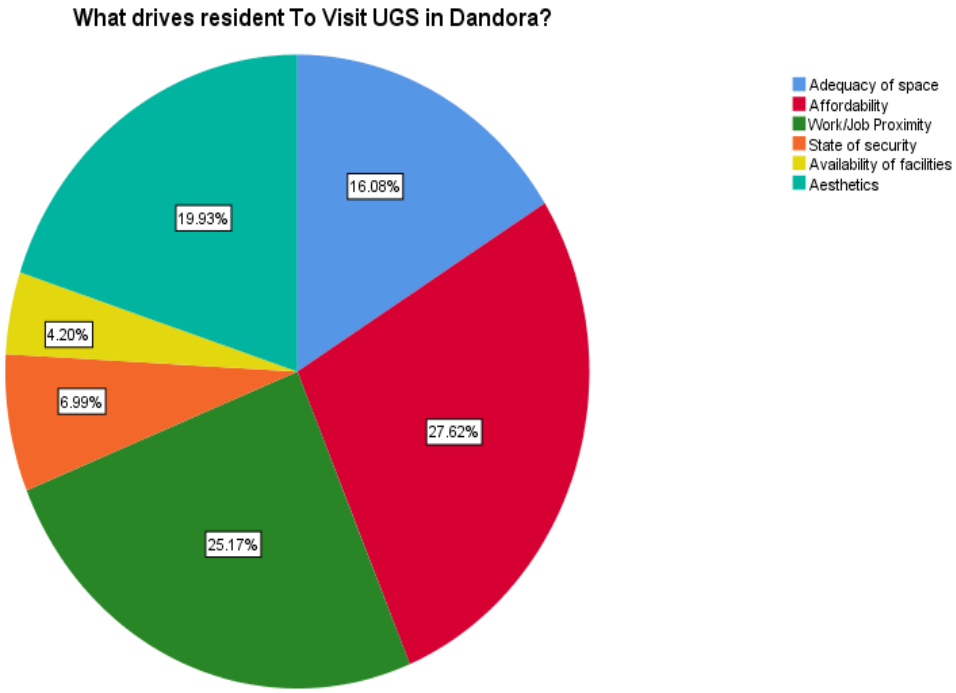

Figure 4.4: Driving factors that attracts resident to use UGS in Dandora

This study supports O'Neill and Thomas (2012) research that concludes that most people are attracted to the most affordable UGS options. This study also supports Aziz (2018), Wang et al. (2013) and Carr, et al. (1996) conclusion that the UGS proximity to home and working places improves the overall accessibility of the latter hence making them to be attractive to the residents.

4.2.3 Driving factors discouraging residents not to use/visit UGS

From the 16% of the respondents who do not visit UGS; 25.5% said insecurity and inadequacy of space in the UGS drives them away from visit, 19.15% are driven away by congestion and inadequate leisure time (high job and family demands), 6.4% do not visit the spaces because of high cost if visitation, and lastly 4.3% of the respondents from the above 16% do not visit the UGS because they find them dirty and non-appealing. Majority

of the respondent said what drives them away from visiting UGS was the state of insecurity and inadequacy of space. This is depicted by **Fig 4.5** below.

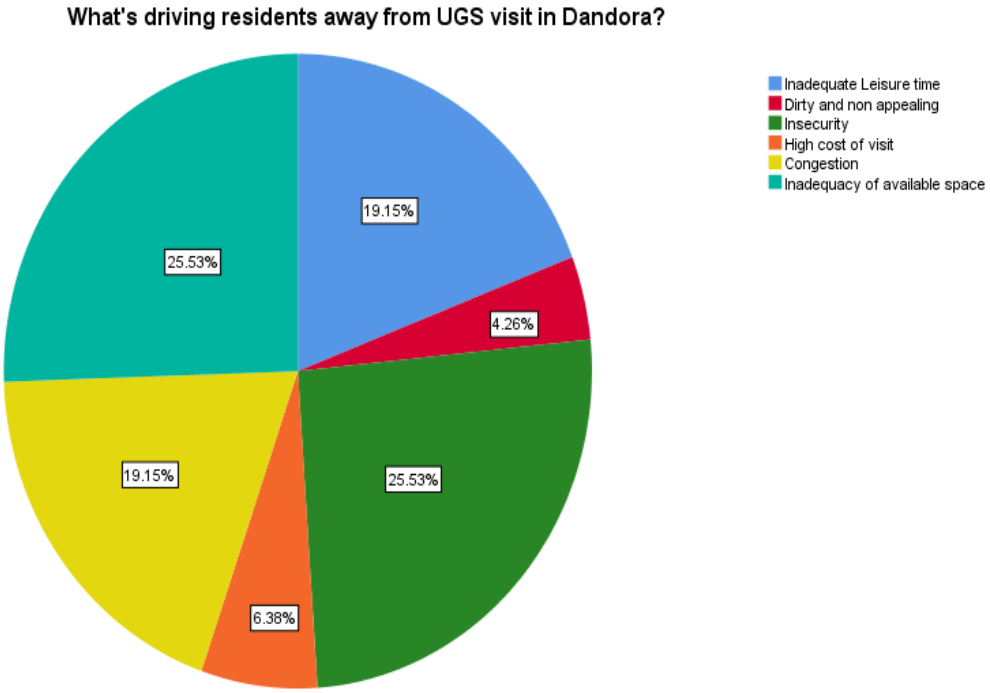

Figure 4.5: Driving factors discouraging residents not to use/visit UGS in Dandora

The study findings agree with Wakaba (2016) that insecurity could be one of the factors discouraging residents not to visit UGS because no one(especially vulnerable groups; women, the disabled and children) wish to become any victim of crime.

4.2.4 Human activities that are practiced in or around UGS

4.2.4.1 Social activities practiced in UGS

From the study findings, 39.01% of the respondents said that they participate in meditation and nature walks, 28.02% participates in fitness/games and sport, 9.34% participate in scenic viewing and animal watching, 8.24% participate in secular music concerts and social

events, 4.95% said they participate in pet walks, 2.75% participate in religious activities such as crusades and weddings, 1.10% said they participate by dumping household wastes in the UGS and lastly 6.59% said that they do not participate in any of the above social activities. Majority of the respondents participate in meditation and nature walks and games and sport because the latter tends to help them maintain the high state of both physical and mental fitness.

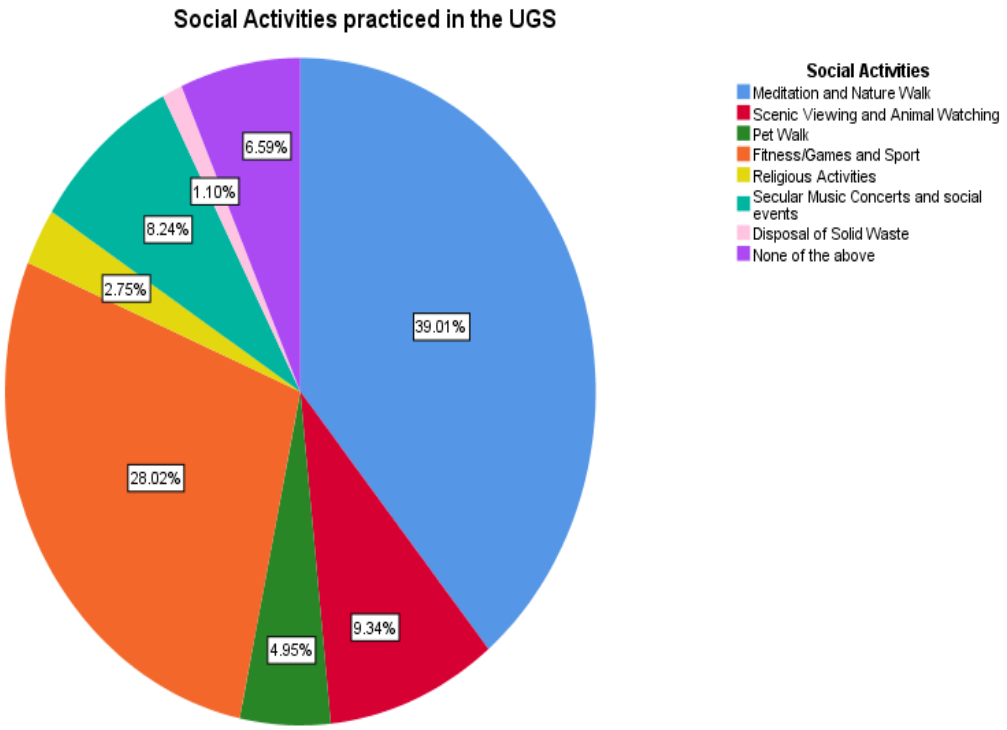

Figure 4.6: Social activities practiced in UGS

The study findings agree with that of Cities and Inclusive (2017) that the UGS do not only serve as aesthetic and decorative purpose, but also a space where the society can conduct it 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 America College Health Association (2020), WHO and Black (2018), BJ Psych Int. (2017)

that UGS give residents a place meditate and relieve stress from families and after long working hours.

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

Plate2: Upcoming birthday celebration setup in Believers Garden Dandora Phase II

Relationship between residents who claim that they don't visit UGS and disposal of waste in the UGS

Table 4.2: Correlation between residents who claim that they don't visit UGS and disposal of waste in the UGS

Correlations

		Residents who claim that they don't visit UGS	Disposal of waste in UGS
Residents who claim that they don't go visit 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).

From the Spearman's correlation results as shown in table 4.2 in the two tailed Spearman Correlation indicated a positive correlation between residents who claim that they don't visit to UGS and disposal of waste in the 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 disposal of waste in the UGS.

The correlation table above reveal that residents who don't go to UGS have a moderate positive correlation (r=.478) relationship with the disposal of waste in UGS. With this result it is clear that those with do not visit the UGS has a high chances of waste disposal in these spaces.

4.2.4.2 Economic Activities Practiced in UGS

From the study findings, there are a number of economic activities carried in and around green spaces. Hawking was the most popular business which was represented by 29.33%, Garage followed with 20%, then open-air market which was represented by 16.67%. Children entertainment was represented by 10%, 6.67% represented small scale agriculture, car wash, cybercafé and parking lots. Lastly 3.33% of the respondent use the UGS as avenue of selling hard drug. The study highlighted that hawking holds the most percentage while drug peddling had the least.

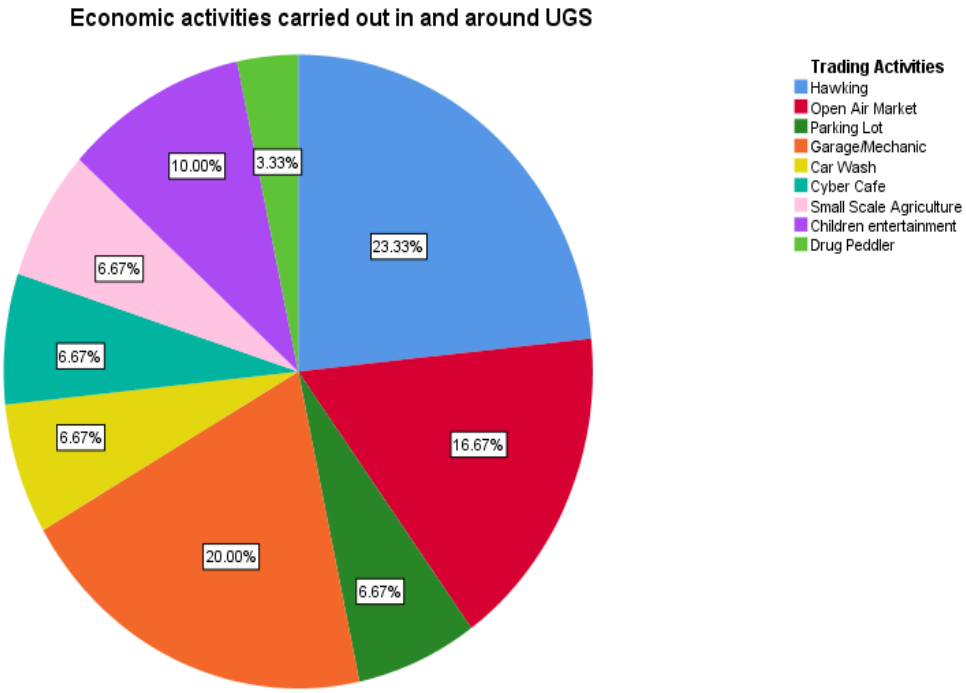

Figure 4.7: Economic activities carried in and around UGS

When compared to the results by Chen, (2012), the study confirms that UGS creates livelihood through provison of space to host most of the informal economic activities especially hawking and open air market. Our study results demnstrated that most of the

UGS have been converted to host car parks and garage as found elsewhwere in the studies of Shoup and Angeles (2018), Green Parking Lot Resource Guide,(2012) and Shapiro and Arkoosh, n.d.. This present study also confirmed the findings by Abdul and Mariapan (2010) who found that UGS could be used in criminal activities such as drug trafficking and peddling.

Plate 3and 4: Hawking in Dandora Phase I market and Car garage in Phase II

Plate 5: Car parking in Phase II

Plate 6 and 7: Open Air Market in Stage 41 in Phase III and Small Agriculture in Phase 5.

4.2.4.3 Environmental Activities Practiced in UGS

From the study findings, 29.12% of the respondents said that they have participated in Community Clean Up, 28.57% have participated in afforestation initiative, 16.48% have participated in gardening and conservation 9.34% have participated in environmental restoration competitions, lastly 16.48% said that they have never participated in any of the above environmental activities. It's evident that majority of the respondents (83.52%) seemed to have participate in environmental activities. This infers that Dandora residents have an environmental spirit.

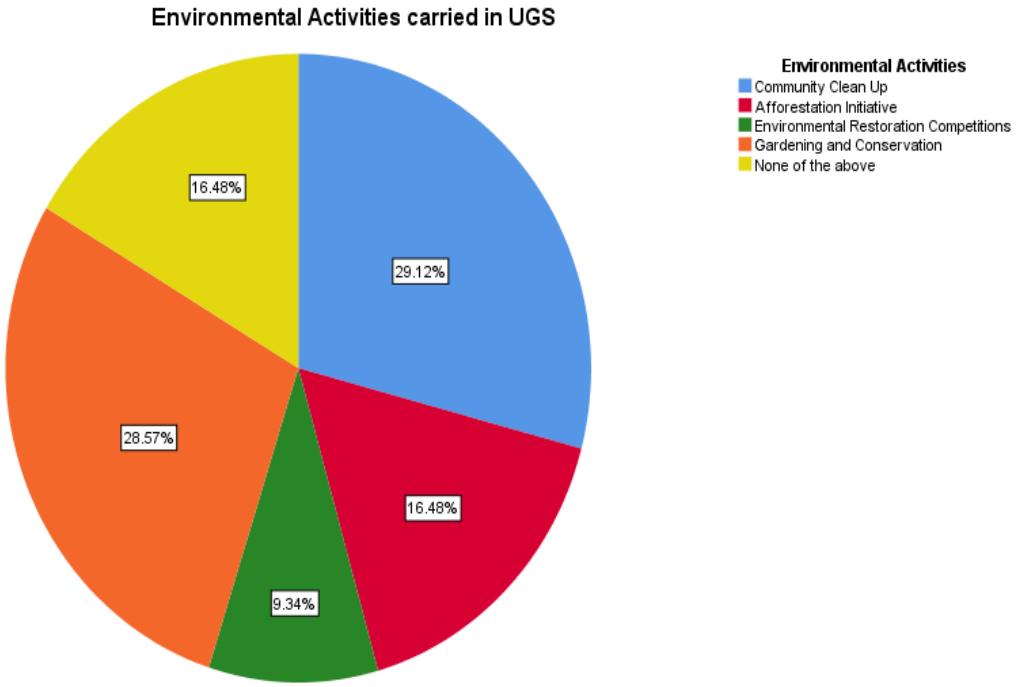

Figure 4.8: Environmental activities practiced in UGS in Dandora

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

1 Plate 8: Community gardening Dandora Phase IV and III respectively

Plate 9: Afforestation on a roadside greenery in Dandora Phase 5

4.2.5 Relationship between socio demographic characteristics and frequency of visitations

H_0 There is no significant relationship between demographic characteristics and frequency of visitations and UGS

The hypothesis tests if there exist a significant effect of socio demographic characteristics on frequency of visitation on UGS. Using multinominal regression model, the dependent variable frequency of visitation was regressed on predicting variables; (place of residence, gender of respondents, age of the respondents, level of education, occupation, length of stay) to test the H_0 in table 4.3 below. The model fitness was assessed using the Chi-square statistic. The Chi-square value was 90.571 and the p-value was less than 0.05 indicating a significant relationship between the dependent variable and independent variable in the model, that the social demographic characteristics has an influence on frequency of visitation.

With P-values greater than .05, both the Spearman's (164.158) and deviance (132.564) statistic test proves that the model is fit. The Pseudo R-square measures are .596 (Cox and Snell), .650 (Nagelkerke) and .365 (Mc Fadden) demonstrating that the model accounts for 36.5% to 65.0% of variance on frequency of visitation from predicting variables. The likelihood ratio test proved only Place of resident being significant to the study while the other are not significant to the final model.

From the parametric estimator results, among residents who visit the UGS on a daily basis, living in Phase 2 had a significant impact on the frequency of visitation. Any resident in Phase 2 will prefer visiting UGS 2.321 times more on a daily basis to never visiting. Residents who visit the UGS on a weekly basis, living in Phase 2 had a significant impact

on the frequency of visitation. Any resident in Phase 2 will prefer visiting UGS 2.413 times more on a weekly basis to never visiting. Residents who visit the UGS on monthly basis, living in Phase 3 and Phase 4 had a significant impact on the frequency of visitation. Any resident in Phase 2 and 3 will prefer visiting UGS 4.083 and .911 times more on a monthly basis to never visiting.

Table 4.3: Multinomial logistic regression to check significant effect of socio demographic characteristics on frequency of visitation on UGS

Model Fitting Information

Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	234.933			
Final	144.362	90.571	42	.000

Goodness-of-Fit

	Chi-Square	df	Sig.
Spearman's	164.158	210	.992
Deviance	132.564	210	1.000

Pseudo R-Square

Cox and Snell	.596
Nagelkerke	.650
McFadden	.365

Likelihood Ratio Tests

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	144.362[a]	.000	0	.
Place of Residence	168.153	23.792	12	.022
Gender of the Respondent	148.060	3.699	3	.296

Age of Respondent	163.855	19.493	12	.077
Level of Education	150.922	6.560	6	.363
Occupation	146.508	2.146	3	.543
Length of Stay	148.073	3.712	3	.294

Parameter Estimates

Frequency of visitation [a]		B	Std. Error	Wald	df	Sig.
Daily	Intercept	17.028	4104.751	.000	1	.997
	[Place of Residence=1]	2.439	1.522	2.567	1	.109
	[Place of Residence=2]	2.321	1.326	3.064	1	.040
	[Place of Residence=3]	2.394	1.616	2.195	1	.138
	[Place of Residence=4]	-.358	1.096	.107	1	.744
	[Place of Residence=5]	0[b]	.	.	0	.
	[Gender of the Respondent=1]	1.287	.928	1.925	1	.165
	[Gender of the Respondent =2]	0[b]	.	.	0	.
	[Age of Respondent=1]	-2.292	4615.023	.000	1	1.000
	[Age of Respondent=2]	-18.267	4104.750	.000	1	.996
	[Age of Respondent=3]	-18.209	4104.750	.000	1	.996
	[Age of Respondent=4]	-18.405	4104.750	.000	1	.996
	[Age of Respondent=5]	0[b]	.	.	0	.
	[Level of Education=1]	.489	1.293	.143	1	.705
	[Level of Education=2]	1.806	1.230	2.154	1	.142
	[Level of Education=3]	0[b]	.	.	0	.
	[Occupation=1]	-2.315	1.678	1.903	1	.168
	[Occupation=2]	-3.413	1.363	6.273	1	.012
	[Occupation=3]	0[b]	.	.	0	.
	Length of Stay	.786	.721	1.187	1	.276
Weekly	Intercept	-4.889	3.041	2.585	1	.108
	[Place of Residence=1]	.117	1.573	.006	1	.940
	[Place of Residence=2]	2.413	1.203	4.026	1	.045
	[Place of Residence=3]	1.232	1.545	.635	1	.425
	[Place of Residence=4]	-.748	.981	.582	1	.446
	[Place of Residence=5]	0[b]	.	.	0	.
	[Gender of the Respondent=1]	1.289	.853	2.283	1	.131
	[Gender of the Respondent =2]	0[b]	.	.	0	.

	[Age of Respondent=1]	18.399	2109.375	.000	1	.993
	[Age of Respondent=2]	1.802	1.605	1.260	1	.262
	[Age of Respondent=3]	.582	1.408	.171	1	.679
	[Age of Respondent=4]	.658	.000	.	1	.
	[Age of Respondent=5]	0[b]	.	.	0	.
	[Level of Education=1]	-.906	1.196	.574	1	.449
	[Level of Education=2]	1.122	1.128	.990	1	.320
	[Level of Education=3]	0[b]	.	.	0	.
	[Occupation=1]	1.798	1.818	.978	1	.323
	[Occupation=2]	.340	1.562	.047	1	.828
	[Occupation=3]	0[b]	.	.	0	.
	Length of Stay	1.138	.688	2.738	1	.098
Monthl	Intercept	-24.596	2411.365	.000	1	.992
y	[Place of Residence=1]	2.766	2.182	1.606	1	.205
	[Place of Residence=2]	-12.791	1811.615	.000	1	.994
	[Place of Residence=3]	4.083	2.034	4.030	1	.045
	[Place of Residence=4]	.911	1.482	.378	1	.049
	[Place of Residence=5]	0[b]	.	.	0	.
	[Gender of the Respondent=1]	1.971	1.205	2.676	1	.102
	[Gender of the Respondent =2]	0[b]	.	.	0	.
	[Age of Respondent=1]	3.252	3215.836	.000	1	.999
	[Age of Respondent=2]	2.228	2.179	1.045	1	.307
	[Age of Respondent=3]	2.786	1.980	1.981	1	.159
	[Age of Respondent=4]	.872	.000	.	1	.
	[Age of Respondent=5]	0[b]	.	.	0	.
	[Level of Education=1]	.919	1.948	.223	1	.637
	[Level of Education=2]	1.945	1.832	1.127	1	.288
	[Level of Education=3]	0[b]	.	.	0	.
	[Occupation=1]	14.632	2411.361	.000	1	.995
	[Occupation=2]	14.103	2411.361	.000	1	.995
	[Occupation=3]	0[b]	.	.	0	.
	Length of Stay	1.526	.997	2.343	1	.126

a. The reference category is: Never.

b. This parameter is set to zero because it is redundant.

c. Floating point overflow occurred while computing this statistic. Its value is therefore set to system missing.

4.3 Effects of human activities on UGS

4.3.1 Positive effects of human activities on UGS

The respondents were given a list of positive effects that human activities have on UGS so as to rate on a 3-point Likert scale. 1-Lowly Significant extent, 2-Moderately significant, 3-Highly significant extent. Based on the study findings, the respondents agreed that the following is the extent of positive effects that human activities pose to UGS; Reduction of pollution of rivers , streams and drainage system (M=1.36, SD=.689), Sustainable solid waste management (M=1.24, SD=.622), Soil conservation (M=1.36, SD=.628), Stable security (M=1.15, SD=.435), Increased wildlife species population (M=1.53, SD=.834), Afforestation (M=2.27, SD=.777), Green grabbing (M=1.52, SD=.785), Provision of children play area (M=1.50, SD=.718), Increased aesthetics (M=1.40, SD=.752) as well as effective management and maintenance (M=1.42, SD=.684). Afforestation was the highest positive impact as a result of human activities on UGS in Dandora.

The aggregate mean for sub variables under positive effects of human activities on UGS recoded at 1.48 with a low standard deviation of 0.76. Based on the measurement scale, the values translate to lowly significance. This implies that majority of the respondents agreed that positive effects of human activities on UGS to be lowly significance. (**Tab 4.4**) and Figure (**Fig 4.14**) below.

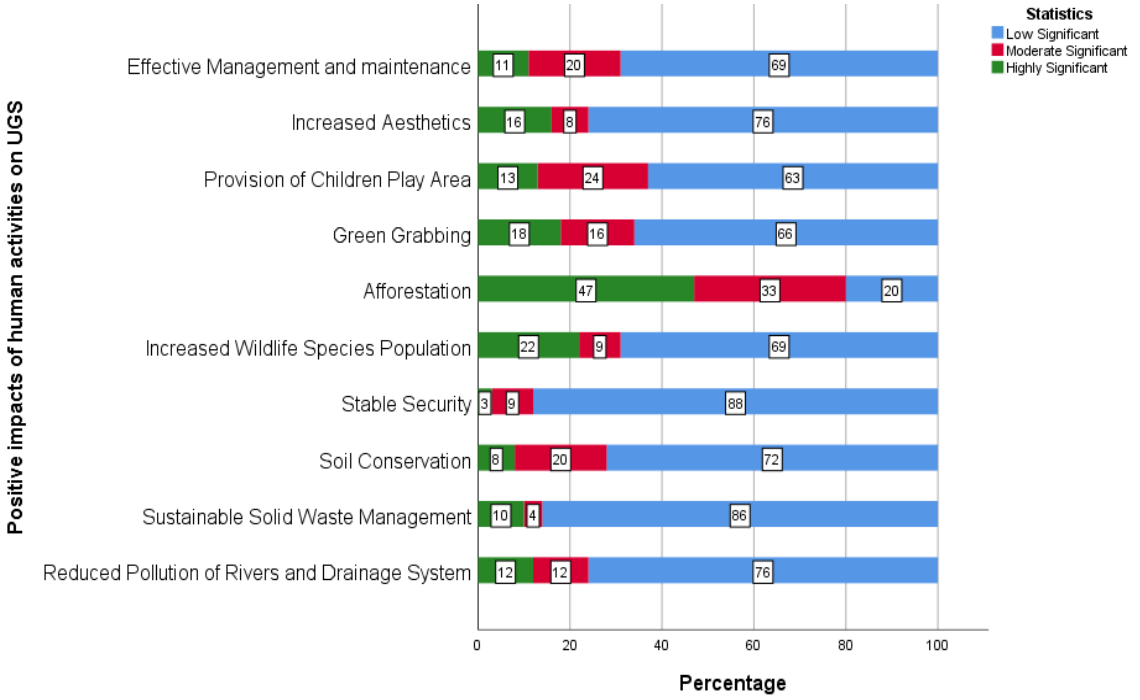

Figure 4.9: Percentages of positive effects of human activities on UGS

Table 4.4: Positive effects of human activities on UGS

Positive effects of human activities on UGS	**Mean**	**Std. Deviation**
Reduced Pollution of Rivers and Drainage System	1.36	.689
Sustainable Solid Waste Management	1.24	.622
Soil Conservation	1.36	.628
Stable Security	1.15	.435
Increased Wildlife Species Population	1.53	.834
Afforestation	2.27	.777
Green Grabbing	1.52	.785
Provision of Children Play Area	1.50	.718
Increased Aesthetics	1.40	.752
Effective Overall Management and maintenance	1.42	.684
Aggregate	**1.48**	

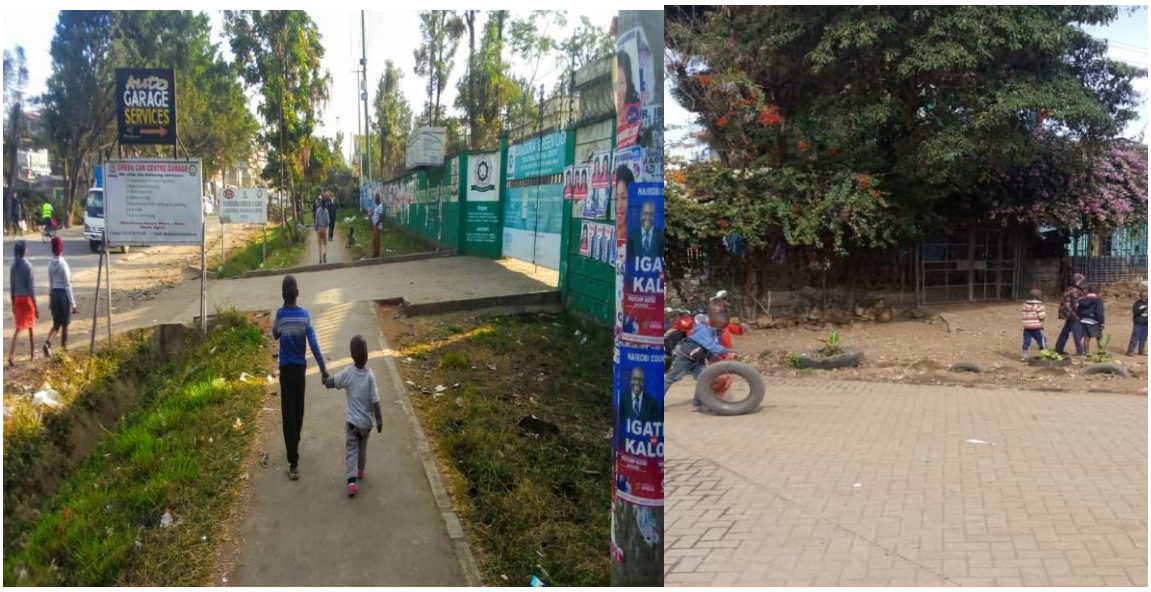

Plate 10: Carbro paved pedestrian sidewalks (On the right Phase 1 and on the left Phase I1).

Plate 11: Believers (Phase II) and Pamoja (Phase III) gardens Refurbished UGS managed by the community

4.3.2 Negative effects of human activities on UGS

The respondents were given a list of negative effects that human activities have on UGS so as to rate on a 3-point Likert scale. 1-Highly Significant extent, 2-Moderately significant, 3-Lowly significant extent. Based on the study findings, the respondents agreed that the following is the extent of negative effects that human activities pose to UGS; Pollution of rivers and streams (M=1.87, SD=.812), Poor solid waste management (M=1.44, SD=.715), Reduced vegetation cover (M=1.97, SD=.687), Soil erosion (M=2.12, SD=.798), Idlers/Insecurities (M=1.51, SD=.798), Reduced wildlife species population (M=1.90, SD=.759), Deforestation (M=2.25, SD=.592), Land use change/ land grabbing (M=1.63, SD=.812), Limited children play area (M=1.48, SD=.731), Reduced aesthetics (M=1.27, SD=.584) as well as Poor management and maintenance (M=1.70, SD=.870).

The aggregate mean for sub variables under negative effects of human activities on UGS recoded at 1.73 with a low standard deviation of 0.76. Based on the measurement scale, the values translate to high significance. This implies that majority of the respondents agreed that negative effects of human activities on UGS to be highly significance. (**Tab 4.4**) and Figure (**Fig 4.14**) below.

Reduced aesthetics was the highest negative impact as a result of human activities on UGS in Dandora. UGS were lowly impacted in terms of deforestation as seen in the table (**Tab 4.4**) and Figure (**Fig 4.14**) below.

Figure 4.10: Percentages of negative effects of human activities on UGS

Table 4.5: Negative effects of human activities on UGS

Negative effects of human activities on UGS	**Mean**	**Std. Deviation**
Pollution of Rivers Steams and Drainage System	1.87	.812
Poor Solid Waste Management	1.44	.715
Reduced Vegetation Cover	1.95	.687
Soil Erosion	2.12	.715
Idlers/Insecurity	1.51	.798
Reduced Wildlife Species Population	1.90	.759
Deforestation	2.25	.592
Land use Change and Land Grabbing	1.63	.812
Limited Children Play Area	1.48	.731
Reduced Aesthetics	1.27	.584
Poor Management and maintenance	1.70	.870
Aggregate Mean	**1.73**	

This study confirms conclusion by Maingi and Shitindo, (2021)and Martínková and Parry (2011) that most of the sporting events and economic activities tend have enormous amounts of negative effects on the green spaces due to the high production of wastes.

4.3.3 Relationship between social, economic, environmental activities and negatives effects on UGS

H_0 There is no relationship between social, economic, environmental activities and negative effects on UGS.

Table 4.6: Correlation analysis to show relationship between social and environmental activities and negative effects on UGS.

Correlations

		Residents' participation in social activities	Residents' Participation in Economic Activities	Residents' Participation in Environmental Activities
Negative Effects on UGS	Spearman's Correlation Coefficient	.018	.304*	-.502*
	Sig. (2-tailed)	.007	.013	.044
	N	100	30	100

*. Correlation is significant at the 0.05 level (2-tailed).

The Spearman's correlation results indicated that there is a positive correlation between negative effects on UGS and residents' participation in social and economic activities, this means that whenever there is a positive change in residents' participation in social activities, there is a positive increase in negative effects on UGS. Since the p in **Tab 4.5** is

less than **α=0.05**, this confirms that there is a valid relationship between negative effects on UGS and residents' participation in all the activities.

It's also clear that there is a negative correlation between negative effects on UGS and residents' participation in environmental activities, this means that whenever there is a positive change in residents' participation in environmental activities, there is a negative increase in negative effects on UGS. Since the p is less than **α=0.01**, this confirms that there is a valid relationship between negative effects on UGS and residents' participation in social activities.

The correlation tables above revel that the residents' participation in social and economic activities had a weak positive correlation of (0.018) and (0.304) respectively with negative effects on UGS. On the other hand, residents' participation in environmental activities on the other hand had moderate negative correlation of (.502). With this result it is clear that somehow residents' participation in social/economic activities has been contributing to the negative effects on the UGS found in Dandora while environmental activities seemed to have positively impact the UGS.

4.3.4 Overall impression of UGS

The study sought to find out the overall impression of the UGS according to the residents in terms of their level of satisfaction. The overall impression is important because it tends to summarize the image of the UGS in Dandora. 28% of the respondents were displeased with the overall impression of the UGS while 17% were pleased. 27% of the residents were very dissatisfied while 6% were very satisfied. Lastly 22% were neither satisfied nor dissatisfied with the overall impression of the UGS.

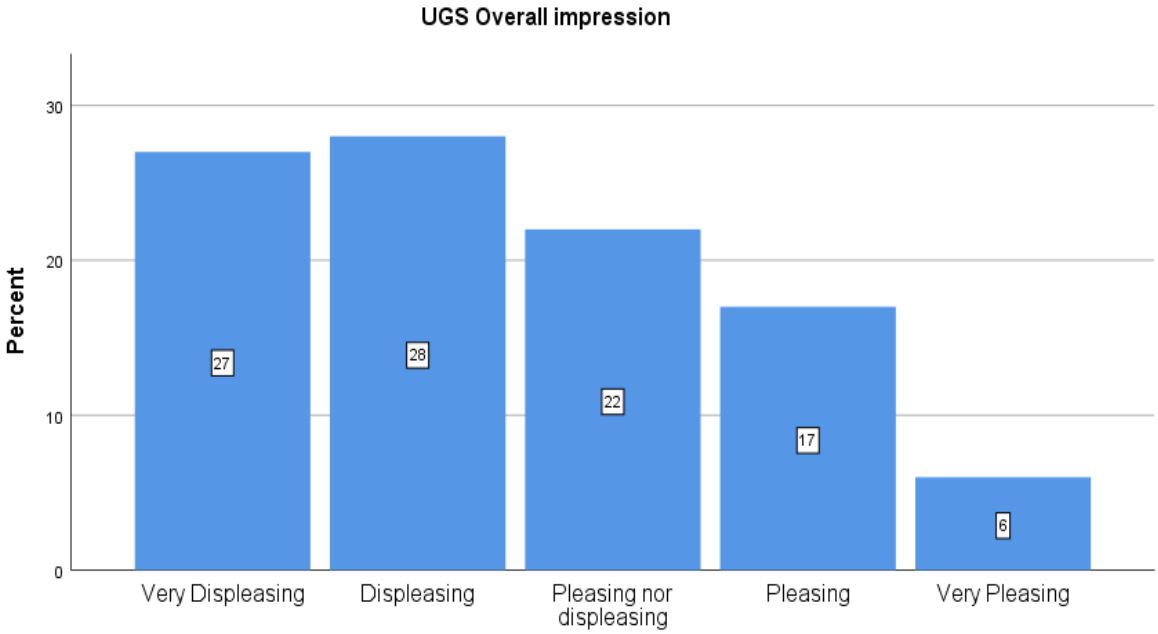

Figure 4.11: Overall UGS impression

Plate 12: Exposed soil (Along Mwigai Kenyatta Road in Dandora Ph 2 and an open space in Dandora phase IV respectively).

Plate 13: Deforestation and UGS Encroachment in Dandora 1 Stadium

Plates 14: Indiscriminate solid waste disposal Dandora Railway greeneries

Plate 15: A situation of inadequate children play area in Dandora II

4.4 Effectiveness of existing institutional, legal and policy frameworks in management of UGS in Dandora.

4.4.1 Policy and legal framework that govern the management and maintenance of UGS in Dandora.

4.4.1.1 The Constitution of Kenya, 2010

The constitution of Kenya 2010 has some several aspects indirectly related to UGS establishments. The first aspect is mentioned on the preamble where respect of the environment and people's heritage are to be achieved thus sustaining the environment for benefits of both the present and future generations. In chapter 4, Bill of Rights; article 42 provides that everyone has the right to a clean and healthy environment and also to have it protected for the sake of both the future and present generation's benefits. Apparently in most UGS that are managed by the NCC are not well managed and maintained. The heaps of uncollected solid tend to leave these spaces unattractive and prone to cause diseases and pest outbursts. Article 60 directs that, land in Kenya shall be held and managed in a prospect that is effective, productive, equitable and sustainable in accordance with principle such as: sustainable and productive management of land resources, sound conservation and protection of ecologically sensitive areas. Apparently in the riparian greeneries in Dandora have been encroached violating the 6m riparian rule and nothing is been done about it. Article 69 (d) encourages public participation and awareness in the environmental matters and in the management of public resources. In the research findings, 83% of the respondents claimed that they have never been involved in public participation and public awareness initiatives on matter that relate to the management of the UGS by the

government. Article 70 envisage for enforcement of existing planning and environment laws but apparently this has not been the case in the enforcement of the plastic ban policy that was geared to make Kenya a plastic free country. Failure of the enforcement of the ban has made some parts of the country go back in the production and the usage of the banned item. This has in turn hyped the levels of plastic wastes found in UGS within Dandora.

4.4.1.2 The Physical and Land Use Planning Act, 2019

In The Physical and Land Use Planning Act of 2019, the Director of physical planning shall be the chief government adviser on all matters relating to physical planning. The director shall formulate national, regional and special area physical development policies, guidelines and projects with the approval of his/her team of Liaison Committee. The director of physical planning will advise on the relevant matters which include land use management, change of user, extension of leases, and extension of user and subdivision of land. The director of physical planning also requires the local authority to ensure proper implementation of the physical development control and preservation orders. The Physical and Land Use Planning Act Cap 286 makes provision of the preparation of physical development plan of local, regional or special area. Section 30(1) directs that none will be allowed to conduct developmental activities within the area of a local authority without permission of development from the local authority. The Physical and Land Use Planning Act stipulate that for every of 10,000 of the urban population, 1-2 hectares will be put aside to aid as recreational spaces for that population. UN, WHO has minimum standard of ten square meters per person which is contrary to what Nairobi has to offers to her residents. Nairobi has below one square meter of UGS per its residents. This could have been have brought up by increased population growth and urbanization rate within the city.

The act through the physical planning handbook has the planning requirement for UGS in the urban settings. The study noted that some of NCC staffs are not familiarized with this act and its handbook. The act suffers a big blow since planning requirements for explain are for only park and stadiums in the neighborhood up to the metropolitan level. This has left out other green spaces like roadside greeneries, railway greeneries, riverine greeneries, community gardens, vacant lots among others. This act is also silent about how these spaces should be utilized by the public.

4.4.1.3 Environmental Management and Coordination Act of 1999 (Rev. 2015)

Section 7, of the Environment Management and Coordination Act (EMCA) of 1999, there are some legal and institutional frameworks that that helps in the act to achieve management and coordination of the environment. These institutions include; the National Environmental Council (NEC), National Environment Management Authority (NEMA), County Environmental Committee (CEC), National Environmental Action Plan Committee, Public Complaint Committee (PCC) and others. NEMA has the mandate for the execution of any required stipulation in relation to policies related to the environment. Section 58 provides that every developmental activity which are have high likelihood of imposing significant impacts on the environment must undergo an environmental impact assessment before hitting out. EMCA have some provisions which also tend to protect and conserve the environment through protection of traditional interest, identification of hilly and mountainous areas, reforestation and afforestation of hill tops, hill tops and mountainous areas, protection of the natural and artificial forests, conservation of biological diversity, conservation of biological resource in-situ/ex-situ and protection of environmentally significant area (Government of Kenya, 2012). This act is too old and

comprehensive. There is a dire need to be divided it into small manageable acts. EMCA like any other act of parliament fails to stipulate specific guidelines on UGS management and governance.

4.4.1.4 Urban Areas and cities Act, 2012

In the Cities and Urban area Act 2012, Section 13, the Board of Cities/Municipality shall control land development and zoning by public and private sector for purpose including markets, transport, open and green parks, entertainment, agriculture and other land users within the framework of master plans of the city/municipality. An indication of countless concerns from the residents on increased cases of public land grabbing and encroachment to conduct other activities which are contrary to the core mandates of UGS could mean that this provision has failed to deliver.

4.4.1.5 The National Urban Development policy

The National Urban Development policy was formulated for the purpose of the urban areas around the country. This policy is to address some important areas such as the urban: economy, finance, governance, management and also planning. It also looked at the environment and also the infrastructure for provision of social services, housing, safety and emerging risks from disasters within the urban areas. This policy does not provide any provisions on the planning requirement for UGS. It was noted that most of the administrators from the study were aware that the policy is somehow vague since it has held no contents on UGS and other recreational places.

4.4.1.6 The Nairobi 2030 Metro Spatial Draft Plan

It is through the Strategic Plan 2008 – 2012, and the Draft Spatial Concept delivered in April 2011 through which the Ministry and Metro 2030 vision (A World Class African Metropolis) was created in relation to the Kenya Vision 2030. This draft plan was developed to promote the metropolitan image of Nairobi and its neighboring towns. To achieve all this, the plan was set to undertake projects such as tourism enhancements and environmental sustainability, infrastructural development. Some of the projects proposed in the plan in as far as UGS in general is concerned includes; crime reduction in the public spaces and parks through setting up of CCTV cameras and streetlights; Design UGS in a way that it could enhance the overall communal utility of the spaces through setting up of public facilities such as public furniture, bins and toilet. The planning policy is supposed to be implement by the year 2030 but for the last 11 years since it was prepared no implementation attempt on its provisions was witnessed. In some FGD done some said this plan and the vision 2030 were so good to be true.

4.4.1.7 Vision 2030

In Vision 2030 the environment the does not feature as a pillar, the national government have put in place a wide range of institutional policy and legal framework to combat the causes of environmental degradation and negative impacts on ecosystems caused by the industrial and economic development programs. The aims of the vision were to increase the forest cover and lessen the environmental diseases. This vision strategies include; promoting environmental conservation in order to provide better support to the economic pillar and also for the purpose of achieving the Millennium Development Goals. The flagship projects for the environment include; solid wastes management systems

initiatives, it also called up for the relocation of the Dandora dumpsite and reclaim the area by setting up an urban green space, the plastic bag policy which will limit production and use of environmentally friendly options such as the khaki bags, land core and land use mapping projects. It also takes the initiative of rehabilitation of the water towers through water catchment management programs. As we approach 2030, nothing much has been done especially. Dandora Dumpsite was to be relocated and its space used to host the construction of a world class UGS project for its growing population to enjoy but lately the politicians have viewed it dumpsite as a resource boosting their interest high, this has hence made it difficult to implement the project. Trials have been made in making Kenya a plastic free but public are still buying, using and disposing plastic waste indiscriminately ending up in the UGS. This is all because of enforcement breakdown by NEMA.

4.4.2 Public awareness on the Policy and Legal frameworks on UGS management.

During the field study the residents and the business were asked if they have any awareness of the existence of policy and legal framework governing UGS in Dandora. The findings suggested that majority (74%) of the respondents were no aware of any policy and legal framework governing the UGS while 26% said they were aware.

A correlation analysis technique was done to check if there was any relationship between level of education and the public awareness on the available policy and legal framework on UGS management so as to make inferences on the descriptive statistics.

Table 4.7: Correlation between the level of education and public on the policy and legal framework on UGS governance

Correlations			
		Level of Education	**Public awareness on the Policy and Legal framework on UGS**
Level of Education	Spearman's Correlation Coefficient	1	.652**
	Sig. (2-tailed)		.000
	N	100	100
Public awareness on the Policy and Legal framework on UGS	Spearman's Correlation Coefficient	.652**	1
	Sig. (2-tailed)	.000	
	N	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

The Spearman's correlation results indicated that there is a positive correlation between the level of education and public on the policy and legal framework on UGS governance, this means that whenever there is a positive change in level of education, there is a positive increase in the level of public awareness on the policy and legal framework on UGS governance. Since the p is less than **α=0.01**, this confirms that there is a valid relationship between the level of education public awareness on the public awareness on the policy and legal framework on UGS governance.

The correlation table above revel that the level of education has a strong positive correlation (0.652) relationship with the public awareness on the policy and legal framework on UGS governance in Dandora. This means that as the residence's level of education advances,

there is a proportion increases in the public awareness on the policy and legal framework on UGS governance. The results demonstrates that those with less education level as that not of college they tend to be less aware on the available policy and legal frameworks and their provisions in UGS governance. There is a need dire for the county government, community organizations and other related agencies to invest in an intensive the public awareness and sensitization on the UGS policy and legal frameworks for all residents regardless of their education status.

4.4.3 Institutional framework that governs the management and maintenance of UGS in Dandora.

4.4.3.1 National Environment Management Authority (NEMA)

The authority was established under section 7 of the EMCA of 1999 and has been operating as a government agency in the Ministry of Environment, Water and Natural Resources since 2002 with a core mandate in supervision and coordination of all matters relating to environment. Its functions include; coordination of environmental activities being undertaken by the lead agencies, taking account of the stocks of natural resources in Kenya and how they get to be utilized and conserved, establish and review the land use guidelines in consultation with the relevant lead agencies, undertake research and publish their findings among other functions. NEMA has a mandate in enforcing the provisions laid out in EMCA as well as the regulations on; waste management, environmental impact assessment, noise, and biodiversity regulations.

From the key informant interview schedule at NEMA HQ, the authority not developed any regulations dealing with UGS as it had done with waste management, environmental impact assessment, noise, and biodiversity. NEMA doesn't have much say on UGS

planning and management but yet it has a full mandate on monitoring impact of land use on people and the natural environment. Prof. Judi Wakhungu, the then Cabinet Secretary for Environment and Natural Resources banned plastic bags on 28th Feb 2017, the ban took effect the same year with the help of her board of management and the NEMA staff who embarked on its enforcement. NEMA are aware that waste management especially that of plastic is exquisitely indiscriminate in the lower-class area (Dandora included) due to the fact that business and household are not compliant with the waste regulations. This has in turn made the existing UGS to look disheveled with reduced aesthetic value. NEMA staffs are looking forward to work on their weaknesses especially on enforcement.

4.4.3.2 Ministry of Land, Housing and Urban Development

The ministry was established in 2013 through amalgamation of five ministries (Public works, urban development, land, housing and Nairobi metropolitan service) by the assumption of the new government as an executive order. Its main mandate include; provision of policy direction and coordination of all matter that relates to lands, housing and development. Its functions include; public land administration, physical planning, land policy management, surveying and mapping of public land among other functions. The ministry of land, housing and Urban Development has three directorates which includes; land, housing and urban development. Both public works and Nairobi metropolitan development are contained in the directorate of urban development. Directorate of urban development is mandated in policy formulation, urban planning and management, municipal development and lastly research and training. Public Works tend to supervise planning, designs, constructions and lastly maintenance of government properties in the arena of built and infrastructural development. Nairobi metropolitan development is

mandated in formulation, coordination and administration of policy in respect to urban development. National Urban development policy (NUDP) was developed by this ministry to solve problems and challenges brough forth by rapid urbanization and also in provision of governance and management guidelines in resource allocation in urban areas.

From the Key informant interviews, in the department planning acknowledged that there their land use plans/systems does not cater for small enterprises in Nairobi County. This explained why the informal business enterprises occupy UGS to carry out their daily routines.

The NUDP was predicted to provide guidelines in UGS provisions and develop tactics to restore and increase their landmass area cover. It was noted that most of the administrators from the study were aware that the policy is somehow vague since it has held no provisions with contents on UGS and other recreational places. The ministry acknowledges that there has been absence of public participation in the planning and management of the UGS in Nairobi due to the confusion brought duplication of roles duties between them and with the county government. Another reason why the public fail to get involved is that the ministry lacks an organized system in management and maintenance of UGS that fail to accommodate the public. Soon the National Land Commission and the ministry are looking forward in development of GIS database for all the state land of which the UGS are part of at the county extent and also the update the current Nation Spatial plan with of policy and guidelines for UGS conservation, protection and management.

4.4.3.3 Kenya Forest Service

This is a state corporation under the Forest act, established in 2007 mandated to develop, conserve and sustainable manage forest and its resources for development in Kenya. Its function relating to the UGS include; sustainable management of forest and its resources for social and economic aids; and development and maintenance of important infrastructure for effective forest protection and conservation. KFS inspires and encourages communities living adjacent to forest, take part in forest conservation and protection. KFS does not get involved in oversight of the management of UGS, but since Dandora has some natural riverine forest along the Nairobi River then KFS can come in advise NCC on how they can manage their forest resources. Since Dandora is a lower income area then the riverine forest and trees are at a higher risk of extinction. There is a need on community capacity building on sustainable forest and tree management in these areas where the community can benefit without damaging the existing biodiversity.

4.4.3.4 Nairobi City Council

Within NCC in the Department of Environment (Park and Open Spaces section) is where UGS are located. This Department has the following objectives; making and enforcing regulations that guarantee quality of use satisfaction; continuous maintenance of open spaces to maintain their high standards through efficient practices; indorse acceptable uses diversification to ensure there is good synergies among all the user groups; administer and protect UGS to ensure that they remain on their public domain and oversee daily maintenance for the public use. UGS administration falls under the Chief Environmental Officers-Conservation and Recreation. The Chief Environmental Officers reports to Assistant Director (Parks and Open spaces) who then reports to the Director of

Environment NCC. The County Government allocate funds for management and maintenance of UGS to the Park and Open Space section via the Department of Environment, the moneys are disbursed to the Chief Environmental Officers. As per the Nairobi City Council Finance Act of 2013, any business person who wishes to undertake business activities in UGS must be issued with a license from County Hall. From the research finding out of the thirty businesses interviewed, 43.33% of the traders do not pay for their operational rent taxes on the spaces occupied in the UGS. This indicated that the County Government of Nairobi is losing revenue due to the gross incompetence of NCC revenue collectors. The unlicensed businesses especially those located inside UGS, could be one of the major contributors of indiscriminate solid waste management in these spaces due their lack of accountability nature arising from NCC officials' failure to do their duties.

From NCC made it clear that they face a number of challenges in the management and maintenance of UGS which include; inadequate funds from the county government, land grabbing and encroachment by the private developers, inadequate number of staffs, inconsistency nature of the Kazi Mtaani initiative by the National Government, increased cases of vandalism of the public facilities such as fences that surrounds the UGS, uncooperative members of the public who litter and dispose solid waste in theses spaces. The council intends to work with NEMA and the ministry of Environment, Water and Natural Resources in formulation, implementation of new policy guidelines that will exclusively govern the management of the UGS which will be achieved through intensive public involvement and constant engagement in all stages. The council acknowledge that there have been ineffective public participation and this was verified to be true with 82%

of the Dandora residents saying that they have never been ask to participate in any stage of policy and law making by NCC.

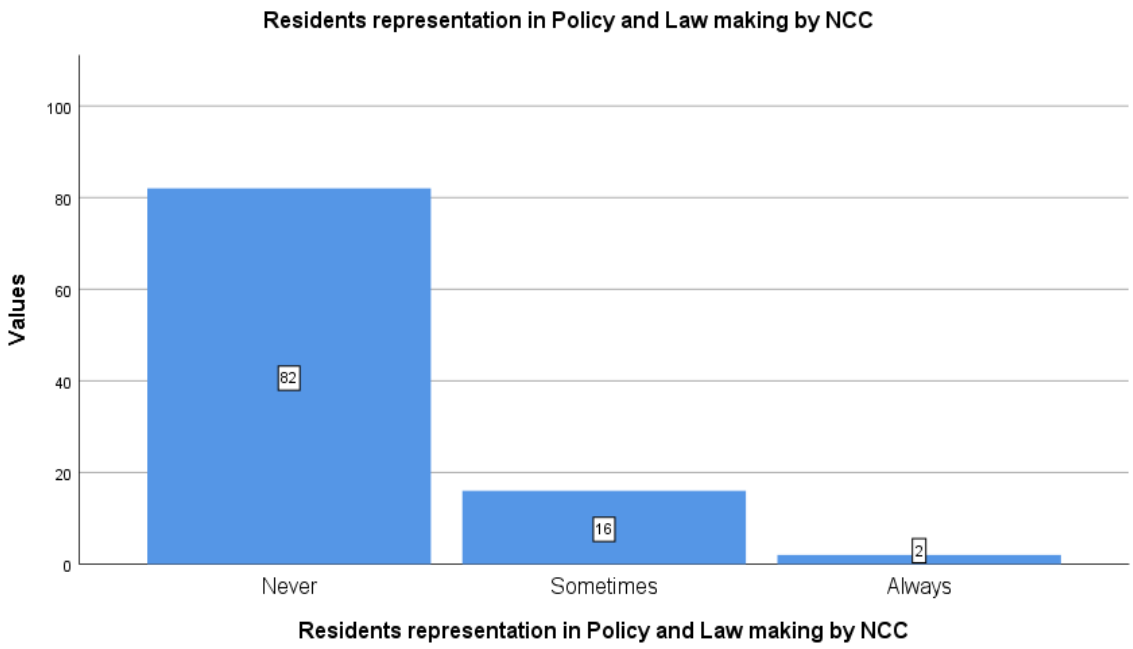

Figure 4.12: Resident's representation in Policy and law making by NCC

The council also noted that it has been had to has been extremely hard and difficult to push for the idea of relocation of the Dandora Dumpsite and using the space to construct a 600million worth of UGS. This is due to the fact that the dumpsite is badly politicized and the majority of the public tend to view it now as a resource other than a health nuisance as it was then.

4.4.3.5 Community Based Organizations/Resident Associations

These organizations are playing vital role in improving the environmental outlooks in their neighborhood through resource mobilization and community awareness creation and sensitization towards matter surrounding UGS and maintenance of the community gardens. Some of these CBOs which the researcher managed hold FGDs with include; Dandora Transformational League (DTL), Jijenge Pamoja Ghetto (JPG), Dandora Resident Associations, Mustard seed and Believers. All the mentioned CBOs been had; conservation of the environment as their primary interest among, mobilization of residents against land grabbing by private sectors like DTL has been involved in petitioning for change in Kenya's land laws to bar allocation of public land especially the easement and wayleaves for other objectives. Other activities done by the CBOs include; provide services security, clean up, hosting environmental events and competitions and gardening and beautification, among others UGS maintenance duties. CBOs should work closely with NCC on the matters ascertaining UGS but apparent that appears to be a challenge. Member of these CBOs complained that they do not feel represented in the any stage of law, regulation or policy making that concerns UGS. Other challenges include; high cost of maintenance, inadequate funds and resources to run their organization, land grabbing, uncooperative members of society, vandalism and theft resulting from increased numbers of idlers.

4.4.4 Management of UGS

The researcher sought to find out who manages the UGS in Dandora. The graph below shows that, 59% of the respondents said the Community groups/ organizations manages the UGS, 29% said NCC, 3% said it's the UGS are managed through a partnership of the county government and the community groups, lastly 9% of the respondents reported that

the green spaces are neglected so no one manages them. The results demonstrated that the community groups/organizations the most responsible in the governance, management and maintenance of UGS in Dandora, the county government through NCC seemed to be unreliable for the job.

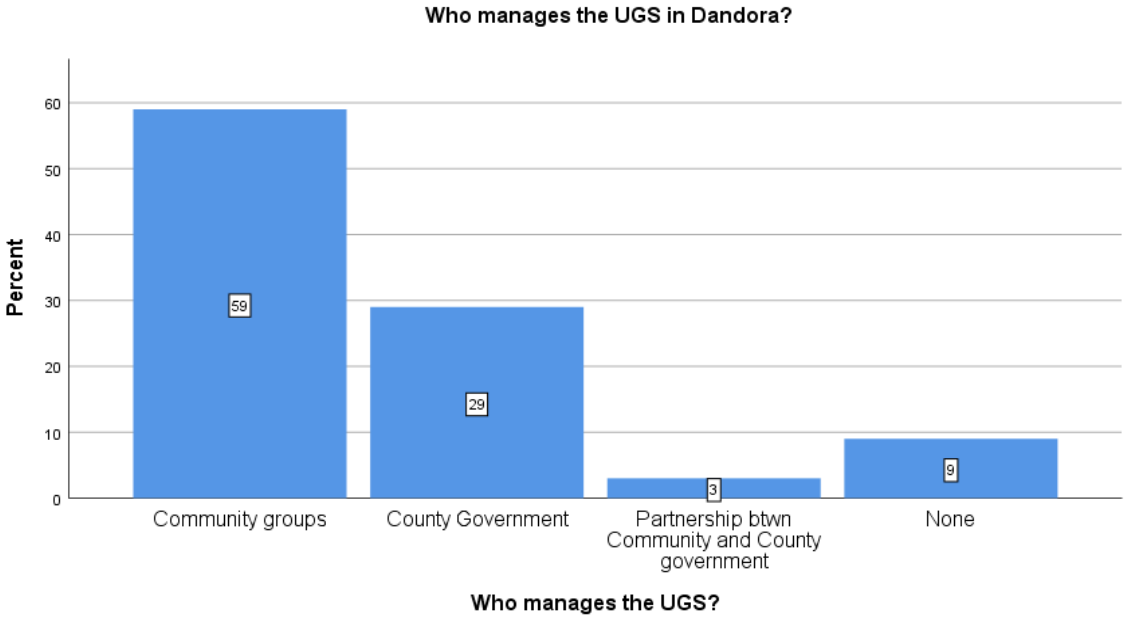

Figure 4:13: Management of UGS in Dandora

4.4.5 Management challenges faced by the governing institutions

The researcher sought to find out the management challenges the FGD and key informant interviews with the two main managing bodies for management of the UGS in Dandora (CBOs; Dandora Transformational League (DTL), Jijenge Pamoja Ghetto (JPG), Dandora Resident Associations, Mustard seed and Believers; and the Country Government). The graph below shows the CBOs rate of response from the FGDs carried out, Majority (29.2%) of the CBOs said inadequate resources and maintenance equipment is one of the greatest challenges, 21.9% said uncooperative nature of community members is a challenge, 15.2% faced increased indiscriminate solid waste management as a challenge, 13.7% faced

increased number of idlers, 8.8% said land grabbing was a challenge, 7.9% said that vandalism and theft was a challenge. lastly 3.5% of the respondents reported neglection from NCC and other NGOs in cooperating and supporting their mandate was is a challenge. The study results it's clear that these community groups/organizations have their greatest challenge as inadequate resource to fund their activities and mandates.

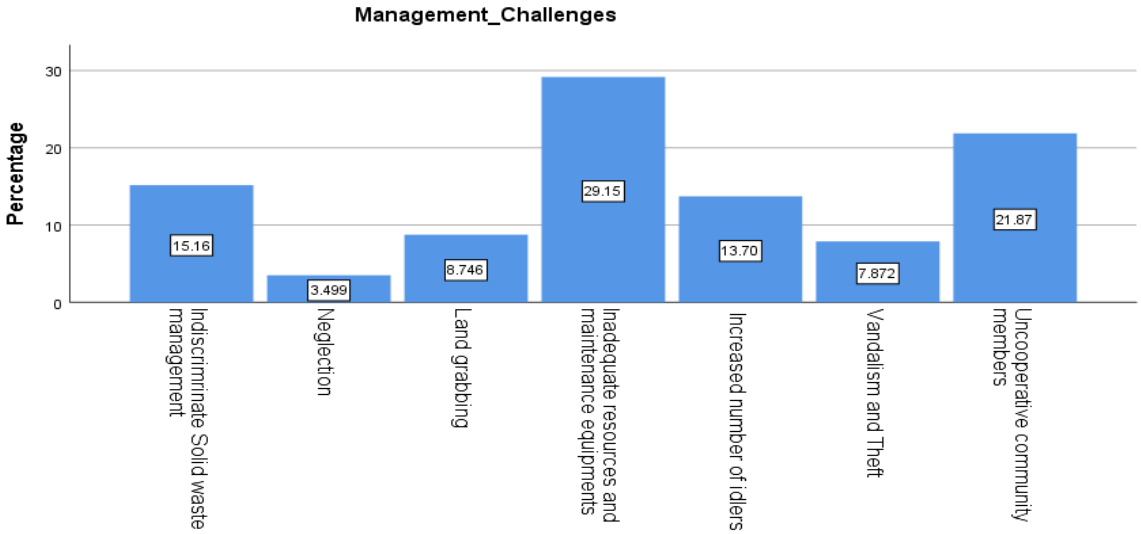

Figure 4.14: Management challenges

Shockingly enough the challenges faced by NCC were almost similar to that of community groups/organizations. From key informant interview with NCC, it was demonstrated that they face a number of challenges in the management and maintenance of UGS which include; inadequate funds from the county government, land grabbing and encroachment by the high profiled private developers, inadequate number of staffs, inconsistency nature of the Kazi Mtaani initiative by the National Government, increased cases of vandalism of the public facilities such as fences that surrounds the UGS, uncooperative members of the public who litter and dispose solid waste in theses spaces.

CHAPTER FIVE:

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter gives a summary of findings of the study in investigating the drivers, effects and policy implication on human activities practiced in the UGS. It draws conclusion on the findings and draft recommendations on the implications and policy interventions that could transform and develop of UGS in Dandora and other similar suburbs.

5.1 Summary of the findings

5.1.1 Drivers that influence the use of UGS in Dandora

The research finding established that there are several drivers which are attracting/discouraging resident in visiting UGS. From the 84% of the residents who visit UGS in Dandora were driven by; affordability (absence of entry charges), proximity to place where they stay and work, aesthetics and beauty of these spaces, adequacy of spaces, the state of security present and lastly, availability of facilities. Majority of the respondent said what drives 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. 16% of the residents are driven away from visiting UGS due to the following; insecurity, inadequacy of space, congestion and inadequate leisure time due to high job and family demands, high cost if visitation, and dirty and non-appealing. Majority of the respondent said what drives them away from visiting UGS was the state of insecurity in Dandora.

The finding established that there are several human activities that are practiced in and around green spaces in Dandora. They were categorized in to three, social activities, economic and environmental activities. The social activities included; meditation and nature walks, fitness/games and sport, scenic viewing and animal watching, secular music concerts and social events, pet walks, religious activities such as crusades and weddings, dumping household wastes in the UGS Majority of the respondents participate in meditation and nature walks and games and sport because the latter tends to help them maintain the high state of both physical and mental fitness. The other category is the economic activities, which included; Hawking, garage, open-air market, children entertainment, small scale agriculture, car wash, cybercafé and parking lots and selling drug peddling. Hawking was the most popular activities practiced in Dandora. The last category of environmental activities included; community clean-up, afforestation initiative, gardening and environmental restoration competitions. From the findings 83.52% of the respondents seemed to have participated in environmental activities.

The hypothesis there is no significant effect of social demographic characteristics on frequency of UGS visitation was tested through multinomial logistic regression analysis. The model fitness was assessed using the Chi-square statistic which was 90.571 with the p-value was less than 0.05. The results showed that there is a significant relationship between the dependent variable and independent variable in the model, that the social demographic characteristics has an influence on frequency of visitation.

5.1.2 Impacts of the human activities on UGS in Dandora

Based on the study findings, the respondents agreed that the following is the extent of positive effects that human activities pose to UGS; Reduction of pollution of rivers , streams and drainage system (M=1.36, SD=.689), Sustainable solid waste management (M=1.24, SD=.622), Soil conservation (M=1.36, SD=.628), Stable security (M=1.15, SD=.435), Increased wildlife species population (M=1.53, SD=.834), Afforestation (M=2.27, SD=.777), Green grabbing (M=1.52, SD=.785), Provision of children play area (M=1.50, SD=.718), Increased aesthetics (M=1.40, SD=.752) as well as effective management and maintenance (M=1.42, SD=.684). Afforestation was the highest positive impact as a result of human activities on UGS in Dandora.

The aggregate mean for sub variables under positive effects of human activities on UGS recoded at 1.48 with a low standard deviation of 0.76. Based on the measurement scale, the values translate to lowly significance.

Based on the study findings, the respondents agreed that the following negative effects from human activities posed to UGS were the most significant; Reduced aesthetics (M=1.27 SD=.584), Poor solid waste management (M=1.44 SD=.715), Increased insecurity (M=1.51 SD=.798), Land use change/ land grabbing (M=1.63 SD=.812) and Reduced vegetation cover (M=1.95 SD=.687). This statistic was enhanced with the respondent's views on UGS condition and overall impression. The result revealed that 55% of the respondent find the UGS in Dandora very dissatisfying/ dissatisfying. The aggregate mean for sub variables under negative effects of human activities on UGS recoded at 1.73 with a low standard deviation of 0.76. Based on the measurement scale, the values translate to high significance.

Hypothesis that there is no significant relationship between negative effects on UGS and residents' participation in social, economic and environmental activities on was assessed. The null hypothesis was rejected since all activities seemed to have a relationship with negative effects on the UGS. Both social and economic activities seemed to have a positive correlation (.018 and .0304 respectively) with negative effects on UGS while environmental activities had moderately negative correlation (-.502) with the negative effects on UGS. These results lead to a conclusion that both social and economic activities negatively affect the UGS in Dandora while environmental activities do the opposite.

5.1.3 Effectiveness of the existing institutional, legal and policy frameworks for sustainable management and utilization of UGS in Dandora.

The study established that Kenya lacks specific policy/policies dealing with planning and management of UGS. The existing legal framework mentions some aspects in urban planning that relates to UGS management such as; vested responsibility of the County Governments to manage and govern UGS, policy making in matters regarding the environment UGS being part of that, citizen participation in development projects in the urban areas. The Physical and Land Use Planning Act through the physical planning handbook has the planning requirement for UGS in the urban settings. The study noted the NCC which is mandated to manage and govern the UGS are not familiarized with this act and its handbook. The act suffers a big blow since planning requirements for explain are for only park and stadiums in the neighborhood up to the metropolitan level. Environment Management and Coordination Act of 1999 main mandate is to help Kenya achieve highest levels of management and coordination of the environment through legal and institutional frameworks. Apparently, EMCA is too old and comprehensive. There is a dire need to be

divided it into small manageable acts fails to stipulate specific guidelines and provisions on UGS management and governance. Cities and Urban area Act of 2012 was formulated to provide provisions on control land development and zoning within the framework of master plans of the city/municipality. An indication of countless concerns from the residents on increased cases of public land grabbing and encroachment to conduct other activities which are contrary to the core mandates of UGS could mean that this provision has failed to deliver. Article 69 (d) of Kenyan constitution encourages public participation and awareness in the environmental matters and in the management of public resources. In the research findings, 83% of the respondents claimed that they have never been involved in public participation and public awareness initiatives on matter that relate to the management of the UGS by the county government.

The Ministry of Land, Housing and Urban Development main mandate include; provision of policy direction and coordination of all matter that relates to lands, housing and development. The ministry acknowledges that there has been absence of public participation in the planning and management of the UGS in Nairobi due to the confusion brought duplication of roles duties between them and with the county government. Another reason why the public fail to get involved is that the ministry lacks an organized system in management and maintenance of UGS that fail to accommodate the public. NEMA, established under section 7 of the EMCA of 1999 and has been operating as a government agency in the Ministry of Environment, Water and Natural Resources since 2002 with a core mandate in supervision and coordination of all matters relating to environment. The authority not developed any regulations dealing with UGS. Since the ban of plastic bags in 28th Feb 2017 to-date the authority is struggling with its enforcement due to the fact that

business and household are not compliant with the waste regulations. This has in turn made the existing UGS to look disheveled with reduced aesthetic value. NEMA staffs are looking forward to work on their weaknesses especially on enforcement. NCC through Department of Environment (Park and Open Spaces section) is mandated to; in making and enforcing regulations that guarantee quality of use satisfaction; continuous maintenance of open spaces to maintain their high standards through efficient practices. Apparently from the study results, most of the residents gives credits to Community groups/ organizations (some of these CBOs which the researcher managed hold FGDs with include; Dandora Transformational League (DTL), Jijenge Pamoja Ghetto (JPG), Dandora Resident Associations, Mustard seed and Believers) in the manages the UGS within Dandora. As per the Nairobi City Council Finance Act of 2013, any business person who wishes to undertake business activities in UGS must be issued with a license from County Hall. From the research finding out of the thirty businesses interviewed, 43.33% of the traders failed to pay for their operational rent taxes on the spaces occupied in the UGS. This is all uncollected revenue resulting from NCC incompetence.

From research study, it was clear that CBOs and NCC face a number of challenges in the management and maintenance of UGS which included; inadequate funds, land grabbing and encroachment by the high profiled private developers, inadequate number of staffs, inconsistency nature of the Kazi Mtaani initiative by the National Government, increased cases of vandalism of the public facilities such as fences that surrounds the UGS, uncooperative members of the public who litter and dispose solid waste in theses spaces.

5.2 Conclusion

In conclusion, affordability, proximity, aesthetics, adequacy of spaces, security, and availability of facilities are factors affecting residents' visits to urban green spaces. The biggest driver for visiting UGS is affordability, while insecurity is the biggest deterrent. Residents tend to participate in a wide variety of human activities. Majority of the respondents participate in meditation and nature walks and games and sport (social activities), hawking (economic), and clean ups (environmental activities).

Urban green spaces are crucial for fostering sustainable lifestyles in urban cities and communities. However, with rapid population growth, urbanization, and economic development in urban areas, UGS are being threatened. Inefficient policy and legal frameworks for managing UGS, along with unsustainable human activities in and around these spaces, pose significant risks to their well-being. Unfortunately, the government of Nairobi County is not doing enough to effectively and efficiently manage these important spaces.

This serves as a valuable lesson for other cities, particularly in Africa where urban green spaces are under immense pressure, that preserving and protecting these spaces should be approached as a multi-faceted issue requiring a comprehensive and multi-disciplinary approach to tackle the problem from various angles.

5.3 Recommendations

The knowledge gathered from the study findings and literature review informed the study recommendations as follows.

1. 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.
2. Development of UGS regulations and standards.
3. 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 within UGS.
4. NCC should ensure effective and timely waste collection and disposal as this will reduce the chances of waste reaching to the UGS vicinity.
5. NEMA should develop strong enforcement team and stringent sanctions that will be geared to bring down any person, business and industry producing plastic bags.
6. The county government should reclaim and rehabilitate any open space that could be have been encroached to facilitate other unplanned and haphazard developments. This move will tend to increase the green space size as they originally were and hence be more functional, usable and accessible to the public.
7. To reduce encroachments, ministry of land can invest on both a centralized land information system and Geographic information system as a tool in innovative land use planning. This move will tend to create realistic databases that will aid estimate the future urban requirements.

8. The county government in collaboration with the NGOs, CBOs, schools and the society should engage in tree planting, community gardening to increase the aesthetic and beauty of Dandora.
9. The county government in collaboration with the relevant NGOs and CBOs should participate in giving the community teaching and practices of importance of maintenance and conservation of the current green spaces that they have within their vicinity, these can be done through workshops and seminars.
10. Community participation alongside the policy makers during the full decision-making process is vital. Involving the community in the planning and policy process will help articulate their desires and needs of the facilities to be provided and added in the design of the open spaces. The community participation is also important as it enhance ownership of the project and maintenance.

5.4 Areas for further research.

This study was limited to investigating the drivers of human activities in UGS of Dandora and their effects in relation to the policy frameworks guiding their management. It however recognized certain aspects of the UGS could add more value to the understanding and thereby improve the spaces in any urban area of Kenya, apart for Dandora. The following further research areas can aid in the improvement of UGS:

1. Crimes in and around UGS of Dandora and similar settlements
2. Solid waste management in UGS.
3. Specific standards and guidelines for UGS so as to promote proper planning and management of land uses.

4. Innovative approaches to UGS management that may include the private sector and UGS users. This would facilitate active engagement of the key stakeholders in park management, especially government, park users, the private sector and civil society organizations interested in park conservation.

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APPENDICES

APPENDIX I: Household Questionnaire

MAASAI MARA UNIVERSITY

SCHOOL OF NATURAL RESOURCE, TOURISM AND HOSPITALITY

DEPARTMENT OF ENVIRONMENTAL STUDIES, GEOGRAPHY AND AGRICULTURE

MASTER OF ENVIRONMENTAL PLANNING AND MANAGEMENT

HOUSEHOLD QUESTIONNAIRE

Dear respondent,

I am Namalwa Silver a student from Maasai Mara University and wish to carry out a study on the ***investigation on drivers, effects and policy implications of human activities on Urban Green Spaces within Dandora***. This questionnaire contains questions about the green space conditions in your area as part of my academic research which is a requirement in the fulfilment of my master's degree in Environmental Studies (Planning and Management). The formulated questions are strictly for academic analytical purpose only.

Confidentiality will be highly upheld and therefore honest response will be highly appreciated.

Thank you.

Yours faithfully,

Namalwa Silver.

1. Bio Data

Tick (√) correctly where appropriate.

a. *Gender*: Male ☐ Female ☐

b. *Age of the respondent:*

i. below 20 yrs. ☐

ii. 30-40 ☐

iii. 40-50 ☐

iv. 51yrs. and above ☐

c. *Level of education:*

i. Primary level ☐

ii. Secondary level ☐

iii. College/graduate ☐

iv. None ☐

e. *Occupation:*

i. Employed ☐

ii. Self-employed ☐

iii. Unemployed ☐

f. How long have been living in this estate .....

2. Drivers and diverse types of human activities taking place in Urban Green Spaces in Dandora.

a. *Are there green open spaces within your location?* Yes ☐ No ☐

If yes, how many green spaces are within your location?

i. Less than 5 ☐

ii. 5-10 ☐

iii. More than 10 ☐

b. Do you visit these green spaces within you? Yes ☐ No ☐

If yes how often do you visit

i. Daily ☐

ii. Weekly ☐

iii. Monthly ☐

iv. After every 2 months ☐

v. After every 6 months ☐

vi. After every one Yearly ☐

If no, give any reasons to why you don't……

c. What attracts you most to visit this park?

i. Availability ☐

ii. Affordability ☐

iii. Proximity to your home/place of work ☐

iv. State of security ☐

v. Availability of facilities ☐

vi. Aesthetics ☐

vii. Other (Specify) ……

c. If you make an attempt to visit the green spaces, what time of the day do you prefer going?

i. Before 8am ☐

ii. 8am-1pm ☐

iii. 1pm-5pm ☐

iv. After 5pm ☐

v. 8am-5pm ☐

e. Why do you prefer the time stated in d. above?

i. Most convenient ☐

ii. To avoid congestion ☐

iii. Presence of other green spaces visitors☐

iv. Other (specify) **……**

f. Do you participate in social activities? yes ☐ *no* ☐

If yes what social activities do conduct on your visit to these green space (community gardens, stadium etc.,)

i. Physical activities ☐

ii. Meditation and nature walks ☐

iii. Scenic viewing and animals watching ☐

iv. Pet walk ☐

v. Recreation/leisure/games and sport ☐

vi. Religious activities ☐

vii. Team building events ☐

viii. Work/business /commercial ☐

Photography

Nail polish

Hawking

ix. Pass time ☐

x. Throwing solid waste ☐

xi. Other (specify) .....

h. Are there environmental activities carried out in the green spaces? Yes ☐ No ☐

If yes, what are environmental activities are carried out?

i. Community clean-up ☐

ii. Afforestation initiative/tree planting ☐

iii. Environmental restoration competition such as projects and events ☐

iv. Gardening and conservation ☐

v. Deforestation ☐

vi. Other (specify) .....

Have you ever participated in any of the environmental activities carried out in the green spaces? Yes ☐ No ☐

3. Effects of the human actions on Urban Green Spaces in Dandora.

a. According to you, what could be the overall impression of the green open spaces within your location?

i. Very pleasing ☐

ii. Pleasing ☐

iii. Neither satisfying nor displeasing ☐

iv. Displeasing ☐

v. Very displeasing ☐

b. What could be the adverse effects and challenges facing these spaces resulting from the human activities that takes places there?

*For the **degree of effect/challenge** insert numbers as follows*

1. highly significant 2. Moderate significance 3. Low significance

Effect/challenge	***Degree of effect/challenge***
Pollution of rivers/streams	

Poor solid waste management and littering	
Reduced vegetation cover	
Soil erosion	
Idlers/ insecurity	
Deforestation	
Land use change and land grabbing	
Lack of children play area	
Poor management and maintenance	
Others	

c. What could be the positive effects resulting from the human activities that takes places there?

*For the **degree of positive effect** insert numbers as follows*

1. highly significant 2. Moderate significance 3. Low significance

Effect/challenge	***Degree of effect/challenge***
Reduction in Pollution of rivers/streams	
Sustainable solid waste management and littering	
Soil conservation	
Stability in security	
Afforestation	
Green grabbing	
Provision of unlimited children play area	
Effective management and maintenance	
Others	

d.What changes could you have possibly observed since you began working within/around your green space?

Positive ☐ Negative ☐

What positive changes have you got to experience?

i. Increased wildlife species population ☐

ii. Expansion or roads ☐

iii. Increased number of green spaces ☐

iv. Increased number of green space users ☐

v. Other……

vi. none ☐

What negative changes have you got to experience?

i. Reduction of green spaces size ☐

ii. Green space land grabbing ☐

iii. Environmental pollution ☐

iv. Forest deforestation and degradation ☐

v. Reduced wildlife species population ☐

vi. Poor green space maintenance ☐

vii. Reduced number of green spaces ☐

viii. Other……

ix. none ☐

4. Effectiveness of the Institutional, legal and policy framework governing and managing the Urban Green Spaces in Dandora

a. *What could be the overall impression of green open spaces management and governance in Dandora considering the effects and challenges that affect them within your location?*

i. Very pleasing ☐

ii. Pleasing ☐

iii. Neither satisfying nor displeasing ☐

iv. Displeasing ☐

v. Very displeasing ☐

b. In the following timeframes, have you noticed any improvements in governance and maintenance of the available green spaces in Dandora? If yes give the improvement and maintenance actions taken

Time frame	***Yes, No***	***Improvement and maintenance actions taken***
Last 6 months	☐ ☐	……

Last, I yr.	☐	☐	……
Last 3yrs.	☐	☐	……
Last 5 yrs.	☐	☐	……
5yrs. and above	☐	☐	……

c. Are you aware about the any existing laws, and policy formulated to govern and manage Urban Green Spaces in Dandora?

Yes ☐ No ☐

d. According to you, who could manage these green spaces better?

i. *Community* ☐

ii. *County government* ☐

iii. *NGOs* ☐

iv. *Individual private companies* ☐

v. *None* ☐

e. what could be the challenges that these green spaces encounter in as far as management is concerned

……
……
……
……

f. If you were given the chance to improve, govern and manage green open spaces in Dandora, what different could you have done

i. ……

ii. ……

iii. ……

iv. ……

Thanks for your cooperation

APPENDIX II: Traders interview guide

MAASAI MARA UNIVERSITY

SCHOOL OF NATURAL RESOURCE, TOURISM AND HOSPITALITY

DEPARTMENT OF ENVIRONMENTAL STUDIES, GEOGRAPHY AND AGRICULTURE

MASTER OF ENVIRONMENTAL PLANNING AND MANAGEMENT

TRADERS INTERVIEW GUIDE

Dear respondent,

I am Namalwa Silver a student from Maasai Mara University and wish to carry out a study on the ***investigation on drivers, effects and policy implications of human activities on Urban Green Spaces within Dandora***. This questionnaire contains questions about the green space conditions in your area as part of my academic research which is a requirement in the fulfilment of my master's degree in Environmental Studies (Planning and Management). The formulated questions are strictly for academic analytical purpose only.

Confidentiality will be highly upheld and therefore honest response will be highly appreciated.

Thank you.

Yours faithfully,

Namalwa Silver.

1. Bio Data

Tick (√) correctly where appropriate.

a. *Gender*: Male ☐ Female ☐

b. *Age of the respondent:*

i. below 20 yrs. ☐

ii. 20-30 ☐

iii. 30-40 ☐

iv. 40-50 ☐

v. 51yrs. and above ☐

c. *Level of education:*

i. Primary level ☐

ii. Secondary level ☐

iii. College/graduate ☐

iv. None ☐

e. *Occupation*

i. Self-employed ☐

ii. Employed ☐

2. Trading activities within urban green spaces in Dandora.

a. What is the type of commercial activity you are carrying out?

i. Hawking ☐

ii. open air-market ☐

iii. Parking lot ☐

iv. Garage/mechanic ☐

v. Car wash ☐

vi. Shop ☐

vii. Cyber-café ☐

viii. Beauty parlor-nail polish ☐

ix. Children entertainment i.e., bouncing castle, face painting and etc., ☐

v. Others (specify) .....

b. How long have been in the business?

i. below 5yrs. ☐

ii. 25-10 ☐

iii. 10-15 ☐

iv. 15-20 ☐

v. 20 yrs. and above ☐

c. Where do you carry your business?

In/within green spaces borders☐ Outside/around green spaces borders☐

d. which are the best/profitable days for doing business?

i. Weekdays ☐

ii. Weekends ☐

iii. Public holidays ☐

iv. School holidays☐

v. Religious holidays ☐

e. Does the proximal location to the green spaces influence your profit? Yes ☐ No ☐

How?

i. Increased sales ☐

ii. Reduced sales ☐

iii. Increased number of customers ☐

iv. Increased referrals ☐

v. Others .....

3. Effects of the human actions on Urban Green Spaces in Dandora.

a. What type of solid waste do you generate?

i. Organic waste ☐

ii. Paper ☐

iii. Plastic ☐

iv. Oil spills ☐

v. Metal ☐

vi. Others .....

b. Are you provided with waste disposal point? Yes ☐ No ☐

if yes which one?

i. Road side bins/containers ☐

ii. Waste disposal pit ☐

iii. central collection point ☐

vii. others (specify) .....

b. What could be the adverse effects and challenges facing these spaces resulting from the economic activities that takes places there?

*For the **degree of effect/challenge** insert numbers as follows*

1. highly significant 2. Moderate significance 3. Low significance

Effect/challenge	***Degree of effect/challenge***
Pollution of rivers/streams	
Poor solid waste management and littering	
Reduced vegetation cover	
Soil erosion	
Idlers/ insecurity	
Deforestation	
Land use change and land grabbing	
Lack of children play area	
Poor management and maintenance	
Others	

c. According to you, what could be the overall impression of the green open spaces your location?

i. Very pleasing ☐

ii. Pleasing ☐

iii. Neither satisfying nor displeasing ☐

iv. Displeasing ☐

v. Very displeasing ☐

d. What changes could you have possibly observed since you began working within/around your green space?

Positive ☐ Negative ☐

What positive changes have you got to experience?

vii. Increased wildlife species population ☐

viii. Expansion or roads ☐

ix. Increased number of green spaces ☐

x. Increased number of green space users ☐

xi. Other.....

xii. none ☐

What negative changes have you got to experience?

x. Reduction of green spaces size ☐

xi. Green space land grabbing ☐

xii. Environmental pollution ☐

xiii. Forest deforestation and degradation ☐

xiv. Reduced wildlife species population ☐

xv. Poor green space maintenance ☐

xvi. Reduced number of green spaces ☐

xvii. Other.....

xviii. none ☐

Governing and managing the Urban Green Spaces in Dandora

a. Who manages business operations within green spaces in Dandora?

i. Nairobi City County ☐

ii. Community ☐

iii. NGOs ☐

iv. Others .....

b. Do you pay for the use of the business space? Yes ☐ No ☐

If yes how much (in KSh.) do you pay on a daily basis

i. below 100 ksh. ☐

ii. 100-200 ☐

iii. 300-400 ☐

iv. 400-500 ☐

v. 500 ksh. and above ☐

c. In the following timeframes, have you noticed any improvements in governance and maintenance of the available green spaces in Dandora? If yes give the improvement and maintenance actions taken

Time frame	***Yes, No***	***Improvement and maintenance actions taken***
Last 6 months	☐ ☐	.....
Last, I yr.	☐ ☐	.....
Last 3yrs.	☐ ☐	.....
Last 5 yrs.	☐ ☐	.....
5yrs. and above	☐ ☐	.....

c. Are you aware about the any existing laws, and policy formulated to govern and manage Urban Green Spaces in Dandora?

Yes ☐ No ☐

d. According to you, who could manage these green spaces better?

i. *Community* ☐

ii. *County government* ☐

iii. *NGOs* ☐

iv. *Individual private companies* ☐

v. *None* ☐

e. what could be the challenges that these green spaces encounter in as far as management is concerned

……
……
……
……

f. If you were given the chance to improve, govern and manage green open spaces in Dandora, what different could you have done

i. .....

ii. .....

iii. ……

iv. ……

Thanks for your cooperation

APPENDIX III: Key informant interview schedule

MAASAI MARA UNIVERSITY

SCHOOL OF NATURAL RESOURCE, TOURISM AND HOSPITALITY

DEPARTMENT OF ENVIRONMENTAL STUDIES, GEOGRAPHY AND AGRICULTURE

MASTER OF ENVIRONMENTAL PLANNING AND MANAGEMENT

KEY INFORMANT INTERVIEW SCHEDULE

Dear respondent,

I am Namalwa Silver a student from Maasai Mara University and wish to carry out a study on the ***investigation on drivers, effects and policy implications of human activities on Urban Green Spaces within Dandora***. This interview schedule contains questions about the green space conditions in your area as part of my academic research which is a requirement in the fulfilment of my master's degree in Environmental Studies (Planning and Management). The formulated questions are strictly for academic analytical purpose only.

Confidentiality will be highly upheld and therefore honest response will be highly appreciated.

Thank you.

Yours faithfully,

Namalwa Silver

INSTIUTION/ORGANIZATION: .....

OFFICER NAME: .....

RANK/POSITION: .....

DEPARTMENT: .....

OFFICE: .....

DATE: .....

Institutional, legal and policy framework

Authority

i. What is the mandate of your institution/organization?

ii. What roles do your outfit perform in relation to be management of green spaces in Dandora?

iii. How do you get to perform these roles?

iv. Which legislation is used for the provision of green open spaces in Dandora?

v. Who has the power to management of theses spaces? Is the power vested upon The National Government or the County Government?

vi. According to you, how do you view the role of your institution? Are they sufficient or insufficient, flexible or rigid, well-structured or not well-structured etc.

vii. How do you get to see the planning regulations of Dandora on the management of Urban Green Spaces? What can you say about the enforcement of such regulations?

viii.

Involvement

i. To what extent is your institution represented in any conversation on green spaces in Dandora? Gave examples of the such conservations and their objective?

ii. To what extent is your institution represented in any law and policy making exercises on green spaces in Dandora? Give examples of the laws and policy that you got involved in making?

iii. Mention some institutions or bodies that you collaborate with in management of green open spaces in Dandora? If any, what are your contribution and theirs as well, in the management of green open spaces?

iv. Comments on some of the good and bad collaboration of the institution in the governance and management of green open spaces?

v. How will you rate the level of public involvement in the management of green spaces in Dandora?

vi. In your opinion which institutions are doing so well and also not doing so well concerning the management of green open spaces in Dandora? And to those not doing well what would you recommend?

Green spaces

i. Give examples of green spaces common in Dandora Ask further for specific green spaces that they are involved in its management?

ii. What is the current state or condition of green spaces in? Probe further on for information on specific issues such as attractiveness, comfort, safety, maintenance, accessibility, publicity, community participation, and conservation and heritage.

iii. Are the green spaces able to support the sustainable development of Dandora? Tailor your answer to the economic, social and environmental development of Dandora.

iv. What is your perception on green spaces? Your answer should focus on what green spaces should be used for, which institution should manage it, and how green spaces should be managed.

Thanks for your cooperation

APPENDIX IV: FGD guide

MAASAI MARA UNIVERSITY

SCHOOL OF NATURAL RESOURCE, TOURISM AND HOSPITALITY

DEPARTMENT OF ENVIRONMENTAL STUDIES, GEOGRAPHY AND AGRICULTURE

MASTER OF ENVIRONMENTAL PLANNING AND MANAGEMENT

FOCUS GROUP DISCUSSION GUIDE FOR DANDORA RESIDENTS

Dear respondent,

I am Namalwa Silver a student from Maasai Mara University and wish to carry out a study on the ***investigation on drivers, effects and policy implications of human activities on Urban Green Spaces within Dandora***. This interview schedule contains questions about the green space conditions in your area as part of my academic research which is a requirement in the fulfilment of my master's degree in Environmental Studies (Planning and Management). The formulated questions are strictly for academic analytical purpose only.

Confidentiality will be highly upheld and therefore honest response will be highly appreciated.

Thank you.

Yours faithfully,

Namalwa Silver

NAME OF THE INTERVIEWER: .....

NAME OF NEIGHBOURHOOD: .....

DATE: .....

1. GENERAL INFORMATION OF URBAN SPACES

i. Please mention some of the green spaces present in this neighborhood?

ii. What are the benefits realized by this neighborhood from the green spaces found here?

iii. Are the green spaces able to support the sustainable development of Dandora? Tailor your answer to the economic, social and environmental development of Dandora.

iv. What are the socio-economic activities practiced on these green spaces in your neighborhood?

v. What are the environmental activities carried out on these green spaces?

vi. What is the current state or condition of green spaces in? Probe further on for information on specific issues such as attractiveness, comfort, safety, maintenance, accessibility, publicity, community participation, and conservation and heritage.

vii. What measures do you recommend for successful development of Urban Green Spaces with the best conditions in this neighborhood?

2. MANAGEMENT AND GOVERNANCE OF THE URBAN GREEN SPACES

i. How do you get to see the planning regulations of Dandora on the management of Urban Green Spaces? What can you say about the enforcement of such regulations?

ii. To what extent is your neighborhood represented in any conversation on green spaces in Dandora? Gave examples of the such conservations and their objective?

iii. To what extent is your neighborhood represented in any law and policy making exercises on green spaces in Dandora? Give examples of the laws and policy that you got involved in making?

iv. To what extent are the views of this neighborhood taken into account on the decisions regarding the management of green spaces in this neighborhood?

v. How will you rate the level of public involvement in the management of green spaces in Dandora?

vii. In your opinion which institutions are doing so well and also not doing so well concerning the management of green open spaces in Dandora? And to those not doing well what would you recommend?

Thanks for your cooperation

APPENDIX V: Observation Checklist

OBSERVATION CHECKLIST/GUIDE

Status/conditions; activities/events on Urban Green Spaces in Dandora.			
Date	**Time**	**Area/Neighborhood**	**Event or activity and conditions out of the ordinary observed.**

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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RESEARCH LICENSE

This is to Certify that Mr.. Silva Mgunda Namalwa of Maasai Mara University, has been licensed to conduct research in Nairobi on the topic: INVESTIGATION ON DRIVERS, EFFECTS, AND POLICY IMPLICATIONS OF HUMAN ACTIVITIES ON URBAN GREEN OPEN SPACES IN DANDORA, NAIROBI COUNTY. for the period ending : 01/August/2023.

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