DIVERGENT PERCEPTIONS IN OPEN SPACES PROVISION IN NAIROBI: TOWARDS NEW BEGINNING IN COLLABORATIVE APPROACHES

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ABSTRACT

Nairobi was planned as a colonial capital within interconnected parklands that earned it the name "The green city in the sun." Over time, these have been systematically decimated through alienation and consequent development. This study documents the systematic loss of public open spaces and interrogates the residents' awareness of the decimation, the importance of open spaces and their views on remedial measures. It suggests a new beginning of sustainable provision based on per capita standards, typologies and good governance anchored on strong stakeholder involvement. Data was collected through questionnaire survey (N=400) supplemented by 20 key respondents questionnaire survey, interviews, observation, review of documents and maps. The study reveals high levels of awareness of the resource loss and the benefits that accrue from its provision and use. An overwhelming majority of respondents recommends the demolition of existing developments and the reversion of land to open space usage while simultaneously applying high standards for continued provision. The results call for a new beginning based on new structures, stakeholder involvement and strong checks and balances going forward.

Key Words: *urban open spaces, alienation, benefits, provision standards, stakeholders, Nairobi or Nairobi City or Nairobi County*

INTRODUCTION

Urban open spaces are indispensable components of urban living. These constitute areas without buildings within cities and towns especially those zoned or reserved for recreational use and primarily include parks, gardens, sports fields and water bodies (Stanley, et al., 2012). Streets and other communication routes are considered as grey open spaces (Dunnett, et al., 2002) and are not part of the current study. Public open spaces have free accessibility and are often in public ownership (Hunter, et al., 2015; Mensah, et al., 2016). Many scientific studies have shown urban open spaces as having numerous benefits.

Treed urban open spaces purify air and water, regulate flooding, replenish underground water, reduce heat islands, mitigate climate change and solar radiation and create biodiversity (Gomez-Baggethum and Burton, 2013; Eisenman, 2013). Trees on streets induce speed and driver error reduction, ameliorating road accidents and loss of life (Ulrich, et al., 1991; Rakhshandehroo, 2015). Green and blue landscapes restore human health, induce quick recovery, reduce stress (Kaplan and Kaplan, 1989; Volker and Kristemann, 2011), and decrease mental disorders and destructive emotions (Annerstedt, et al., 2012; Lee and Maheswaran, 2015). Activities within open spaces contribute to healing and prevent diseases like cancers, diabetes, obesity, dementia and others (Cerin et al., 2017; Tapper, 2018).

Open spaces encourage neighbourhood and family cohesion (Jennings, et al., 2016), aid cognitive and social skill development in children (Rakhshandehroo, 2015) and reduce crime and juvenile delinquency (Dunnett, et al., 2002). City greens and blue generate pride of place, attract investment, raise property-values and create employment (UN-Habitat 2017; Tapper 2018). Inadequate open spaces lack in environmental justice (Thompson, 2002; Wolch, et al, 2014).

White et al., (1948) appreciated that civilizations are built through qualities cultivated in organized games such as the common rules of fairness, sportsmanship, leadership, industry and self-control and urged Nairobi City government to provide ample budget for the development and management of public recreation. They posited all ages require open spaces since in every person there is a child with a simple sense of humour and adventure that finds profitable outlet within open spaces. They noted Nairobi had ample undeveloped state land. The government would not spend any money on acquisition.

The policy vision for their Nairobi master plan was to "emphasize the need for consolidation and compactness, of linking together the various open spaces and its careful distribution among the neighbourhoods" (White et al., 1948, p. 55). This they put into design providing 2934 hectares of recreational parkland equal to 29.25% of the total town (Nairobi was chattered as a city in 1954) area (Figure 1). This open space provision model was based on technical and personal views of the designers and was centred on top bottom planning without due involvement of the stakeholders. The model has guided overall urban planning in Nairobi City to date.

The South African designers did not introduce the philosophy of plenteous provision of urban open spaces to Nairobi. In 1932 the colonial government had carved out Karura and Ngong forests and latter gazetted them (Green Belt Movement, 2009). This was simple since before the founding of the city in 1899, its current location was mainly a tropical forest teaming with wild animals and clean rivers flowing through the marshy swamp, now the central business district, to the Athi Plains in the east (O'Toole, undated). In 1946, it established the 117km2 Nairobi national park (Hyman, 2011) unaware that this would for decades to come be the only global provision within a city. City Park, Arboretum, The Royal Golf Club and The Horse Race Course were already operational by 1927 (Local Government Commission, 1927).

The White, et al., (1948) recommendation to preserve and finance the planned open spaces went unheeded after Kenya's independence in 1963. The vital benefits not withstanding, Nairobi has lost many hectares of recreational open spaces to private developers aided by lack of coherent open space policy, legal framework and public participation (Mireri and Makwaro, 2011; Mwaura, 2006) exposing the city to negative impacts like climate warming (Ongoma, et al., 2010) and pollution (Thynell, 2015; Thynell, 2016). UN-Habitat (2016) reports a total of 4754 hectares of recreational open spaces in Nairobi by 2016 inclusive of forests and government-managed stadiums. This paper aims at examining the accountable alienated public open spaces and the city residents' views thereof establishing provision standards and open space

requirements going forward. The paper concludes by making proposals for all public open places in Nairobi.

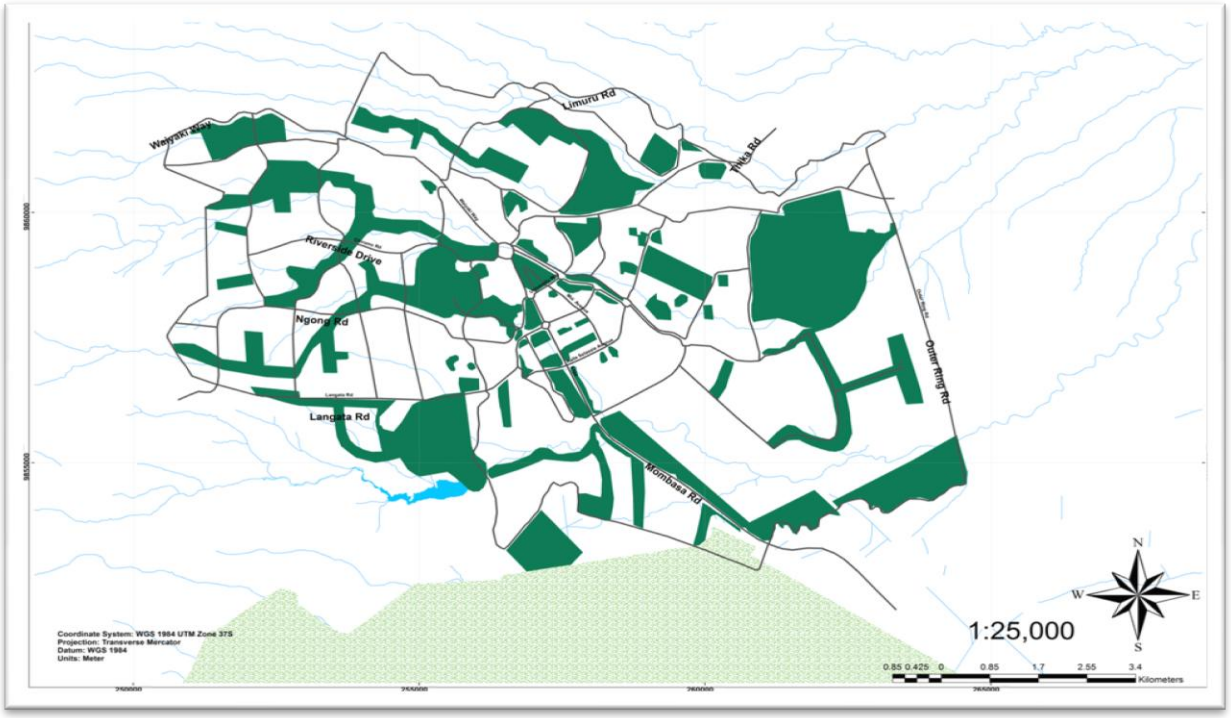

Figure 1: Open spaces provided by the Nairobi Master Plan for a Colonial Capital
Source: White *et al.*, 1948

RESEARCH MATERIAL AND METHODS

This study's theoretical framework (Figure 2) is based on Psycho evolutionary stress reduction theory or stress reduction theory in short (Ulrich, et al., 1991; Harting, et al., 2014) and the theory of common property resources or the theory of tragedy of the commons (Wiesner and York, 1964; Hardin, 2001). The first theory defines the critical importance of urban open spaces in the wellbeing of urban residents while the second highlights difficulties pertaining to their administration as demonstrated in Nairobi.

The study was based in Nairobi as the capital city of Kenya and headquarters of many international organizations including UN-Habitat and UNEP. It was designed around a conceptual framework that shows strong correlations between effective urban open space planning and sustainable open space outcomes. It employs qualitative and quantitative designs for more reliable results (Williams et al., 2007). The qualitative approach was based on an exploratory case study as a method of inquiry, which was triangulated through simultaneous use of review of document and maps, participant observations, interviews (Dammak, 2015) and application of 20 questionnaires applied to purposively sampled key respondents (Williams, et

al., 2007). The quantitative approach was based on a scientifically sampled questionnaire survey (N=400). The data was analysed using SPSS.

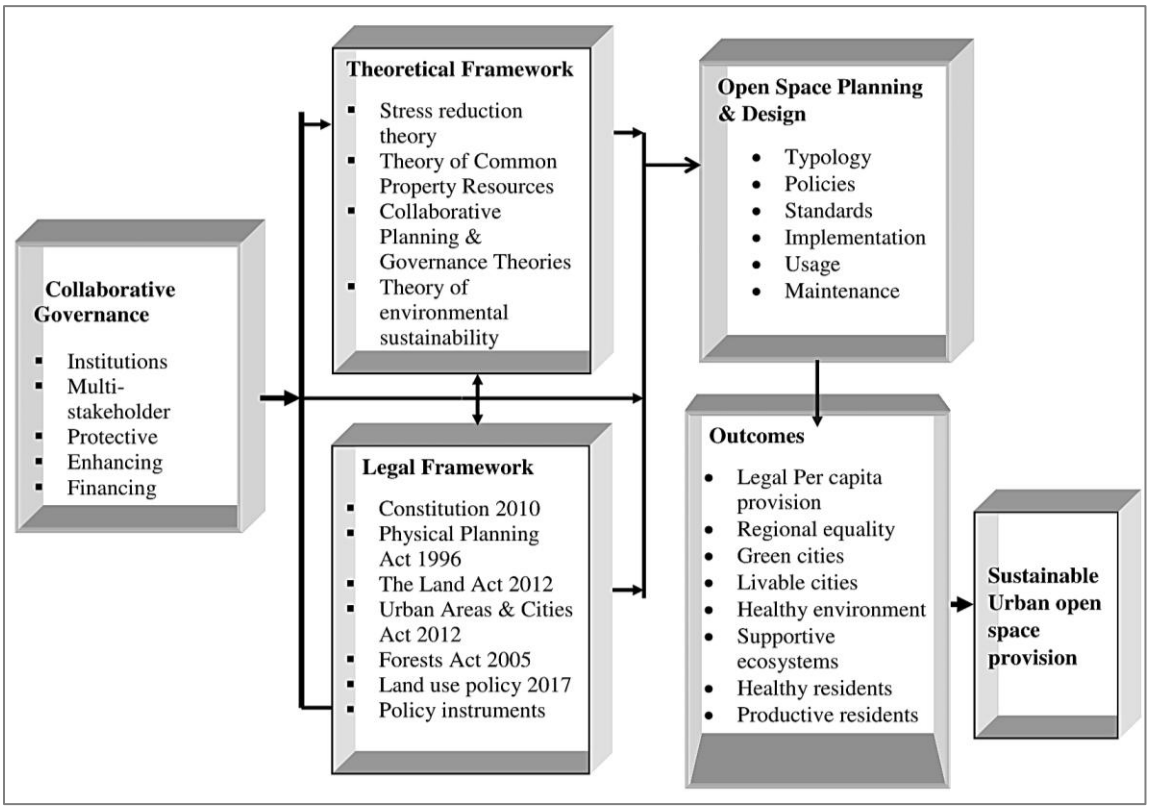

Figure 2: Conceptual framework

RESULTS

Massive loss of open spaces in Nairobi

Of the 2934 hectares of parkland, only 492 hectares (16.8%) currently remain as open spaces (Figure 3) comprising mainly of some riparian reserves, Uhuru Park, Central Park, City Park and the Arboretum. To derive the loss of open spaces, a GIS overlay was made on the Nairobi Land Use Map (Japanese Government Technical Cooperation Program [JICA], 2005). The results are displayed on the Nairobi open space alienation map (Figure 3).

There is another unknown loss of neighbourhood open spaces surrendered under the 10% sub division rule operational in Nairobi until the promulgation of the 2010 Kenya Constitution. Only the respective developers can reclaim these where there was no collusion. The nullification of free surrender by article 40, section 3(b), (i) of the Kenya Constitution (Government of Kenya, 2010) introduces the principle of compensation and by default upholds the 10% open space provision under the management of developers or residents associations where housing units are sold off.

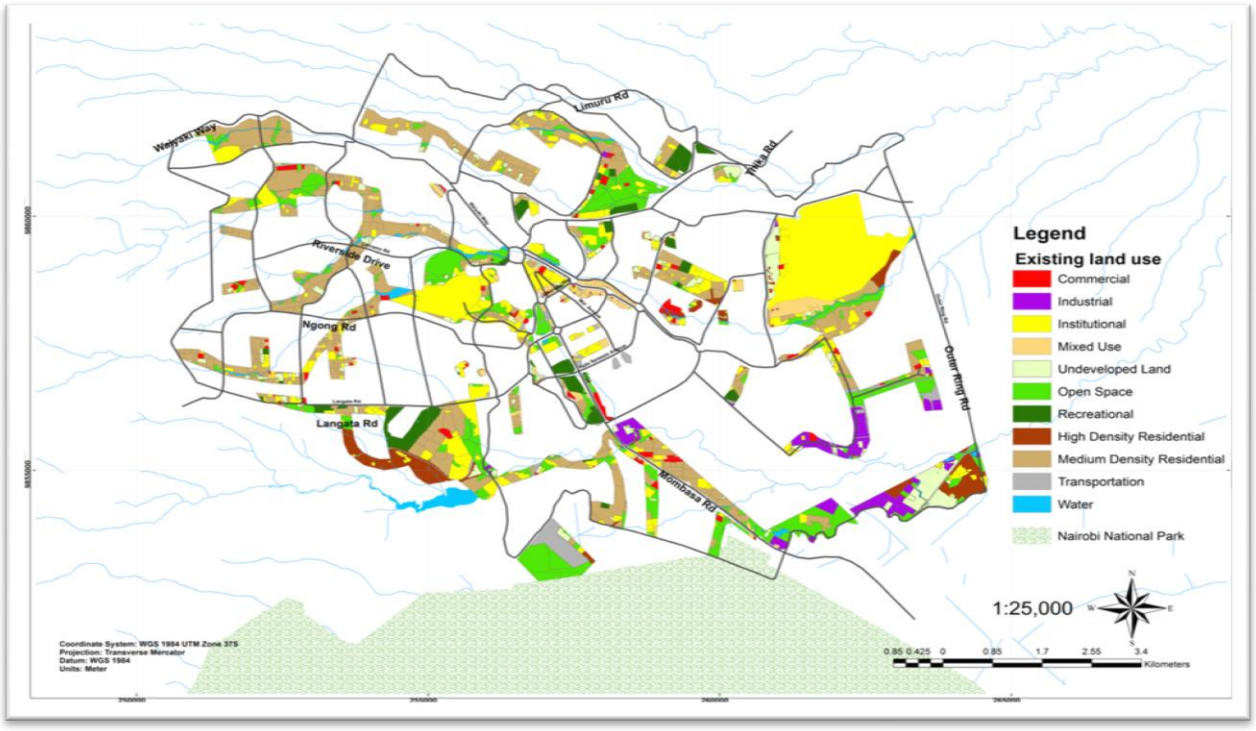

Figure 3: Nairobi open space alienation map

Forests too suffered from alienation. Between 1992 and 1996, 476 hectares of Karura Forest were excised and allocated to 67 companies (Green Belt Movement, 2010) each appropriating an average of 7 hectare (17.5 acres) of essential public land. These titles have been cancelled according to the same source though litigation continues awaiting a loophole to pounce on the forest. Friends of Karura Forest (2013) posit that 100 hectares of forest are still in private hands. The same source reports alienation of 2000 hectares of Ngong Forest.

Open space losses on private land have been aggravated by densification especially in the western part of the city where construction is irregularly approved and carried out from beacon to beacon without policy back up. No trees are planted in such developments after felling many mature ones. Often trees on the abutting road reserve are cut down and the area paved for car parking. According to the Nairobi City Ordinances and Zones (Nairobi city Council, undated) the development in these areas should not exceed 4 floors where apartments are allowed and should have ground coverage of 35% on sewer and 25% without sewer while retaining building lines of 6 to 9 metres on all abutting streets depending on their sizes. Despite official approval stamps on the building plans, the developments are against zoning and other planning policy guidelines and therefore illegal.

Table 1: Identifiable alienated open spaces in Nairobi

Open spaces in hectares	New land use	Alienated open Spaces in hectares
1948 planned City-wide open spaces = 2934 including riparian reserves	Institutional	772
	Industrial	103
	Commercial	67.64
	Transportation	86
	Mixed Use	90
	Medium density Residential	898
	High Density Residential	121
	Recreational (private clubs)	141
	Allocated & undeveloped	165
Subtotal		2,444
Karura Forest	Residential, institutions & embassies	100
Ngong Forest	Residential, institutions, transportation	2,000
Arboretum (org.133)	Residential and offices	103
Sub total		2,203
Grand total		4,647 (11,483 acres)

The alienated public open spaces were appropriately placed on actual location for the purpose of costing. Using Cytonn Real Estate (2018) values of land per acre in the pertinent areas of the city, the loss to the Nairobi public was calculated at Kenya shillings 1.6 trillion or equivalent of 15.8 billion US dollars.

The state of blue open spaces in Nairobi City

Nairobi Rivers have an area of 46.35 hectares (JICA, 2005). Most of the river reserves are allocated (Figure 2) with instances of alienation of the rivers themselves in contravention of article 60(1) of the Constitution of Kenya. The 2005 surface water area of the Nairobi dam designed in 1946 was 33 hectares as deduced from the JICA (2005) map. The dam and its hinterland, previously used for boating and other water based recreation, has substantially shrunk while its hinterland has been alienated and mainly constructed on. This is the only sizable water body in the city. Many key respondents are against the decommissioning suggested by some Nairobi City politicians (Mutanu, 2019).

The Nairobi blue spaces are highly neglected and abused from the time they were pristine waters in the early 1900s to this day. The Local Government Commission (1927) reports raw sewage from the European residential areas as being emptied into the rivers. Industrial wastes are also finding their way into the rivers that are sometimes covered with whitish foam. Nearly 100% of the respondents agree that Nairobi Rivers are smelly, full of plastics and garbage.

Public awareness of alienation of open spaces and suggested remedial measures

Nairobi residents are aware of the inadequacy (68.5%) and alienation (84%) of open spaces in the city. About 85% and 100% of key respondents confirm total absence of public parks in their areas of residence and alienation of wetlands in Nairobi respectively. Majority of respondents (91%) confirm allocation of city wetlands. An overwhelming majority (95%) of the respondents are convinced the city governance has not protected open spaces against alienation. About 94% of the respondents and 100% of key respondents want the government to repossess all the grabbed land. The majority of respondents (71.5%) recommend demolition of existing structures with only 21.5% opting for court action.

Awareness of consequences of inadequate open spaces

The majority of the respondents are aware of the many benefits of open spaces and the consequences of their inadequate provision. About 74% of the respondents strongly agree or agree that open spaces deficiency with the consequent lack of recreational activities causes criminality in youth (74%) and result in poor performance in schools (80.6%). About 79% of the respondents are aware (Table 4) that lack of urban open spaces results in poor mental health and poor physical health (90.8%). With this knowledge, many respondents (62.3%) would recreate given the opportunity.

Lack of sustainability in public open spaces provision in Nairobi

This study confirms the conclusions of others that Nairobi lacks in open space sustainability particularly with regards to neighbourhood parks (Figure 4). Many respondents (73%) do not use neighbourhood parks because they were either not provided for during the planning process (46%) or they have been allocated to other urban uses (27%). Private open spaces such as clubs in the residential areas are not accessible to non-members as reported by 3% of the respondents. Others are accessible but not usable due to their bad condition (4%) or are insecure (5%). This makes 85% of potential park users who cannot do so at a neighbourhood level due to poor planning and management. Only 15% of the total respondents would not use open spaces even if they had them due to reported pressure of work. Many respondents (77%) use major parks within the city with the reminder citing distance and pressure of work as deterrents of major park usage.

Standards for adequate provision of open spaces

Maximum levels of efficiency in urban open space provision require an all-inclusive classification backed by comprehensive standards regime that direct planning from the local neighbourhood to district and urban levels (World Health Organisation, 2010; Nochian, et al., 2015). The latter is lacking in Nairobi. The respondents gave their preferred affordable standards of open space planning by both public institutions and private developers towards continued

provision of open spaces (Table 2). Future affordability ought to push these standards closer to better practice cities (Byrne and Sipe, 2010).

Table 2: Preferred open space provision standards for Nairobi

Key respondents 20				Sample respondents 400	
Parks	Sizes	Frequencies	Percentage	Frequencies	Percentage
Neighborhood	0.8 Ha	1	5	90	22.5
	1.2 Ha	19	95	310	77.5
District	0.2 Ha	2	10	83	20.8
	0.4 Ha	18	90	317	79.2
Urban	0.4 Ha	2	10	66	16.5
	0.8 Ha	18	90	334	83.5

Majority of respondents prefer neighbourhood parks provided at 1.2 hectares, district parks at 0.4 hectares and urban parks at 0.8 hectares per 1000 population. These give a combined provision standard of 2.4 hectares per 1000 population or per capita open space of 24M^2.

Open spaces requirements towards sustainable provision

Nairobi has a total freely accessible open spaces area of 2,363 hectares against the 4,754 hectares (UN-Habitat, 2016) that includes forests and stadiums managed by the national Government and publicly accessed upon some form of payments. Of the total freely accessible open spaces, 1,871 hectares are new provisions of what currently is documented from land subdivisions since 1948, as past and current city governments have not made provision for new parks. The freely accessible open spaces constitute 3.4% of the total city area and 2018 per capita open space of 5.3M^2. This will drop to 4.1M^2 by 2025 if no more provision is made. By 2025, Nairobi's projected population will be 5,762,639 requiring a minimum open space provision of 8,079 hectares. The 2018 public open space requirement stands at 5,300 hectares. The current provision of 2,363 hectares leaves a deficit of 2,937 hectares.

Some suggestions towards open space regional equity

The riparian reserves in the eastern part of the city can provide 1,846 hectares at varying average widths of 150 meters on either side of the rivers. With the good will of the national and county Governments, Kenya Parliament and Judiciary together with the strong will of the Nairobi residents for the common good, the wetlands and riparian reserves, vacant or developed, including all allocated undeveloped open spaces should be restored back to public ownership. Those already owning developed plots within former open spaces should pay a sum of money equivalent to the current value less what was paid to the county and national governments at allocation for direct purchase of open spaces within reasonable distance of the alienated land. The repossession of 3,500 hectares alienated from the 4,000 hectare Ruai sewerage treatment site

(Nairobi City County, 2016) could accommodate a 1,000 hectares of much needed forest in the eastern part of Nairobi. Direct purchase of land for forests, district and urban parks particularly in the same region would satisfy open space demand up to 2025.

Nairobi residents desire to participate in open spaces management

The majority of respondents appreciate the positive role of stakeholder involvement in open space management. Many key respondents who include high level public urban planners, city and pertinent Government managers agree that public participation in open space management produces the most effective policies (70%), the best plans (75%), the best managed parks (70%), the most fulfilled residents (70%) and the least crime cities (70%). The respondents are willing from now going forward to protect the parks against grabbing (95%), plant trees (96.8%) and take care of them (92.6), maintain open spaces (92.3%) and assist in their planning (92.8%).

Structures for new beginning in open space governance

As already noted, governance is of critical importance in all forms of urban management. About 91.3% of the respondents overwhelmingly supported the creation of Nairobi County as a special status district. Nairobi residents are ready for this new beginning where they participate centrally directed by the national Government. Due to heavy expenditure incurred in the purchase of land for open spaces, about 60% of the respondents recommended provision of district and urban parks by the national government as opposed to 31% who preferred this function to be carried out by the Nairobi City government. Developers should provide a minimum reservation of 10% of land under planning application specifically for open spaces (95%).

DISCUSSION

This study is consistent with the findings of others that there is indeed loss of open spaces in Nairobi both at macro and micro levels. The divergent views on open space planning and management by the early city planners and designers have been lost over time. A vibrant, prosperous and green city was the original vision for Nairobi. Today's city residents have similar aspirations refusing to be deterred by personal greed at public investment provided for the common good. Many respondents therefore recommend demolition of structures constructed on open spaces including riparian reserves and wetlands. They realize these are extreme remedial measures that involve huge losses of investment. However riparian reserves and wetlands must be maintained where they naturally occur. Their loss due to misuse through weak governance is permanent while their retention benefits the entire city ecosystem now and into the future. The city residents are latently aware that their continued stay in Nairobi without adequate public open spaces will ultimately be many times more expensive to them in loss of lives and destruction of investments than the demolition option. They therefore unconsciously support the stress

reduction theory that propounds the utter necessity of nature human contacts for meaningful urban survival.

The theory of common properties resources has been perfectly played out in Nairobi. The suggested solution of assignment of ownership through individualized ownership has failed due to change of land use causing serious consequences like climate warming, widespread flooding and destruction of lives and properties among others. More advanced assignment of ownership that give free access to public open spaces need to be urgently implemented. This study proposes co-ownership of open spaces with developers, philanthropists, resident associations, companies and other stakeholders as the case may be with the national or county government by way of a new dual title registration framework with stringent anti-alienation conditions to protect them from future abuse. The 10% reservation of land for open spaces should be maintained under conditions that uphold the Kenya Constitution while land should be purchased, developed and banked for urban and district parks.

New legislation is necessary mandating every neighbourhood of the city, irrespective of land use to have officially registered resident/owners associations empowered to assist in the betterment and security of their environments. Just as power has been devolved to the counties for better administration and management of resources at grass-root levels (Government of Kenya, 2010), so the management of neighbourhood open spaces should be devolved to local levels for better management, security and local ownership.

The future liveability of Nairobi City and wellness of its residents and ecosystems demands bold action now. Nairobi has already crossed the red light of environmental mismanagement preferring economic gains as exemplified by the topical debate on developments around Nairobi dam and the city's riparian reserves and wetlands. Public welfare must transcend personal enrichment. Clean air and waters were the heritage of Nairobi that all must endeavour to reclaim. The desires of Nairobi residents to participate in open space planning and management form the initial steps towards heritage reclamation.

Sustainable open space provision in Nairobi City is hard to realize with top bottom planning and governance structures that employ meaningless or no stakeholder involvement. For a new beginning, respondents have by a wide majority recommended that Nairobi City County be uplifted to a special status district with initial special financial allocations or tax regime provisions to be governed under the national government through highly qualified pertinent professionals both elected and nominated. Over time, the city would be capable of instituting high-level development projects after meeting its other routine obligations on its own and in joint partnerships be a growth engine that attracts investment, creates employment and financially contributes towards other areas of national development. It would also provide good practice case study for other cities and towns in Kenya.

CONCLUSION

In terms of public open space provision, Nairobi is seriously disenfranchised. Good governance is critical for provision of open space planning and legal frameworks anchored on public participation and supported by adequate financing. The high levels of good will demonstrated by the majority of respondents towards provision, development and management of open spaces ought to be urgently directed to constructive action. This new beginning should painstakingly rebrand Nairobi as a thriving and life enhancing 'green city in the sun'.

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