

**USER PERCEPTION OF LAND USE ACTIVITIES AND FORMS ALONG RIVER CORRIDORS:
A CASE OF THE NAIROBI RIVER URBAN WATERFRONT**

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User Perception of Land Use Activities and Forms Along River Corridors
A Case of the Nairobi River Urban Waterfront

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

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DEDICATION

For William and Kabura

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TABLE OF CONTENTS

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENTS	iv
TABLE OF CONTENTS	v
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF PLATES	xii
LIST OF APPENDICES	xv
LIST OF ACRONYMS	xvi
ABSTRACT	xvii
CHAPTER 1: INTRODUCTION	
1.1.0 Background	1
1.2.0 Problem Statement	3
1.3.0 Study Objectives	9
1.4.0 Study Assumptions	10
1.5.0 Scope of the Study	10
1.6.0 Significance of the Study	14
1.7.0 Study Limitations	17
1.8.0 Organisation of the Study	18

CHAPTER 2: LITERATURE REVIEW

2.1.0	Introduction	20
2.2.0	Urban Ecology and Urban Design	20
2.3.0	Continuity and Change of Urban Form	22
2.4.0	Cityscape Analysis	28
2.5.0	Environmental Psychology and Environment-Behaviour Studies	32
2.6.0	Urban Decline and Regeneration	34
2.7.0	The Commons/ Public Realm	36
2.8.0	Urban Waterfronts	38
2.9.0	Theoretical Framework	54
2.10.0	Conceptual Framework	59
2.11.0	Conclusion	60
2.12.0	Hypothesis of the Study.....	62
2.13.0	Theoretical Definitions	63
2.14.0	Operational Definitions	63

CHAPTER 3: RESEARCH METHODOLOGY

3.1.0	Introduction	65
3.2.0	Research Approach	65
3.3.0	Research Setting	66
3.4.0	Research Design	67
3.5.0	Sample Size	70
3.6.0	Sampling Methods	70
3.7.0	Data Collection Tools	72

3.8.0	Data Analysis and Presentation	74
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CHAPTER 4: STUDY AREA – NAIROBI

4.1.0	Introduction	75
4.2.0	Historical Background	75
4.3.0	Climatic Conditions	77
4.4.0	Hydrology	84
4.5.0	Geology	85
4.6.0	Evolution of Land Use Patterns in Nairobi	85
4.7.0	Social Determinants of Land Use Patterns in Nairobi	94
4.8.0	The Nairobi River Corridor	98
4.9.0	Conclusion	99

CHAPTER 5: DATA ANALYSIS AND PRESENTATION

5.1.0	Introduction	100
5.2.0	Land Use Activities	100
5.3.0	Building Forms	103
5.4.0	Respondents' Personal Information	106
5.5.0	Rating the Nairobi River Corridor	109
5.6.0	Rating of Urban Scenes	113
5.7.0	User Behaviour	114
5.8.0	Discussion	118

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1.0 Introduction119

6.2.0 Conclusions119

6.3.0 Recommendations121

BIBLIOGRAPHY127

APPENDICES135

LIST OF TABLES

Table 2.8.1: The social dimensions of urban waterfront planning41

Table 5.2.1: Zoning Ordinances for areas adjacent to the river corridor102

LIST OF FIGURES

Figure 1.5.1:	Geographical scope of study	11
Figure 2.9.1:	Fining the social meaning of space through symbolic interactionism	59
Figure 2.10.1:	Conceptual framework	60
Figure 3.3.1:	Nairobi River Corridor in the CBD	67
Figure 4.2.1:	Map of Kenya showing the location of Nairobi	75
Figure 4.2.2:	Nairobi's boundary changes (1900-1963)	76
Figure 4.2.3:	Nairobi's population growth (1906-2000)	77
Figure 4.3.1:	Annual frequency wind rose for the city of Nairobi	79
Figure 4.3.2:	Mean Monthly Rainfall	80
Figure 4.3.3:	Diurnal Variation of Rainfall	81
Figure 4.3.4:	Mean Monthly Temperature (JKIA)	82
Figure 4.3.5:	Mean Daily Sunshine Hours	83
Figure 4.3.6:	Mean Monthly Humidity	84
Figure 4.6.1:	Concentric Zone Theory	87
Figure 4.6.2:	The functional structure of Nairobi's CBD in 1964	88
Figure 4.6.3:	The Axial Development Theory	89
Figure 4.6.4:	Nairobi's expansion along major transportation routes	90
Figure 4.6.5:	Sector Theory	91
Figure 4.6.6:	Land use in the Old City area of Nairobi in 1979	92
Figure 4.6.7:	The Multiple Nuclei Theory	93
Figure 4.6.8:	Land Use in Nairobi in 1979	94
Figure 4.7.1:	Nairobi Township and CBD, 1917	95
Figure 4.7.2:	The CBD of Nairobi, 1901	96

Figure 4.7.3:	The segregation of residential areas in Nairobi, 1909	97
Figure 4.8.1:	Nairobi city, showing the profile of Nairobi River	98
Figure 4.9.1:	The urban structure of Nairobi, 1992	99
Figure 5.2.1:	The Nairobi River corridor as an edge	101
Figure 5.3.1:	Aerial view of the urban structure along the waterfront	104
Figure 5.3.2:	Aerial view of the urban structure along the waterfront	105
Figure 5.4.1:	Gender distribution of respondents	106
Figure 5.4.2:	Users' marital status	106
Figure 5.4.3:	Entry points	107
Figure 5.4.4:	Exit points	107
Figure 5.4.5:	Users' age profiles	107
Figure 5.4.6:	Users' education status	107
Figure 5.4.7:	Occupations	108
Figure 5.4.8:	Users' income levels	108
Figure 5.5.1:	The <i>best things</i> about the river corridor	109
Figure 5.5.2:	The <i>worst things</i> about the river corridor	110
Figure 5.5.3:	Users' activities	112
Figure 5.5.4:	Activities that <i>should not be</i> situated along the river corridor	113
Figure 5.5.5:	Activities that <i>should be</i> situated along the river corridor	113
Figure 6.3.1:	Linking lively episodes through pedestrian networks	122
Figure 6.3.2:	Land use activities overlap to create a vibrant mix of uses	124
Figure 6.3.3:	Continuous pedestrian access to the waterfront	126

LIST OF PLATES

Plate 1.2.1:	Obstruction of access road	3
Plate 1.2.2:	Dilapidated road network	3
Plate 1.2.3:	Informal trading encroaching on bridges	3
Plate 1.2.4:	Makeshift pedestrian bridge	3
Plate 1.2.5:	Solid waste along the riverbank	4
Plate 1.2.6:	Poor water quality	4
Plate 1.2.7:	Storm water draining directly into the river	5
Plate 1.2.8:	Street families on the river corridor	5
Plate 1.2.9:	Dilapidated built fabric and unkempt natural surroundings	5
Plate 1.2.10:	Used tire tube business at the water's edge	6
Plate 1.2.11:	Informal structures draining waste into the river	6
Plate 1.2.12:	Dumping and sorting of waste paper	7
Plate 1.2.13:	Car-washing activities and scrap metals along the water's edge	7
Plate 1.2.14:	Overgrown thickets and dense vegetation	8
Plate 1.2.15:	Rear walls of buildings fronting the waterfront	8
Plate 1.2.16:	Proliferation of temporary structures	8
Plate 1.2.17:	Idle youth in adjacent premises	8
Plate 1.2.18:	Family groups from residential areas do not use the waterfront	9
Plate 1.2.19:	Young men relax after showering in the river	9
Plate 1.5.1:	Gabions stabilise the river bank	13
Plate 1.5.2:	Tree planting efforts	13
Plate 1.5.3:	Provision of street lighting	13
Plate 1.5.4:	The bustling Maasai Market	13

Plate 1.6.1:	Richard Serra's Tilted Arc Sculpture	16
Plate 2.2.1:	Generalised forms of urban development	21
Plate 2.3.1:	Berlin in the eighteenth Century	23
Plate 2.3.2:	New York City plan of 1811	26
Plate 2.6.1:	The Pruitt-Igoe complex in St. Louis, USA	35
Plate 2.6.2:	Tearing down the Pruitt-Igoe complex	35
Plate 2.8.1:	Buildings on the hillside of Positano	44
Plate 2.8.2:	The Positano waterfront	44
Plate 2.8.3:	The Grand Canal in Venice	45
Plate 2.8.4:	Boat parade during the annual Regatta Storica	45
Plate 2.8.5:	Rialto Bridge on the Grand Canal	45
Plate 2.8.6:	The internal marketplace on the Rialto Bridge	45
Plate 2.8.7:	The Ponte Vecchio Bridge in Florence, Italy	46
Plate 2.8.8:	Walkway on the water's edge along the Tiber	47
Plate 2.8.9:	Bridge across the Tiber in Rome	47
Plate 2.8.10:	Pedestrian activity on the Seine riverfront	48
Plate 2.8.11:	The "Batobus" boat, Paris	48
Plate 2.8.12:	Aerial view of Amsterdam's canals	50
Plate 2.8.13:	Scaled buildings along Amsterdam's canals	50
Plate 2.8.14:	Recreation on the San Antonio Riverwalk	51
Plate 2.8.15:	Pedestrian activity on the San Antonio Riverwalk	51
Plate 2.8.16:	The Istanbul waterfront	52
Plate 2.8.17:	Piazza de Spaña in Seville, Spain	52
Plate 2.8.18:	Marina del Ray in Los Angeles	54

Plate 2.8.19:	John's Pass in Saint Petersburg, Florida	54
Plate 2.9.1:	A y-map that graphically represents convex spaces	55
Plate 2.9.2:	Paths, nodes, edges, districts and landmarks	55
Plate 2.9.3:	The visual form of Boston	56
Plate 2.9.4:	Singular and multiple connectivity of nodes	57
Plate 2.9.5:	Urban Design Theories	58
Plate 5.2.1:	Developments oriented away from the waterfront	103
Plate 5.2.2:	Dilapidated built fabric	103
Plate 5.2.3:	Mixed use developments along the waterfront	103
Plate 5.2.4:	Mixed use developments along the waterfront	103
Plate 5.3.1:	Informal structures encroaching on the open space	106
Plate 5.3.2:	Informal structures in empty lots	106
Plate 5.7.1:	Abandoned waterfront near Museum Hill	115
Plate 5.7.2:	Abandoned waterfront near Museum Hill	115
Plate 5.8.1:	Aerial view of waste paper industry	116
Plate 5.8.2:	Aerial view of automotive activities	117
Plate 5.8.3:	Mixed use development accessed from the waterfront	118
Plate 5.8.4:	Residential flats oriented away from the waterfront	118

LIST OF APPENDICES

Appendix 1: Interview schedule for waterfront users135

Appendix 2: Questionnaire for experts139

Appendix 3: Photos used as visual aids140

Appendix 4: Code Book146

Appendix 5: Implementation Matrix for NRBP153

LIST OF ACRONYMS

EBR	Environmental-Behaviour Research
CCN	City Council of Nairobi
CBD	Central Business District
MEMR	Ministry of Environment and Mineral Resources
NCBDA	Nairobi Central Business District Association
NEMA	National Environment Management Authority
NRBP	Nairobi River Basin Programme
NYS	National Youth Service
UNEP	United Nations Environment Programme

ABSTRACT

The Nairobi River corridor is neither pleasant nor enjoyable. Accessibility to the waterfront is ill-defined and obscure. The built and natural environments are neglected, dilapidated and unsightly. The river basin is highly polluted with mounds of garbage, raw sewage, and chemical wastes. Unplanned and unregulated development schemes proliferate, and the areas adjacent to the river are extremely dangerous and crime prone. This research studies the relationship between environments and human behaviour. The study employs Environmental Behaviour Research methods to establish how the forms and land uses along the Nairobi River corridor relate to the users' attitudes and resultant behaviour patterns. Observation methods are used to establish the land use activities and dominant behaviour patterns of the users. User perception and attitude are assessed through scheduled interviews which employ preference/judgment scales, open ended questions and visual aids, where respondents rate 80 photos representing a variety of urban scenes and urban waterfronts. 5 urban design professionals have also rated the photos, in order to establish their Complexity, Monumentality, Order, Openness, Balance and Commonness. The respondents rate the *best things* about the river corridor as the Commerce/Business environment, and the *worst things* as Environmental Issues, Social Issues, Poor Infrastructure and Poor Maintenance. They *like* Complex, Ordered, Open, Balanced and Commonplace urban scenes; and Complex, Monumental, Ordered, Open, Balanced and Unusual urban waterfronts. It is recommended that regeneration efforts enhance essential linkages through an integrated transportation network, giving priority to pedestrian circulation. A vibrant mix of uses, and cultural events should also be incorporated to attract users to a continuous waterfront promenade, in order to inject vitality and bring active participation by users with the water's edge.

CHAPTER 1: INTRODUCTION

1.1.0 BACKGROUND

During the last centuries, the urban waterfront areas have undergone large transitions (Breen and Rigby, 1991; Hudson, 1996; Sairinen and Kumpulainen, 2006). Urban waterfront redevelopment has grown out of the need to respond to the historic alteration of land and water uses along the edges of thousands of cities throughout the world. In the past 30 years, the development trend has mainly been guided by the shift from industrial to commercial, residential, cultural and recreational uses of waterfront areas. In addition, the natural environments and waterfronts of Third World countries are negatively impacted by the absolute primacy of economic development over human development (Silva, 1997). Consequently in many cities, efforts are currently being made for urban waterfront regeneration to keep up with the demands of change (Fisher et al, 2004; Sairinen and Kumpulainen, 2006).

Although the social dimension of urban waterfront regeneration plans have become increasingly important in urban policies, the social impact assessments of waterfront regeneration interventions has been a much more weakly developed area. In various waterfront regeneration projects, environmental issues have been widely addressed through Environmental Impact Assessments (EIA) and Strategic Environmental Assessments of waterfront redevelopment interventions, at the expense of social issues (Nairobi River Basin Program (NRBP), 1999; Seattle's Waterfront Concept Plan, 2004; Bayfront Park, 2003; Mississippi Riverfront Revival, 2004). Sairinen and Kumpulainen (2006) propose that the social dimension of urban waterfront regeneration can be divided into four categories: *resources and identity; social status; access and activities; and waterfront experience.*

Resources and identity involves analysing the main characteristics of the waterfront area, identifying the resources that can be considered as strengths in the area, as well as the cultural or historic values of a specific area. Study of *social status* involves identifying for whom (social, age or ethnic groups) the physical facilities and service areas are planned and built. *Access and activities* involves establishing how accessible the waterfront areas are to the public, the ease or difficulty people have while approaching the waterfront and what kinds of activities are possible at the waterfront. Finally, *waterfront experience* explores the effects of the physical presence of water (sea, lake or river), its restorative experiences and visual and emotional/spiritual stimulation (Sairinen and Kumpulainen, 2006).

Since urban waterfronts are public spaces that are experienced on a regular basis by large numbers of people, they have a substantial influence on the evaluative image of the city. At present, decisions about the visual quality of the environment predominantly the domain of design professionals (Moughtin, 2003). Unfortunately, research indicates that professionals and the public do not share aesthetic values; they differ significantly in their environmental preferences, and professionals do not always accurately gauge aesthetic needs of the public (Sommer, 1969; Nasar, 1988). Reliance on professional intuition alone is therefore not acceptable. Since *waterfront experience* centrally involves the relationship between physical stimuli and human response, social dimensions of regeneration should involve Environmental Psychology and Environmental Behaviour Research (EBR) and Environmental Aesthetics. These areas of expertise use scientific methodologies to help explain the interrelationship between environments and human behaviour. Findings in these fields indicate because of its importance, visual quality may well influence well-being and behaviour in a given setting (Zeisel, 1984; Nasar, 1988; Fisher, 2005; Bechtel and Churchman, 2002).

1.2.0 PROBLEM STATEMENT

The Nairobi river corridor does not offer pleasure or enjoyment to the public. Visitors to the city do not venture into the river corridor without a local guide; in fact few local residents feel comfortable attempting to access the river corridor. Accessibility routes to the river are ill-defined and obscure. Unregulated development obstructs a major vehicular access road (Plate 1.2.1). Dilapidated road networks impede both pedestrian and vehicular circulation (Plate 1.2.2). Informal activities and informal structures have mushroomed in the area blocking existing access routes (Plate 1.2.3). These activities impede connection between different sides of the waterfront (Plate 1.2.4).



Plate 1.2.1: Obstruction of access road.
(Source: Author, 2007)



Plate 1.2.2: Dilapidated road network.
(Source: Author, 2007)



Plate 1.2.3: Informal trading encroaching on bridges.
(Source: Author, 2007)



Plate 1.2.4: Makeshift pedestrian bridge.
(Source: Author, 2007)

The Nairobi River corridor is a highly polluted environment. Mounds and mounds of garbage characterise the length of the river corridor, and the public regularly uses the river as a 'public toilet' (Plate 1.2.5). What once used to be a fresh water river is now a toxic black liquid, saturated with suspended and dissolved solids, heavy metals, raw sewage, fertilizers and other chemicals (Plate 1.2.6). Untreated storm water and raw sewage are discharged directly into the river (Plate 1.2.7). Instead of attracting tourists, the river is a magnet for 'street urchins', who scavenge in the garbage heaps in an attempt to eke out a living (Plate 1.2.8). This unchecked pollution has rendered the river water unsafe for human consumption, and it is a cause of high rates of water-borne diseases and other infections (NRBP, 2001). Some parts of the river have been invaded by alien plant species and lost all their biological value (Karisa, 2000).



Plate 1.2.5: Solid waste along the riverbank.
(Source: Author, 2007)



Plate 1.2.6: Poor water quality.
(Source: Author, 2007)



Plate 1.2.7: Storm water draining direct into the river.
(Source: Author, 2007)



Plate 1.2.8: Street families on the river corridor.
(Source: Author, 2007)

Urban waterfronts capitalise on views to the water from the surrounding streets and neighbourhoods. The planning guidelines for the city of Nairobi have major access routes as well as building frontages and access routes are located away from the river corridor. The views experienced along the river corridor are, therefore, predominantly of the rear side of buildings, a majority of which are in a state of disrepair. The visual stimulus afforded along the Nairobi river corridor is therefore not scenic, but rather of an unkempt environment, where the buildings and the natural environment is neglected and dilapidated (Plate 1.2.9).



Plate 1.2.9: Dilapidate built fabric and unkempt natural surroundings.
(Source: Author, 2007)

Ineptitude in implementation of land use policy and environmental regulations by the relevant authorities has led to a disregard for the existing city planning and zoning regulations in the area. Unplanned urban development schemes have encroached on the former riverine areas. The result is the processes of devastation to the river basin due to the land use activities situated adjacent to it. Resale of used tire tubes, car spare parts and other second hand wares on the waterfront leads to pollution of the environment with a variety of toxic and non-biodegradable substances such as plastics, rubbers and rusting metals (Plate 1.2.10). Retail markets, small restaurants and hotels channel their untreated waste directly into the river channel (Plate 1.2.11). Car washing, servicing and repair are also rampant along the waterfront and the dirty water and oil generated seeps unchecked into the river (Plate 1.2.12). Adjacent printing and stationery premises (predominantly along Kijabe Street) generate chemical waste seepage that pollutes the river, as well as solid waste (waste paper). The sorting of this waste paper is carried out on the riverbanks, with no heed paid to the waste that inevitably seeps into and pollutes the river (Plate 1.2.13).



Plate 1.2.10: Used tire tube business at the water's edge.
(Source: Author, 2007)



Plate 1.2.11: Informal structures draining waste into the river.
(Source: Author, 2007)