ASSESSMENT OF COMMUNITY'S PARTICIPATION IN CONSERVATION OF OPEN SPACES IN DAR ES SALAAM CITY, TANZANIA

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ABSTRACT

Open spaces in cities like Dar es Salaam are facing problem of encroachments and conversion for residential and or commercial land uses. Many studies have been done to address the failure of the "top-down approach" by the government authorities and recommended participation and empowerment of local community around the open spaces. However, the state of awareness, perceptions and willingness of local community towards participation in conservation of open spaces (COSP) was still not known. This study therefore intended to assess households' awareness and perceptions towards COSP, with a particular focus on their willingness to participate in COSP. Data was collected using structured households' survey questionnaire, key informants interviews, focus group discussions and participatory observation at Mkunguni, Minazini, Sharifushamba and Charambe mitaa in Kinondoni and Ilala municipalities, Dar es Salaam city. Quantitative data were analysed using Statistical Packages for Social Sciences (SPSS) while qualitative data were analysed using content analysis. Results show that majority of the respondent were aware on the types and functions of recreational parks, sports grounds and playing fields compared to other types of open spaces. Majority (67.5%) were aware of Urban Planning Act as enforcing tool while about 94% denied collaboration from statutory bodies in COSP. About 95% and 70.8% perceived that, conservation of open spaces is costing but also beneficent respectively while 73.3% perceived that, existing open spaces have poor quality. Using cross tabulations and regression analysis the result revealed that, 55.8% of the respondents were willing to participate in COSP. Perceived quality, perceived benefits, education and duration of residence were the factors positively influenced households willingness in conservation of open spaces. It is recommended that the modalities should be sought to empower and take into consideration the local community's interest in conservation of open spaces.

DECLARATION

I, **AHMAD HASSAN,** do hereby declare to the Senate of Sokoine University of Agriculture that this dissertation is my own original work done within the period of registration and that it has neither been submitted nor being concurrently submitted in any other institution.

Ahmad Hassan Date

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The above declaration is confirmed;

Dr. Felista F. Mombo Date

(Supervisor)

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DEDICATION

This work is dedicated to Almighty GOD and my mother Rahma I. D. Mkambaku who laid the foundations of my academic background.

TABLE OF CONTENTS

ABSTRACT ii

DECLARATION iii

COPYRIGHT iv

AKNOWLEDGEMENTS v

DEDICATION vi

TABLE OF CONTENTS vii

LIST OF TABLES x

LIST OF FIGURES xi

LIST OF APPENDICES xii

LIST OF ABBREVIATIONS AND ACRONYMS xiii

CHAPTER ONE 1

1.0 INTRODUCTION 1

1.1 Background Information 1

1.2 Problem Statement and Justification 3

1.3 Objectives 6

1.3.1 Main objective 6

1.3.2 Specific objectives 6

1.4 Research Questions 6

1.5 Conceptual Framework 7

CHAPTER TWO 9

2.0 LITERATURE REVIEW 9

2.1 Global Perspective on Open Spaces Conservation 9

2.2 Developing Countries Perspective on Open Spaces Conservation 9

2.3 Tanzania Perspective on Open Spaces Conservation 11

2.4 Households' Awareness towards Open Spaces Conservation 12

2.6 Households' Perceptions towards Open Spaces Conservation 13

2.7 Willingness of the Community towards Participation in Conservation of Open Spaces 16

CHAPTER THREE 19

3.0 MATERIALS AND METHODS...19

3.1 Description of the Study Area 19

3.1.1 Location and topography...19

3.1.2 Choice of study sites 20

3.1.3 Population size, number of households and land area 20

3.1.4 Climate 21

3.1.5 Economic activities 22

3.1.6 Open spaces and management regimes 22

3.2 Review of Regression Models...25

3.2.1 Multinomial regression model 25

3.2.2 Ordered regression model 25

3.2.3 Categorical regression model 26

3.3 Data Collection...27

3.3.1 Research design..27

3.3.2 Primary data collection...27

3.3.2.1 Sample size and Sampling procedures 27

3.3.2.2 Questionnaire survey 28

3.3.2.3 Focused group discussions and Key informants interviews.....................29

3.3.2.4 Direct observation 29

3.3.3 Secondary data collection...29

3.4 Data Analysis 29

3.5 Limitations of the Study...30

CHAPTER FOUR 31

4.0 RESULTS AND DISCUSSIONS 31

4.1 Description of Households' Socio-economic Characteristics 31

4.1.1 Age and sex 31

4.1.2 Marital status and education level 33

4.1.3 Duration of Residence and sources of income 34

4.2 Households' Awareness on the Objectives and Rules towards Open Spaces Conservation..36

4.2.1 Awareness on the objectives of open spaces 36

4.2.2 Awareness on Rules and Regulations Govern Open Spaces..............................37

4.3 Households' Perception towards Conservation of Open Spaces 39

4.3.1 Perceived conservation costs towards open spaces conservation 39

4.3.2 Perceived benefits from conserving open spaces 40

4.3.3 Perceived quality on existing open spaces 41

4.4 Households' Willingness to Participate in Conservation of Open Spaces..................41

4.5 Characteristics Influence Households' Willingness to Participate Conservation of Open Spaces...44

CHAPTER FIVE...50

5.0 CONCLUSIONS AND RECOMMENDATIONS 50

5.1 Conclusions 50

5.2 Recommendations 51

5.2.1 Specific recommendations 51

5.2.2 Recommendation for further research...51

REFFERENCES..52

APPENDICES 63

LIST OF TABLES

Table 1: Anticipated summated scores and value labels of perceived costs, benefits, quality and willingness to participate 15
Table 2: Distribution of population size, number of households and land area 21
Table 3: Distribution of population and land size in wards and mitaa 21
Table 4: Distribution of households' age group, sex, marital status and education level ...32
Table 5: Households' duration of residence and income source 35
Table 6: Households' awareness on types of open spaces 37
Table 7: Households' awareness on functions of open spaces 37
Table 8: Households' awareness on laws and responsibilities 38
Table 9: Households' awareness on collaboration between institutions and local community regarding open spaces conservation 39
Table 10: Perceived open spaces conservation costs, conservation benefits and quality ...40
Table 11: Household willingness to participate in open spaces conservation 44
Table 12: Categorical regression ANOVA table 45
Table 13: Coefficients of categorical regression 49

LIST OF FIGURES

Figure 1: The Conceptual model of the study 8

Figure 2: A Map of Dar es Salaam Region 23

Figure 3: A Map of Ilala and Kinondoni Districts 24

LIST OF APPENDICES

Appendix 1: Household questionnaire for assessment of Community's participation in conservation of open spaces in Dar es Salaam 63

Appendix 2: Interview Guide for key informants (MLHHD and Local Government Authorities) on community participation in open spaces conservation 69

Appendix 3: Interview Guide for Key informants (NEMC) on community participation in open spaces conservation 69

Appendix 4: Interview Guide for Focused group discussion 70

LIST OF ABBREVIATIONS AND ACRONYMS

DCC	Dar es Salaam City Council
DSP	Dar es Salaam Sustainable Project
CDRF	China Development Research Foundation
COSP	Conservation of Open Spaces
ILC	Ilala Municipal Council
KMC	Kinondoni Municipal Council
LIMDEP	Limited Dependent Variable Model
MLHHD	Ministry of Land Housing and Human Settlements Development
NEMC	National Environment Management Council
OECD	Organization for Economic Co-operation and Development
PREM	Poverty Reduction and Environmental Management (PREM)
SAS	Statistical Analysis System
SCP	Sustainable Cities Programme
SNAL	Sokoine National Agriculture Library
SPSS	Statistical Package for Social Sciences
SUA	Sokoine University of Agriculture
UNEP	United Nations Environment Programme
UN-HABITAT	United Nations Human settlements Programme
URT	United Republic of Tanzania
MPA	Marine Protected Area

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

The quality of urban environment depends on the existence and abundances of open spaces**.** Open space in urban area is referred as an urban green space private or public, principally covered by vegetation and directly or indirectly available for the users and may include parks, garden, allotments, wetlands, trees and forest (McConnell and Walls, 2005; Haq, 2011; Mensah, 2014). According to the United States Environmental Protection Agency, open space is any open piece of land that is undeveloped and is accessible to the public including green spaces, schoolyards, playgrounds, public seating areas, plazas and vacant lots.

The existence of open spaces in urban areas tend to decrease the cost of living due to its effect on livelihood such as diseases, flooding, extreme weather change and psychological problem (UN-HABITAT and UNEP, 2005; Persson and Liljestrom, 2014). Furthermore, economies of green spaces in urban areas are not only emphasized by its role in biodiversity and nature conservation but also human health, pollution control, aesthetics recreation and ecosystem services they provide (McConnell and Walls, 2005; Haq, 2011; Mensa, 2014). Many studies have been conducted to address the value of urban green spaces (Thompson, 2002; Wu and Plantinga, 2003; Anderson and West, 2006; Forest research, 2010; Active Living Research, 2010; Rahnama and Akbari, 2013). Ambley and Fleming (2012) claim that, a resident had implicit willingness-to-pay of $1,168 in annual household income for a one-per-cent ($143m^2$) increase in public green space.

However, conservation of green spaces in urban area has been facing many challenges that vary to some extent between developed and developing countries. Hosteller *et al*., (2011) argue that, inadequately engagement, design and management of nearby neighbourhood and business districts had resulted to heavily impaction to green urban infrastructures by surrounding residential and commercial areas. Haq (2011) declares that, destruction and reduction of open spaces in developing countries have been associated with socio-economic factors, culture, population growth, poor management, and poor implementation of environmental policies and increase of informal settlements. In addition, Mensa (2014) claims that encroachments of urban green space and poor implementation of approved city plan can cause destruction or reduction of urban green spaces. Other studies declared the destruction and reduction of open spaces in urban area including (McConnell and Walls, 2005; Bhuiyan, 2011; Officha et al., 2012; Nasution and Zahrah, 2012; Rahnama and Akbari, 2013).

Tanzania like other developing countries has been experiencing the challenges in conserving open spaces in its urban areas such as Dar es Salaam city. The problem is common to both formal and informal settlements (Victor and Makalle, 2003; Vedasto and Mrema, 2013; Mrema, 2013). In the formal settlements, public open spaces are encroached and or change use that is initiated and accelerated by the rich, political leaders and retired government officials “who can bend the rules and regulations” which results to the residents to do the same under the feeling that they will be under protection (Livin, 2012; Vedasto and Mrema, 2013). That might happen when there is a lack of the spirit of ownership by the surrounding households due to the disappearance of the designated use value of open spaces in particular area. There is clear evidence to the disappearance of the use value of open spaces in Dar es Salaam such that playgrounds for children and social gathering have been converted to commercial/residential housing, encroached by small trade dwellers and others to solid waste collection centres (UN-HABITAT and UNEP, 2005; Livin, 2012; Vedasto and Mrema, 2013). This results to the children playing in the street roads while community gathering in the setbacks of building and paths of private lands that have been increasing risk of accidents and conflicts to the children and among members of communities respectively in Dar es Salaam (Mrema, 2013; Persson and Liljestrom, 2014). In order to conserve and protect the remaining open spaces and even to reclaim the others whose change are not significant, communities involvement is paramount. Therefore this study was concerned with assessing the households' characteristics that influence conservation of open spaces in Dar es Salaam City.

1.2 Problem Statement and Justification

Encroachment and or conversion of open spaces to other land uses have been a problem which hindering existence of open spaces in urban areas not only to the developing but also developed countries. The increase demand of land for urban development projects including housing and infrastructure has been raising pressure on open spaces. In developed countries the governments through urban development authorities with policy, rules and regulations had proved inefficient which called for other approaches such as public-private partnership and local community participation in open spaces management (Balram and Dragi´cevi´c, 2005; Sherer, 2006; OECD and CDRF, 2009; Hosteller *et al.*, 2011). The public-private partnership has become successful particularly in the area where community show interest and participate fully on open spaces planning and management. This integration and specialisation in developed countries enabled them to amend policy and finance management, improvement and control of open spaces in sustainable manner (Sherer, 2006).

On the other hand most developing countries like Tanzania have been relying on the governments with policy, rules and regulations which in most cases have proved failure in conserving urban open spaces. Open spaces have been encroached, converted to other land uses. The existing open spaces are poorly maintained with no improvement to meet the need of different groups of community. In Tanzania, Dar es Salam City Council (DCC) through Dar es Salaam Sustainable Project (DSP) established a working group, which organized meetings with ward executive officers, sub-ward chairpersons and primary school teachers (Victor and Makalle, 2003; UN-HABITAT and UNEP, 2005). The DCC required them to create public awareness and protecting invasion on open spaces (UN-HABITAT and UNEP, 2005). However, the state of unawareness of open spaces among public is still exist but to which extent they are not aware is still unknown.

Victor and Makalle (2003) evaluated the performance of DSP in management of open spaces for urban poor and revealed persistent of encroachments and change in land use from open spaces to other residential/commercial. This may imply government failure and poor involvement of local community. Vedasto and Mrema (2013) revealed the failure of "top down" management approach towards public open spaces management and recommended that, households "owning plots surrounding the open spaces should be entrusted with the ownership of such public space and should also be responsible and accountable to the environmental cleanliness of such spaces. Open spaces should be designed and designated specific activities ranging from children's to adults games/social activities". This implies that, involvement of households in management, planning and designing use values of open spaces that consider the socio-economic needs of different groups of people could be the solution towards conservation of open spaces. However, to which extent the surrounding or local community perceive regarding the benefits, costs and quality of open spaces as a motivation for being entrusted with the ownership and or involvement towards conservation of public open spaces is still not known.

Therefore, to have appropriate modality for involving households in conservation of open spaces, it is very important to understand the behaviour of household community towards conservation of open spaces. Mrema (2013) using in-depth interview claims that, local community in unplanned settlements can create and control public open spaces to meet their basic socio-economic needs, this still give lesson that community may have their area of specialization in conserving open spaces in Dar es Salaam. Many studies that had been conducted like UN-HABITAT and UNEP, 2005, Bhuiyan, 2011 and Vedasto and Mrema, 2013 were based on qualitative analysis and argue on the inefficiency of government towards urban planning, policy, rules, laws and regulations in sustainable land use management and emphasis on the involvement of local community for sustainable management and development of open spaces.

However, there is little information about households' awareness, perceptions and socio-economic characteristics influence conservation of open spaces in Dar es Salaam. This study intended to assess households' awareness and perceptions towards open spaces conservation, with a particular focus on their willingness to participate in conservation of open spaces basing on both qualitative and quantitative analysis. The findings from this study will be important to researchers, NGOs and policy makers on conservation and socio-economic development regarding Dar es Salaam as it is a rapid growing urban area with annual population growth rate of 8%. Furthermore, about 70% of residences in Dar es Salaam live in informal and unplanned settlements (World Bank-TZ, 2010) where open spaces reduction problem is feasible and efforts to address it are reasonable.

Besides, the study will provide direction to the government on appropriate policy intervention, provide direction towards public and private partnership management as the market of open spaces could be predicted. Furthermore, this study will sensitize improvement and appropriate design which will increase socio-economic incentives to all beneficiaries.

1.3 Objectives

1.3.1 Main objective

The main objective of this study is to determine community's willingness to participate in conservation of open spaces in Dar es Salaam City.

1.3.2 Specific objectives

The specific objectives of this study are to:

i. Assess households' awareness towards conservation of open spaces;
ii. Determine the households' perceptions towards conservation of open spaces;
iii. Assess the households' willingness to participate in conservation of open space;
iv. Identify the factors influencing households' willingness to participate in conservation of open spaces.

1.4 Research Questions

This study is intending to answer the following questions;

(i) Are the communities aware on the objectives and rules governing open spaces?
(ii) What does community perceive regarding the quality, benefits and costs towards conservation of open spaces?
(iii) Are the communities willing to participate on open spaces conservation?

(iv) What are the factors influencing household's willingness to participate in conservation of open spaces?

1.5 Conceptual Framework

The conceptual framework model of the study is indicated in figure 1. The sustainable management decisions of environmental resources (e.g. Open spaces) cannot be exclusive from involvement of local communities (Heinen and Shrivastava, 2009; Kennedy and Akerlof, 2013). Studies like Heinen and Shrivastava (2009) and Kennedy and Akerlof (2013) have been conducted to show the influence of local communities' socio-economic characteristics in management of environmental resources. In addition, apart from local communities' socio-economic characteristics, other studies like Sesabo et *al*. (2006) and Takon et *al*. (2013) have shown conservation behaviour of local communities can be influenced by benefits, costs and quality as far as environmental resource is concerned (Sesabo et *al*., 2006; Takon et *al*., 2013). Figure 1 below provides conceptual framework for studying households' willingness to participate in this study. This conceptual framework provided a researcher the basis for selecting relevance variable influencing households' willingness to participate towards conservation of open spaces.

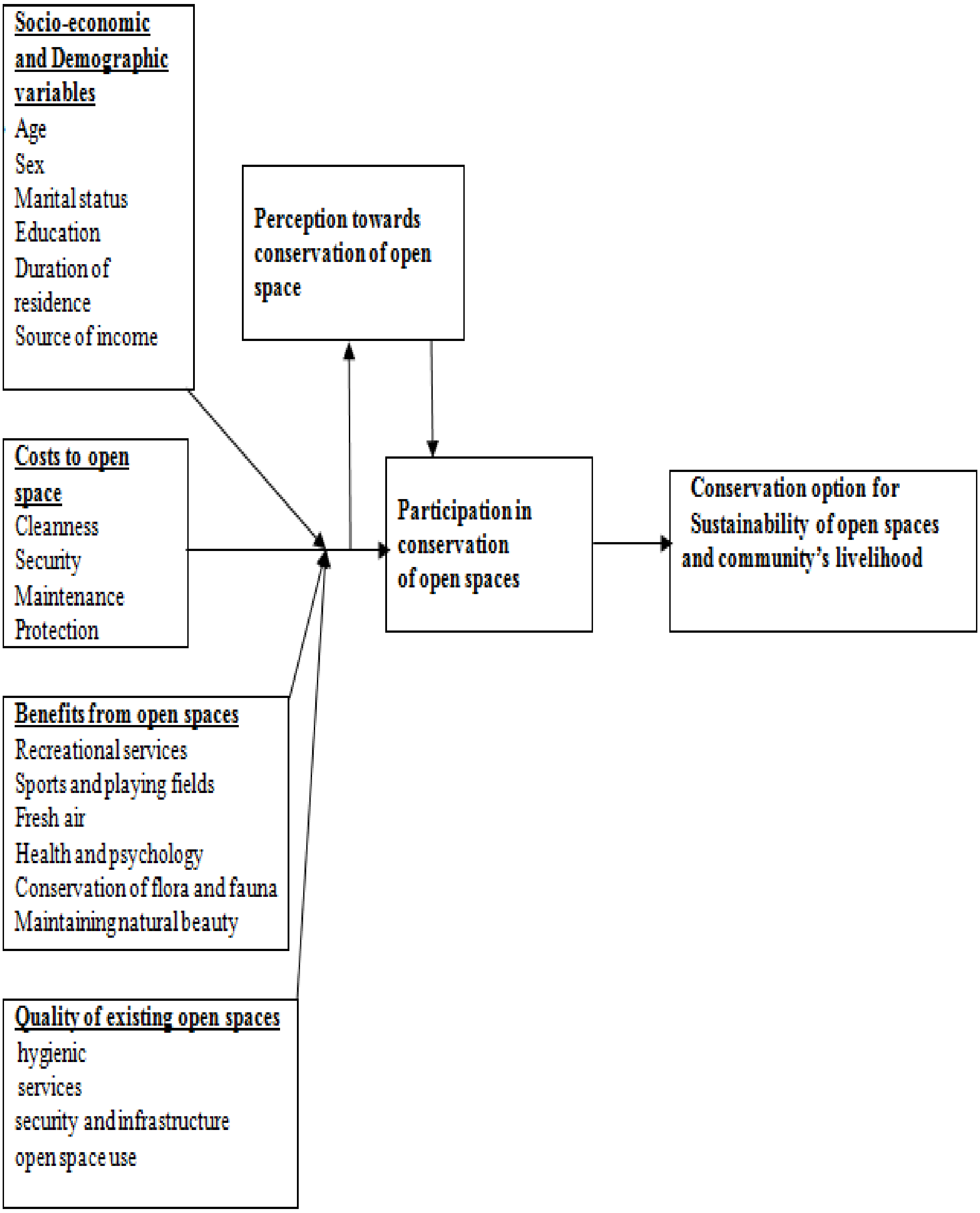

Figure 1: The Conceptual model of the study

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Global Perspective on Open Spaces Conservation

Open space in urban area is an urban green space private or public, principally covered by vegetation and directly or indirectly available for the users and may including parks, garden, allotments, wetlands, trees and forest (McConnell and Walls, 2005; Haq, 2011; Mensah, 2014).

The need to conserve open spaces in most developed countries has been realised when their scarcity, values and some factors threaten open spaces were revealed. In developed country like America the government in collaboration with non beneficial organizations and community created funds raising programme for improving and acquiring private land for new open spaces establishment (Sherer, 2006). The efforts to conserve open spaces in developed countries have been successfully compared to developing countries. The main reason is the presence of proper urban planning policy and strong coordination between governments, non beneficial organizations and local community. In addition positive attitude, perception and knowledge on the values and rules governing open spaces has been motivating community living in developed countries to conserve open spaces (Sherer, 2006; OECD and CDRF, 2009; Forestry research, 2010; Jahdi and Khanmohamad, 2013).

2.2 Developing Countries Perspective on Open Spaces Conservation

Sustainable management of natural resources depends on the level of coordination to handle economic, social and environmental issues among the stakeholders. The households' preferences on different socio-economic factors can influence the environmental conditions of that particular area. Abebe *et al*. (2014) claim that local households in south-western Ethiopia preferred most on fish stock and for that were willing to pay more for conservation of wetland. Mariara *et al*. (2006) stated that "households faced with uncertain outcomes with respect to income streams will diversify their portfolio of activities in order to ameliorate the threat to its welfare by the failure of individual activities". This implies that always household will prefer on matters which maximize their welfare and that is tendency applies on resources conservation (Mariara *et al*., 2006).

Urban open spaces reduction, among the factors causing is uncooperative attitude of the general public, others were laxity in the enforcement of development controls, presence of weak and inappropriate rules, regulations and laws, problems of ownership of green space lands, low priority to green space, poor culture of maintenance and lack of coordination among the allied bodies on green spaces for example open spaces have vulnerably used for solid wastes collection and dumping in developing countries (Babalola *et al*., 2010; Ahmed and Dinye, 2011; Mensah, 2014).

Herzon and Mikk (2006) claim that, farmers who are aware and economically supported tend to have positive attitude towards wildlife conservation. In addition, benefits from conserved area such as resource extraction, employment opportunities, tourism, hedonic property value and non-economic values accrued by individual may cause positive attitude towards conservation of open spaces (Takon *et al*., 2013). However, lack of awareness, individual perceptions and conservation costs such as human and wildlife conflicts, land pressure, loss of resources and forfeited economic opportunity may cause negative attitude towards conservation of that particular natural resources (Babalola *et al*., 2010; Takon *et al*., 2013; Adams *et al*., 2013).

2.3 Tanzania Perspective on Open Spaces Conservation

Tanzanian's Urban Planning Act (2007), third schedule classifies open space in the group of amenities regardless is public or private includes parks, sports grounds and playing fields. There is no direct provision of green space in the act, however provision of places and features of natural beauty of interest including forest woods trees and group of trees have considered in the group of amenity.

Tanzania, like other developing countries faces the problem of reduction of open spaces in urban area such as Dar es Salaam (UN-HABITAT and UNEP, 2005). The situation might be very critical to the community living in unplanned settlements whereby children and other social groups exposed to various risk such as playing to the street roads and encroaching private land (Mrema, 2013). Projects like Sustainable Dar es Salaam Project and National Adaptation Programme of Action initiated the efforts towards conservation of open spaces in Dar es Salaam. Despite of the above initiatives still legal and illegal conversion practice of open spaces to other land uses whether temporary or permanent has been revealed (Victor and Makalle, 2003;URT, 2011; Livin, 2012; Vedasto and Mrema, 2013). Vedasto and Mrema (2013) claim that there is failure of "top down" management approach included government and responsible institutions and recommended on the essence of involving household community on planning and conservation.

Therefore, there is a need to study the household awareness and perceptions towards open spaces conservation, with a particular focus on their willingness to participate in conservation of open spaces basing on quantitative analysis. The study will enable the researcher to identify among other thing the socio-economic factors which can promote household to participate and engage in conservation of open spaces (Sesabo *et al.*, 2006). Other studies suggest that community which is made aware through appropriate communication media and education with availability of socio-economic incentives may participate in open spaces conservation (Mpokigwa *et al*., 2011). Also some studies suggest that for sustainable use of public properties conservation must involve local communities by empowering them and create a necessary condition to manage the resources (Kingazi, 2002; Sanga, 2013).

2.4 Households' Awareness towards Open Spaces Conservation

Awareness is among of the success factors for individuals or community to participate or not participate in a particular issue or project management (Takon *et al*., 2013). People who are aware that, their actions are harmful to the environment are more willing to support corresponding environmental management programmes (Francis, 1987; Herzon and Mikk, 2006; Kangalawe, 2012).

Sesabo *et al*. (2006) argue that, "awareness is what a person thinks and understands about the reality affecting his attitude and decision towards policy and management". Furthermore, hypothesized that, households who are aware on the objectives of establishing marine protected areas and rules governing the use of marine or coastal resources will have favourable attitude towards establishment of marine protected areas. People who are aware of the significant of good environment are also determinant of urban quality and may make open spaces successful (Francis, 1987). Mpokigwa *et al*. (2011) argue that, awareness of community on environmental interventions increase number of people to participate.

Therefore, relative to this study, assessment of households awareness on the objectives and rules governing management of open spaces was paramount important. It was believed that households who understand various types, functions and important are aware of the objectives of open spaces while who are understand the rules and respective authority are aware on the rules governing open spaces management. Finally, those who are aware of the objectives and rules were expected to be more willing to participate in open spaces conservation.

2.6 Households' Perceptions towards Open Spaces Conservation

The environmental conservation problems in both developed and developing countries have pushed the world into new research area that is psychological and human behaviour studies to address the environmental conservation challenges (Akerlof and Kennedy, 2013). Individuals or community's perception is identified as among the factors that can influence human behaviour towards environmental conservation efforts.

Akerlof and Kennedy (2013) claim that, perception can interfere with the progression from pro-environmental knowledge and attitudes to action. Those who have positive perceptions on particular project or programme may have high sense of commitment thus can easily support conservation of particular project or programme (Francis, 1987). Sesabo *et al*. (2006) claim that about half of respondent were supporting marine protected area establishment, among the reasons was their positive perception on the expected benefits such as employment and increase of fish volume. Furthermore, respondents may not support conservation interventions regardless of being aware on environmental conservation due to their perceived costs or perceived economic losses (Sesabo *et al*., 2006; Heinen and Shrivastava, 2009).

However, there is a situation perceived cost from conservation of environmental resources may lead to positive perception when local community are well informed about the problem, need and their role towards solving particular problem. For example, Sewando *et* *al*. (2011) claim that, community had positive perception towards ownership of water project regardless of conservation and user charges costs. It is believed that Individuals or local community's perception on the quality of environmental resource like open spaces may influence their decision to use or not use the open space and likely interfere the conservation efforts (Francis, 1987; Mpokigwa *et al*., 2011).

There are various approaches which have been used to determine individuals' perceptions towards particular programme or issues. For examples, percentages of perceived benefits and costs could be determined from binary response questions (Sesabo *et al*., 2006) or using interview data with exploratory factor analysis by SPSS to get relevant perceived variables that could be described and presented in terms of scores (Lazaro *et al*., 2013). In addition, households' perceptions could be determined by administering likert type question (s) to the household surveyed respondents (Zaghloul *et al*., 2008; Heinen and Shrivastava, 2009; Mpokigwa *et al*., 2011; Shan, 2012; Sewando *et al*., 2012). Individual likert question could be analysed and percentages or frequencies of each iterm be described and presented to give the intended result (Shan, 2012). It may happen that, many dependent variables each in a likert scale explain the same things, in that case two different approaches could be used to analyse such data. First, each variable could be analysed, described and presented independently. Second, the variables could be combined to give one representative dependent variable for further analysis by either factor indexing (Mpokigwa *et al*., 2011; Sewando *et al*., 2012) or by computing the summated or summated mean scores (Zaghloul *et al*., 2008; Heinen and Shrivastava, 2009).

In this study, households' perceptions were determined by computing and analysing summated scores of all variables explaining similar things, this approach is in line with (Zaghloul *et al*., 2008; Johns, 2010; Boone and Boone, 2012). For example, to determine perceived costs from open spaces conservation, four variables such as “cleanness and maintenance costs”, “irrespective uses protection costs”, “vandalism and encroachments protection cost” and “Social security costs” were used. Perceived benefits from open spaces conservation were determined by eight variables such as “Scenic resources conservation”, “Good air quality”, “Good water quality”, “healthy and psychological relief”, “Access for play grounds for children and other members”, “Conserve flora and fauna”, “Provide escapement during natural or artificial disaster” and “ Access for research and learning”. Finally, Perceived quality of existing open spaces was determined by five variables “Poor hygienic condition”, “Spurred of non open spaces related activities”, “Poor security and infrastructures”, “Poor services and against the need” and “Poor environmental conditions”. The responses were at a likert of three points such that, one for disagree, two for neutral and three for agree and the corresponding expected summated scores have presented and labelled according to Zaghloul *et al*. (2008) as illustrated in Table 1.

Table 1: Anticipated summated scores and value labels of perceived costs, benefits, quality and willingness to participate

Variable	Summated Scores		
	Agree	**Neutral**	**Disagree**
Perceived costs	12	8 to <12	4 to <8
Perceived benefits	24	16 to <24	8 to <16
Perceived quality	15	10 to <15	5 to <10
Willingness to participate	18	12 to <18	6 to <12

This study took into account the significance of community’s perception on the perceived quality, benefits and costs towards participatory conservation of open spaces. It was expected that, people with positive perceived benefits and negative perceived quality have higher willingness to participate in conservation while those with positive perception on the conservation cost to be low.

2.7 Willingness of the Community towards Participation in Conservation of Open Spaces

Participation is defined by Biswal (2006) as "a voluntary process by which people, including the disadvantaged (in caste, gender, income, or education), influence or control the decisions that affect them". On the open spaces conservation in urban areas, community's participation is crucial for sustainable outcomes. The emerging efforts towards participatory environmental resources management including local community from planning to implementation level of environmental conservation initiatives was influenced by a proven failure of "top-down" management approach (Roe *et al*., 2009; Shan, 2012; Sakurai *et al*., 2015). However, participation of local community in environmental conservation interventions is not easy because of their complexity that may be associated with differences in demographic and socio-economic behaviours (Shan, 2012; Sakurai *et al*., 2015).

Studies have been conducted to assess willingness of local community to participate in conservation of urban green spaces or open spaces in developed countries especially North America and Europe but very few in Asia and developing countries (Sakurai *et al*., 2015). The study by Sakurai *et al*. (2015) found that need for social interactions and interests in conservation activities such as "greening project" were among the factors influencing local community willingness to participate in conservation activities in Yokohama city. Shan (2012) argue that, education level were the main factors influencing Guangzhou residents' willingness to participate in urban green spaces conservation interventions such as decision making process. Additionally, local community understands, concerning and intentions to restore environmental problems can influence their willingness to participate in conservation interventions of environmental resource (Chun *et al*., 2010).

In Tanzania, studies regarding local community willingness to participate in conservation of urban environmental resources such as open spaces are rare. However, there are number of related studies conducted in rural areas regarding environmental or natural resources conservation. For example, Mpokigwa *et al*. (2011) argue that, communication, education and public awareness can positively influence local community to participate in Forest conservation interventions. Kangalawe (2012) argue that, Irangi hills community demonstrated their willingness to participate in conservation initiatives by self adoption of various conservation measures like tree planting and best agricultural practices. Local community's willingness to participate in conservation of natural resources can be low due to the perceived benefits losses or perceived costs from unfair sharing of various environmental costs and accrued benefits (Sesabo *et al*., 2006; Mwanyoka, 2006). These studies (Sesabo *et al*., 2006; Mwanyoka, 2006; Mpokigwa *et al*., 2011; Kangalawe, 2012) inform that, local community could participate in natural or environmental resource conservation initiatives. Secondly, their decision to participate could be influenced by their social economic and other factors like institutional arrangement. Therefore, it is important to understand the degree of willingness and influential characteristics of local community towards participatory urban environmental conservation interventions for sustainable and effective outcomes.

This study has specifically taken a step to assess the willingness of local community to participate in urban open spaces conservation and the possible demographic and socio-economic characteristics influencing their willingness to participate. It is expected that, the information of this study will promote new venture regarding conservation and protection of open space in developing countries like Tanzania.

It should be mentioned that, in order to determine the households' characteristics influencing willingness to participate in conservation of open spaces, respondents were asked if they are willing to participate in six conservation activities. Those activities were; participating in awareness rising, paying entrance fee once visiting, reporting any irrespective uses, volunteer in cleanness and maintenance, contribute cash and collaborating with the government for conservation of open spaces. The response of each question were coded and entered into the SPSS and summated scale named as willingness to participate in conservation of open spaces was computed, presented and labelled according to Zaghloul *et al*. (2008) as illustrated in Table 1 above.

CHAPTER THREE

3.0 MATERIALS AND METHODS

3.1 Description of the Study Area

3.1.1 Location and topography

The study was conducted in Kinondoni and Ilala municipalities, Dar es Salaam Region. According to URT (2014), Dar es Salaam region lies along the Western Coast of the Indian Ocean. It is situated between latitudes 6.36 and 7 degrees South of the Equator and between longitude 33.3 and 39 degrees to the East of Greenwich. It boarders Pwani Region in the North, West and South while to the East, there is the Indian Ocean as shown in Fig. 2 below.

Dar es Salaam Region is divided into 3 districts namely: Kinondoni, Ilala, and Temeke with four councils namely: Dar es Salaam City Council, Kinondoni Municipal council, Ilala Municipal Council, and Temeke Municipal council. The district boundaries are also the municipal council’s boundaries. Moreover, Dar es Salaam Region is further sub-divided into 8 constituencies, 10 divisions, 90 wards and 542 mitaa. This study has been conducted in four mitaa; Mkunguni, Minazini, Charambe and Sharifushamba in Hananasifu, Makumbusho, West-Upanga and Ilala wards respectively. Hananasifu and Makumbusho wards are in Kinondoni municipality while West-Upanga and Ilala are in Ilala District as shown in Fig. 3.

The Dar es Salaam region occupies the eastern coastal part of Tanzania. The first observation is the Indian Ocean coastal belt, which dominates the region. The coastal belt extends from Mbweni Mpiji in Kinondoni District (North) to Pemba Mnazi Mpakani in Temeke District (South). The feature of the coastal belt rises from 0 to 62 meters above sea level. The second observation is the highland plateau which rises from 62 to about 100 meters above sea level. In addition, the main vegetation of Dar es Salaam Region includes coastal shrubs, Miombo woodlands, coastal swamps and mangrove trees.

3.1.2 Choice of study sites

This study was conducted in four hamlets (*Serikali za mitaa*) including Mkunguni, Minazini, Sharifushamba and Charambe within Hananasifu, Makumbusho, Ilala and West-Upanga wards respectively. Mkunguni and Minazini are located in Kinondoni district while Sharifushamba and Charambe are located in Ilala district. The selection of these mitaa based on the presence of open spaces with different status in Ilala and Kinondoni districts. According to the Kinondoni and Ilala municipalities' reports a total of 160 and 98 open spaces have been identified respectively. However, only 9 and 76 among the identified open spaces in Kinondoni and Ilala respectively still exist while the rest were either converted to other land uses or encroached.

3.1.3 Population size, number of households and land area

Based on URT (2014), the average area per ward in Dar es Salaam Region is 15.5 sq. kms, ranging from 8.0 sq kms per ward in Ilala District to 22.8 sq. kms in Temeke District (Table 2 and Table 3). At street (mtaa) level, the average area per street (mtaa) in Dar es Salaam region is 3.1 sq kms, but varies from 2.1 sq. kms per street in Ilala District to 4.0 sq. Kms per street (mtaa) in Temeke District. Furthermore, Dar es Salaam had a total of 1 095 057 households by 2012 as shown in Table 2.

Table 2: Distribution of population size, number of households and land area

District	Land area (sq.km)	Population size	Number of Households (year 2012)
Kinondoni	501	1 775 049	446 504
Ilala	208	1 220 611	300 660
Temeke	684	1 368 881	347 893
Total	1393	4 364 541	1 095 057

Source: Dar es Salaam Socio economic profile, 2014

Table 3: Distribution of population and land size in wards and mitaa

District	Number of wards	Average area per ward (sq.km)	Average population size per ward	Number of mitaa	Average area per Mitaa (sq.km)	Average population per Mitaa
Kinondoni	34	14.7	52 207	180	2.8	9 861
Ilala	26	8	49 947	101	2.1	12 085
Temeke	30	22.8	45 629	171	4	8 005
Total	90	15.5	48 495	452	3.1	9 656

Source: Dar es Salaam Socio economic profile, 2014

3.1.4 Climate

Dar es Salaam Region experiences a modified type of Equatorial Climate. It is generally hot and humid throughout the year with an average temperature of 29 degree. The hottest season is from October to March during which the temperature can rise up to 35^0C. It is relatively cool between May and August with temperature around 25^0C. There are two main rain seasons; a short rain season from October to December and a long rain season between March and May. The average rainfall is 1000mm (lowest 800mm and highest 1300mm). Humidity is around 96% in the morning and 67% in the afternoon. The climate is also influenced by the South western monsoon winds from April to October.

3.1.5 Economic activities

According to URT (2004), the major economic activities in Dar es Salaam include: internal trade, manufacturing, tourism, transport and communication, urban agriculture, forestry and fishing, mining and quarry, utility services, construction, finance and insurance, public administration and education.

3.1.6 Open spaces and management regimes

The Tanzania Urban Planning Act, 2007, has grouped open spaces into land use for community purposes and amenity together with burial grounds, communal parks, sanctuaries, marine life. Although there is no clear definition of open space, the act has considered it as reserved public or private parks, sports grounds and playing fields, recreational areas, agriculture lands, burial grounds, sanctuaries and marine life which is almost similar to many literatures reviewed in this study. Currently open spaces are under the Government of United republic of Tanzania through the planning authority and corresponding municipal council. Kinondoni municipal council's reported that in a total of 160 identified open spaces 119 were invaded, 32 had been converted to other land use and only 9 were in existence while Ilala municipal council's reported that in a total of 98 identified open spaces 22 were invaded and 76 were in existence. However, Ilala municipal council reported that among the open spaces in existence majority found in new established settlements and most of them have not been compensated and thus officially are not owned by the municipal council (Personal communication, 2015).

Figure 2: A Map of Dar es Salaam Region

Source: Dar es Salaam Region Socio-Economic Profile, 2014

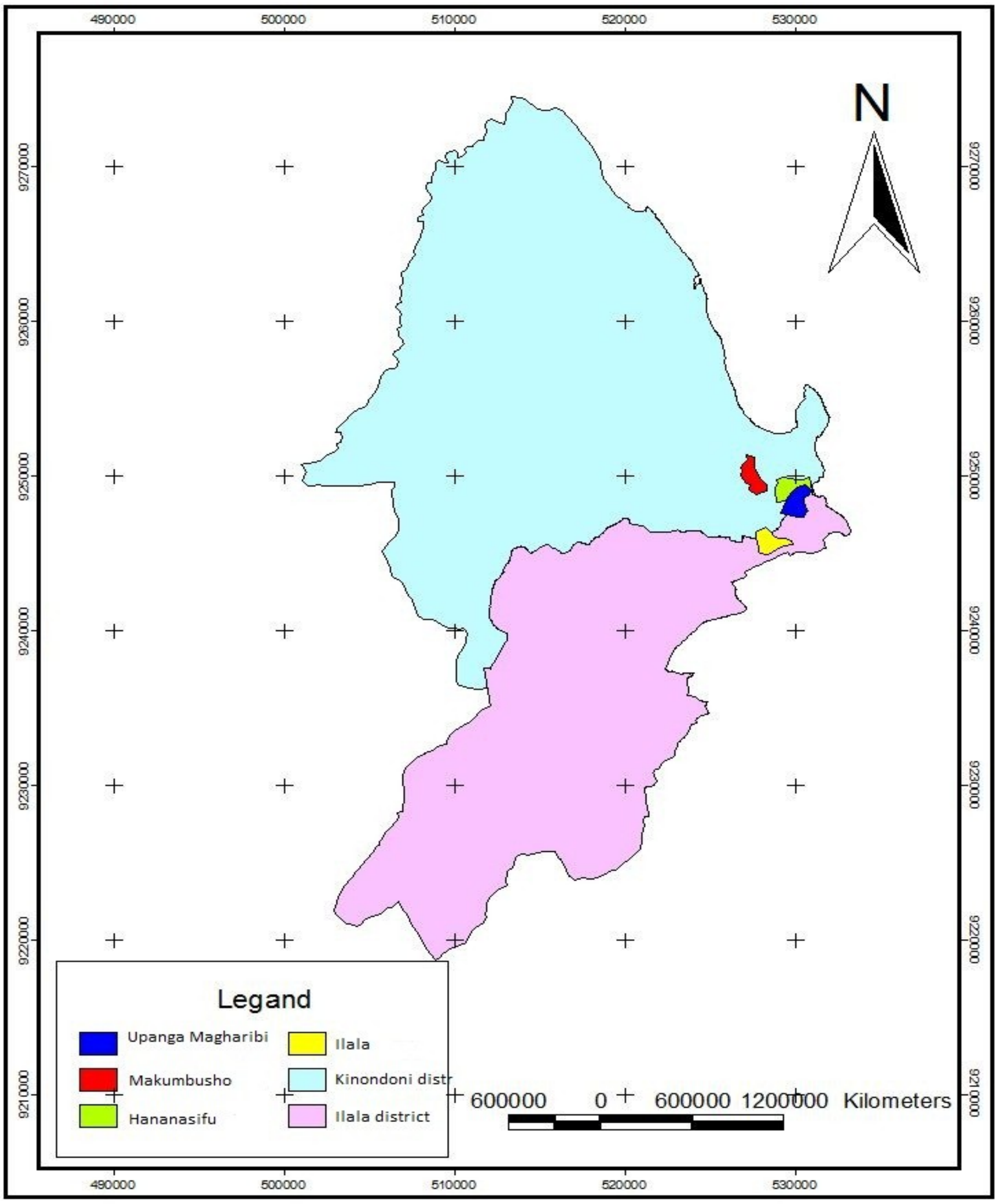

Figure 3: A Map of Ilala and Kinondoni Districts

3.2 Review of Regression Models

Based on the study design and literature reviews, that is cross sectional data using household response survey with the help of Likert-scale questions; a researcher was impressed to review three analytical techniques consisting of Multinomial, Ordinal and Categorical Regression analysis. It is known that, many studies with categorical related nature of data have used multinomial and ordinal regression analysis such as (Winship and Mare, 1984; Zaghloul *et al*., 2008), however very few have used categorical regression analysis.

3.2.1 Multinomial regression model

Gujarati, (2004) claims that multinomial models is one among of the "extension of the binary response regression models". It is either probit or logit that can be used to study "nominal categories such as unskilled, semi skilled and high skilled". The advantage of multinomial over binary regression model is that it can analyse the dependent variable with more than two independent variables. However, when compared to categorical regression analysis multinomial regression model is more sensitive to assumptions like normality, homogeneity and sample size. Also multinomial regression outcome gives many parameter estimates and statistics which bears difficultness in interpretation of the results (Park, 2009).

3.2.2 Ordered regression model

Gujarati, (2004) claims that ordered model can be ordered logistic or probit model with a characteristic, the response variable has more than two ordered, or ranked, categories. Ordered models used to study dependent variables of either the values are in "likert-scale questions in opinion surveys" or in coded nominal categories such as 1=unskilled, 2=semi skilled and 3=high skilled (Schmidheiny, 2007). Adeleke and Adepoju (2010) explained that, ordinal outcomes are analyzed by logistic regression model. However, it becomes difficult with logistic regression model when the dependent variable is ordinal; alternatively multinomial logit model can be fitted provided that ordering of the values of the dependent variable bearing unnecessary. This is because multinomial logit ignores any ordering of the dependent variables. All in all the most common used is the ordinal logistic regression model, also known as "proportional odds model" (Adeleke and Adepoju, 2010). When compared with categorical regression analysis the ordinal regression analysis works under the proportional odds assumption that is all the logit surfaces are parallel and must be tested. Furthermore, ordinal regression analysis become problematic when we have many categorical predictors and or some predictors with many values which results into many cells with small expected values. In this situation, no any statistics that provides a dependable goodness of fit test and predicted frequencies become a problem for the test that evaluates the goodness of fit of the model.

3.2.3 Categorical regression model

The categorical regression model with an optimal scaling is an extension of the classic linear regression and logarithmic analysis capable of transforming ordered or unordered categorical variables such that they reflect the characteristics of the original variables (Sterian and Soutsas, 2005; Kooij and Meulman, 2006). Kooij and Meulman (2006) claim that, optimal scaling is categorized in the method known as non-linear generalization of multiple regressions for categorical variables in a multivariate analysis and linearizes nonlinear relationships in numeric data. This analytical technique performs a better job than other well known methods in statistics and especially when the number of observations in numeric variables is reduced to a much smaller of categories (Van der Kooij and Meulman, 2006). Also categorical regression analysis can run with least assumptions like normality of the predictor variables, smaller rather than larger sample size and only one coefficient is needed for predictor variables (Shrestha, 2009). Model for categorical variable is expressed as a linear regression model for transformed variables as follows (Meulman, 1998; Kooij and Meulman, 2006; Shrestha, 2009).

$$\varphi_r(y) = \sum_{j=1}^{J} \beta_j \varphi_j (X_j) + e \quad \ldots\ldots 1$$

Whereby; φ_r (y) is the vector of observations for transformed response variable, β_j is the regression coefficients, j=1……J is the number of predictor variables, φ_j (X_j) is the transformation function of the predictor variable (X_j) and e is the error vector.

3.3 Data Collection

3.3.1 Research design

The study design was cross sectional, which enabled a researcher to collect the data once and analyse them concurrently. The target population will be the residence of Dar es Salaam in formal and or upgraded settlements with open spaces working according to the approved plan and with open spaces that were approved but current not working as designed due to any reason. The essence was to get a good representative population.

3.3.2 Primary data collection

3.3.2.1 Sample size and Sampling procedures

A total sample of 120 households was randomly selected consisting of 30 households from each street (Mtaa) (Bailey, 1994). The sampling process involved identification and grouping of open spaces purposively based on their locality and current status such that either working as open space or encroached, vandalized and changed into other land uses with reference to Kinondoni and Ilala municipalities. The four open spaces were then randomly selected from two groups whereby each municipality included two open spaces based on the assumption that one is working and another is not working. Following this process, open spaces at Mkunguni, Minazini, Sharifushamba and Charambe streets were selected. Finally, following on the randomly selected open spaces, their equivalently 30 respondents here in referred as households were randomly selected from each street as representatives.

3.3.2.2 Questionnaire survey

Structured households survey questionnaire (Appendix 1) with likert scale of three iterms which are Agree, Neutral and Disagree was administered to respondents. The households demographic and socio economic variables such as age, sex, marital status, level of education, duration of Residence and source of incomes were also included. Then, to assess the community's awareness towards conservation of open spaces the research was based on the awareness on objectives of open spaces and rules governing them. The objective had been assessed with questions about awareness of households on the types, functions and need of conserving open spaces while rules with questions about awareness of households on the existing laws, level of compliance and the might responsible entity for conserving open spaces.

Households' perceptions towards open spaces conservation were determined with the questions assessing the variables perceived conservation costs, benefits and existing quality of open spaces. Finally, to assess the households' willingness to participate in open spaces conservation and factors influencing household's willingness, various questions were asked on different conservation activities including socio-economic and demographic characteristics.

3.3.2.3 Focused group discussions and Key informants interviews

Key informants (Appendix 2 and 3) and focus group discussion (Appendix 4) were conducted in order to supplement information on all matters respondents were required to respond in households' survey questionnaire. The households' demographic and socio-economic variables were also included such as age, sex, education and income condition to help in contextualisation of the findings so as to develop good recommendations.

3.3.2.4 Direct observation

The participatory method was used to collect information which supplemented the data collected from other mentioned methods. The physical identification of various matters which were not disclosed during questionnaire survey and other secondary sources was done. The data on the state open spaces, local people living and behaviour towards conservation of open spaces was collected and used.

3.3.3 Secondary data collection

Secondary data consisted of both qualitative and quantitative and were collected from Dar es Salaam regional office, Ministry of Land Housing and Human Settlements Development, Kinondoni and Ilala municipal councils, journal, books, reports, internet publications, websites, Sokoine National Agriculture Library (SNAL), wards and each Mtaa visited.

3.4 Data Analysis

Data analysis involved qualitative and quantitative analysis. The Statistical Package for Social Sciences (SPSS) computer software was used during analysis of Questionnaire data. Qualitative analysis involved content analysis of the data from direct observation and group discussions. Quantitative analysis involved both descriptive and inferential statistical analyses. Quantitative socio-economic data were analysed using descriptive statistical methods (Frequency distribution). Frequency distribution table and numerical descriptive values (Percentages) were used to summarise the data. This was carried out in order to understand the distribution of respondents and to explain the socio-economic characteristics of the community near to the open spaces. The inferential statistical analysis in this study aimed of finding factors that might influence households' willingness to participate in open spaces conservation. Cross tabulations chi-square was used to assess willingness to participate while categorical optimal scaling regression analysis was used to determine latent factors influence willingness to participate in open spaces conservation. The dependent summated categorical variable used was willingness to participate in conservation of open space.

3.5 Limitations of the Study

There were challenges encountered with this study when conducting field work for this study. The time constraints and availability of secondary data on open spaces in Temeke municipality lead to confinement of this study in Ilala and Kinondoni municipalities. Also, most respondents were not able to differentiate between very agree and agree, and very disagree and disagree when five likert iterm questions were administered to them during the questionnaire pretesting. This problem was solved by confining the questions into three likert iterms, such as agree, neutral and disagree. In addition, respondent were reluctant to give the information regarding their monthly income, this problem has caused this research to have unreliable data on the households' monthly income.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSIONS

4.1 Description of Households' Socio-economic Characteristics

Households' characteristics that were analyzed are socio-economic and demographic. Socio-economic characteristics were age, sex, marital status, level of education, duration of Residence and main source of income while demographic characteristic analyzed was only households' location.

4.1.1 Age and sex

The findings show that about 28.3%, 25.8%, 19.2%, 14.2% were between 41-50, 31-40, 20-30 and 51-60 years of age respectively. Also about 9.2% and 3.3% of the respondents were 61-70 and above 70 years of age respectively (Table 4). This result is similar with (Sesabo *et al*., 2006; Thiruchelvam and Kirupakaran, 2010; Chun *et al*., 2012; Shan, 2012; Lazaro *et al*., 2013; Faleyimu and Akinyemi, 2014) who found that, majority of the respondents by age groups were in the adult (31-50) followed by youth (20-30). The adult group being the majority, that is many respondents are matured enough to understand and takes part in decision making process for a particular community while youth are very energetic, high risk taking and fast learners (Lazaro *et al*., 2013). This implies that majority of the respondents are mature enough to fully understand issues concerning open spaces conservation.

The sex distribution shows that, of the 120 total respondents, 64.2% were males and 35.8% were females (Table 4). This finding is similar with Sesabo *et al*. (2006), Shan (2012), Lazaro *et al*. (2013) and Faleyimu and Akinyemi (2014) who found that, Males were the majority of the respondents while the remain were female. The analysis of gender distribution for this study was of paramount important since gender based labour distribution has a lot of implications particularly in African Countries (Lazaro *et al*., 2013). For example, males are easy to access information, oversee the households' decision making process and they often have higher participation rates for most activities than female (Sterian and Soustas, 2005; Lazaro *et al*., 2013). However, males are less sensitive and or concerned with environment and pro-environmental behaviour compared to females (Zelezny *et al*., 2000; Chun *et al*., 2012). Therefore, the finding on gender distribution could form a base for fairness during awareness raising and attitudinal diagnoses towards open spaces conservation initiatives.

Table 4: Distribution of households' age group, sex, marital status and education level (n=120)

Characteristics	Percentage
Age group	
20-30	19.2
31-40	25.8
41-50	28.3
51-60	14.2
61-70	9.2
>70	3.3
Total	100
Gender	
Male	64.2
Female	35.8
Total	100
Marital status	
Married	70
Never married	21.6
Widow	6.7
Divorced	1.7
Total	100
Education level	
Primary	42.5
Secondary	33.33
Tertiary	4.17
Adult education	8.33
Higher learning	11.67
Total	100

4.1.2 Marital status and education level

The study shows that, about 70% of the respondents responded to the households' survey questionnaire were married followed by never married 21.6%. The rest of the respondents who were very few about 6.7% and 1.7% were widow and divorced respectively (Table 4). This finding is similar to Thiruchelvam and Kirupakaran (2010) and Kiziloglu *et al*. (2014) who found that, majority of the households responded to the households survey questionnaire were married. Understanding of the marital status distribution was of paramount important for this study since it influences decision making process towards environmental conservation interventions. For example, Chun *et al*. (2012) claim that, married people tend to be less sensitive and more satisfied with environmental conditions than single ones. Therefore, understanding the marital status distribution is intended to give a base during planning and implementation of interventions towards conservation of open spaces in Dar es Salaam.

On education, the study shows that, majority of the respondents (about 42.5%) had acquired primary school education (Table 4). This finding is similar to Lazaro *et al*. (2013) and URT (2014). URT (2014) reported that, about 62% of households' heads in Dar es Salaam had acquired primary school education. However, the finding has differed with other researchers in different urban areas like Shan (2012) and Faleyimu and Akinyemi (2014) who found that majority of the respondents had acquired higher degree and tertiary education respectively. This implies that, majority of the respondents had low education level. In addition some studies found that, under constant conditions the higher the level of education the higher is the knowledge on the importance of conserving environmental resources for effective and sustainable urban living (Shan, 2012; Lazaro *et al*., 2012). However, some studies found no positive association between level of education and knowledge or attitude to conserve environmental resources in urban areas. The finding from this study provides the basic information for planning and fairness in implementing conservation initiatives like awareness rising towards conservation of open spaces.

4.1.3 Duration of Residence and sources of income

The findings of the study show that, about 42.51% and 25.83% of the respondents responded to the household survey questionnaire lived in the study area in between 16-30 and 1-15 years respectively. Also, the study shows that, number of respondents has been decreasing from 16 to above 45 years while increasing from years 16 to 1 (Table 5). It can be said that, majority of the respondents are local residents in the group of years (16-30) and they had been decreasing with increasing duration of Residence. This finding is similar to Mpokigwa *et al*. (2011), with the exception of majority of the respondents lived more than 30 years while minority lived less than 10 years.

Furthermore, Mpokigwa *et al*. (2011) found that, the number of respondents was increasing with the increasing duration of residence from 10 to above 30 years while in this study the number of respondents is decreasing with increasing duration of residence from 16 to above 45 years (Table 5). The possible causes of this difference may be urban and rural nature such that urban areas like Dar es Salaam are rapidly growing with developments involving relocation of local residences. Besides that, the finding implies that the more experienced local residences on their local environment in urban area decrease the more the new residences increase. Mpokigwa *et al*. (2011) claim that local residents are very much committed to resource conservation than short term residents. Therefore, this finding provides the base for planning and fairness in implementing conservation initiatives with respect to the nature and trends of local residents in Dar es Salaam City.

The main sources of income in the study area were business (43.4%) while the rest were employment (43.3%) and other sources (13.3%) in (Table 5). In the case of employment, this study refers formal and informal public, private and self-employed respondents. This finding is similar to URT (2014) that showed majority of residents in Dar es Salaam depend on business as major source of income. The analysis of the main sources of income of respondents responded to households survey questionnaire was very important in this study. Many studies had shown that, income generating activities of local residents influence the environmental resource conservation. Ntongani *et al.* (2010) found that expansion of land for agricultural activities had been threatening conservation of Selous-Niasa miombo woodland ecosystem in Nachingwea, Tanzania. Therefore, for the case of this study given that, business is the main income generating activity, it implies that the rate of migration and pressure on land for new settlements, business centres and petty trade increases and threaten conserved open spaces in Dar es Salaam. This trend is supported by the evidence obtained from group discussions, key informant interviewed and direct observation during household survey.

Table 5: Households' duration of residence and income source (n=120)

Characteristics	Percentage
Duration of Residence	
1-15	25.83
16-30	42.51
31-45	23.33
>45	8.33
Total	100
Income source	
Employment	43.3
Business	43.4
Others	13.3
Total	100

4.2 Households' Awareness on the Objectives and Rules towards Open Spaces Conservation

4.2.1 Awareness on the objectives of open spaces

On households' awareness on the objectives of open spaces towards conservation of open spaces, the study found that, most (96.7%) of the respondents were aware of the recreational parks, sports grounds and playing fields as the types of open spaces. However, very few (about 40%) were familiar with forest wood trees (Table 6). Furthermore, on households' awareness on the objectives of open spaces towards conservation of open spaces, the study shows that, most (99.9%) of the respondents were aware on the function of open spaces in providing recreational services and emergency assembling area in a crowded city like Dar es Salaam. Also, more than 95% of the respondents were aware on the function of open spaces in providing education services, health and psychological relief and conserving natural and artificial beauty (Table 7). Generally, more than half of the respondents who responded to the households' survey questionnaire were aware of the functions of open spaces.

The above finding implies that, local community are aware of the functions and types of open spaces. However, recreational parks, sports grounds and playing field are at the highest degree when compared to other types of open spaces. The reason could be that, recreational parks, playing fields and sports grounds are very common and easily accessed. Besides, socio-economical and environmental benefits associated with parks, playing field and sports grounds are well known by local residents. The finding is similar to other environmental conservation related studies such as Francis (1987), Sesabo *et al*. (2006), Sewando *et al*. (2011), Kangalawe (2012) and Mpokigwa (2013) who found high degree of awareness of local community in understanding the issues and importance of particular environmental resources such as urban open spaces, marine and coastal resources, forest, water and farmland and that had influenced their perceptions to support environmental conservation initiatives.

Table 6: Households' awareness on types of open spaces (n=120)

Type of open space	Percentages
Recreation parks	95.8
Forest wood trees	40
Sports grounds and playing fields	96.7
Flooding areas	60
Burial grounds	55
Wetlands	63

Table 7: Households' awareness on functions of open spaces (n=120)

Function/important of open spaces	Percentage
Conserve scenic resources	98.3
Conserve flora and fauna	75
Conserve sources of water	63.3
Protect hazardous areas	70
Provide parks and recreational areas	100
Conserve archaeological resources	99.2
Provide buffer zone between land uses	97.5
Provide improved air quality	97.5
Provide improved water quality	64.2
Healthy and psychological relief	95.8
Sports grounds and playing fields	99.2
Escapement from hazards/emergency	100
Provide area for research and learning	96.7

4.2.2 Awareness on Rules and Regulations Govern Open Spaces

The study finding shows that, majority of respondents (about 67.5%) were aware on the Urban Planning Act, 2007 as the tool for enforcement and governance of open spaces in urban area. However, very few (about 14.2%) agreed to be aware on the other rules for enforcement and governance of open spaces as shown below (Table 8). Also, the study shows that, 99.2% of the respondents agreed that local community are most responsible in conservation of open spaces followed by government authorities.

However, about 94% of respondents disagreed if there is collaboration between those perceived institutions for overseeing open spaces in urban area and local community (Table 9). The above finding implies that, local community are aware about the rules and regulations and are ready to take responsibilities to conserve open spaces. Furthermore, there is lack of collaboration between different actors with local community in management of open spaces and finally, formal education is needed to raise awareness to local community about the laws and roles of different actors towards conservation of open spaces.

Many studies argue that, understanding of the rules and regulations which govern management of environmental resources influences local community perception in supporting conservation initiatives. For example, the study by Sesabo *et al*. (2006) found awareness of local community on rules and regulations governs coastal resources management had positive attitude towards establishment of marine protected area in coastal region, Tanzania.

Table 8: Households' awareness on laws and responsibilities (n=120)

Iterm	Percentage
Laws	
Urban Planning Act, 2007	67.5
Environmental Management Act, 2004	66.7
Local Government Act No.(7) (8), 1982	63.3
Other rules	14.2
Responsible body for conservation	
Municipal Councils	95.8
NEMC	90
Ministry of Land	95.8
Local Community	99.2
Nongovernmental Organizations	70

Table 9: Households' awareness on collaboration between institutions and local community regarding open spaces conservation (n=120)

Iterm	Percentage
Ministry of land	
Agree	7.5
Neutral	0.8
Disagree	91.7
Total	100
NEMC	
Agree	4.2
Neutral	1.7
Disagree	94.2
Total	100
Municipal Council	
Agree	8.3
Neutral	0.8
Disagree	90.8
Total	100
Ward	
Agree	17.5
Neutral	1.7
Disagree	80.8
Total	100

4.3 Households' Perception towards Conservation of Open Spaces

4.3.1 Perceived conservation costs towards open spaces conservation

The summated scale of 4 likert statements on perceived costs from conserving open spaces was analysed. The expected values of summated score for perceived costs are presented in Table 1. The study finding shows that, most of the respondents (95%) have positive perception on costs associated with open spaces conservation and 2.5% disagreed while the rest were neutral/undecided (Table 10). Similar finding was obtained by Sesabo *et al.* (2006) who found that 39.18% of respondents perceived that, conservation of marine resources are associated with costs. However, these respondents who had positive perception on conservation costs had negative attitude to support marine protected area establishment.

The above finding implies that, local community had positive perception on the costs associated with conservation of open spaces. They are aware that, open spaces need maintenance, regular cleanness, protection and social security which had been reflected as the direct conservation costs by local community. Therefore, this finding will provide a base for fairness to local community during participatory open spaces conservation initiatives.

Table 10: Perceived open spaces conservation costs, conservation benefits and quality (n=120)

Variable	Agree (%)	Neutral (%)	Disagree (%)	Total (%)	Standard deviation
Perceived cost	95	2.5	2.5	100	1.07375
Perceived benefits	70.8	29.19	0	100	0.93482
Perceived quality	73.3	25	1.7	100	1.29681

4.3.2 Perceived benefits from conserving open spaces

The summated scale of 8 likert statements on perceived benefits from conserving open spaces was analysed. The expected values of summated score for perceived benefits are as shown on Table 1. The study finding shows that, 70.81% of the respondents perceive conservation of open spaces is beneficial (Table 10), that is open spaces conserve and beautify both natural and artificial environment, provides recreational, sports and playing fields, providing fresh air, health and psychological relief and other more services as described in section 2.6.

The above finding is similar to other studies. For example, Sesabo *et al.* (2006) claim that, about 47.92% of households perceived on the available benefits associated with marine resources conservation such as economical and ecological benefits. Furthermore, Sakurai *et al.* (2015) found that, majority of the households in Yokohama perceived that conservation activities will enhance residents' social interaction for that being a motive to participate in conservation activities. The finding implies that majority of the respondents are aware and positive on the benefits that may be accrued from sustainably management of urban open spaces.

4.3.3 Perceived quality on existing open spaces

The summated scale of 5 likert statements on perceived quality of existing open spaces was analysed. The expected values and labels of summated score for perceived quality were as shown on Table 1. The finding shows that about 73.3% perceive that, existing open spaces have no good quality while the rest were undecided/neutral (Table 10). Similarly, the perceived quality of open spaces has been a concern even in developed countries, study by Lindgren and Castel (2008) argues on different management approaches and mainly they insisted on multi-stakeholders involvement including local community. In South Africa, study by Sutton (2008) argues that, neglecting the general public perceptions of the environment may result in planning approaches and decisions that are inconsistent with a community's needs and desires. The finding implies that, respondents are sensitive and concerned with the existing poor quality of open spaces. Therefore, it is necessary to think of planning and design open spaces which will serve both users satisfactions and the environmental conservation purposes since perceived quality has influence on individual decision to support integrity of the product (Babin *et al*., 2004; Haq, 2011).

4.4 Households' Willingness to Participate in Conservation of Open Spaces

The households' willingness to participate in conservation of open spaces was assessed using six likert questions as variables which were coded and the values entered into the SPSS, followed by computation of the summated scale (willingness to participate in open spaces conservation) for all variables. The values and labels of summated score for willingness to participate are presented in the Table 1. The respondents were asked if they are willing to participate in various activities like awareness rising, visiting and paying entrance fees, reporting open spaces abuse, volunteer cleanness and maintenance, contribute cash and collaborating with government for sustainable conservation of open spaces. The cross tabulation was used to assess the households' willingness to participate in conservation of open spaces and the association between willingness to participate and the location of respondents who responded to households survey questionnaire was determined as shown in Table 11. The finding shows that 55.8% of the respondents were willing to participate in conservation of open spaces while the rest were neutral/undecided.

This finding is similar to other related studies, for example, Shan (2012) found that about 76% of the respondents were willing or very willing to participate in planning, management and design of urban green spaces in Guangzhou, China. Sakurai *et al*. (2015) found that more than half of respondents were willing to participate in various conservation activities in urban area like tree planting and nature conservation in Japan. In addition, high willingness to participate in conservation of fresh water turtle and tropical urban river was demonstrated by local community in Sri Lanka and Malaysia respectively (Thiruchelvam and Kirupakaran, 2010; Chun *et al*., 2012).

In Tanzania, the finding from this study is in agreement with Mrema (2013) who showed that local community were willing to create and control their own open spaces because of understanding of the need and meaning of such spaces in their residence. Studies like Sewando *et al*. (2011) showed that, residents' willingness to participate in forest conservation increases with increase level of education in Mufindi District. Sesabo *et al*. (2006) found that some local residents were willing to participate in conservation initiatives such as establishment of marine protected areas due to positive perceived benefits. Kangalawe (2012) show that, local community demonstrated willingness to participate in farmland conservation by adopting various conservation initiatives in Irangi hills, Dodoma Region.

This finding implies that, local community in Dar es Salaam are willing to participate in open space conservation in spite of their awareness of the cost they would incur so as to improve the degraded quality of the particular sites. It can be argued that, the general level of awareness and perceptions on the quality and the socio- economic benefits of having substantial open spaces contributed much on their willingness to participate in conservation of open spaces. However, the number of the respondents could be increased when awareness programmes are developed.

Furthermore, the finding shows a significant difference on willingness to participate in open spaces conservation between respondents in Mkunguni, Minazini, Sharifushamba and Charambe at (χ^2 =26.105, df = 12, P < 0.05). Minazini has the highest willingness to participate (70%) in open spaces conservation while Charambe had the lowest (23.3%). The possible reasons could be explained with what was revealed during group discussions. During the discussions it was revealed that, many respondents in Minazini had high experience on the trend of open spaces conversion to other land uses, encroachments and other disturbances to open spaces reduction problem in their area. Therefore, their negative perceptions on the way local authorities manage open spaces have encouraged them to have higher willingness to participate in conserving open spaces in their areas. Also, during discussions it was revealed that majority of the respondents in Charambe were new in the area while contributing cash for security and cleanness of their local area including open spaces. Therefore, respondents in Charambe have low courage and less willing to participate in conservation of existing open spaces that could be associated with fear on their time and extra costs with participating in open spaces conservation.

Table 11: Household willingness to participate in open spaces conservation

Summated scores	Value labels	Mkunguni (n=30)%	Mtaa Minazini (n=30)%	Sharifushamba (n=30)%	Charambe(n=30) %	Total (n=120) %
0	Disagree	0	0	0	0	0
12 - 16	Neutral	36.6	30	33.4	76.6	44.2
18	Agree	63.3	70	66.7	23.3	55.8
Total		100	100	100	100	100

Total number of households=120, Pearson Chi- square=26.105, df = 12, p=0.010

4.5 Characteristics Influence Households' Willingness to Participate Conservation of Open Spaces

It should be mentioned that, in order to determine how the households' characteristics influence the willingness of the individual household to participate in conservation of open spaces the Categorical regression model with the help of Statistical Package for Social Sciences (SPSS) was used during analysis. The dependent variable was willingness to participate in conservation of open spaces while the independent variables were perceived costs, perceived quality, perceived benefits, respondents' age, gender, marital status, education level, duration of Residence, and source of income. The results of categorical regression analysis are summarised in Tables 12 and 13.

The result gave $R^2 = 0.439$ which shows that about 43.9% of the willingness to participate in conservation of open spaces is explained by transformed values of independent variables included in the regression equation. Furthermore, the analysis of variance (ANOVA) gave the value of $F = 2.040$, that corresponds to the 0.005 level of significance, which means that the categorical regression model adapted well to the transformed data (Table 12).

Table 12: Categorical regression ANOVA table

	Sum of Square	df	Mean square	F	Level of significance
Regression	52.688	33	1.597	2.040	0.005
Residual	67.312	86	0.783		
Total	120.000	119			

The study result shows several socio-economic factors had positive and negative influence on households' willingness to participate in conservation of open spaces. The factors observed to influence positively households' willingness to participate in open spaces conservation include perceived quality, perceived benefits, Duration of Residence and level of education (Table 13).

The result shows that, perceived quality is statistically significant (P = 0.002) and positive (Beta = 0.180) regression coefficient with households' willingness to participate in conservation of open spaces. This implies that, households or local community are most concerned with the existing quality of open spaces and are motivated to participate for improvement. These findings are similar to those reported by Sakurai *et al*. (2015) for Yokohama in Japan local community believed that their participation in conservation initiative will influence the quality of urban green spaces.

The result also shows that, perceived benefit is statistically significant (P = 0.000) and positive (Beta = 0.454) regression coefficient with households' willingness to participate in conservation of open spaces. This implies that, for a unit increase in understanding the benefits associated with open spaces there is a unit increase of willingness to participate in conservation of open spaces among the local community particularly households. These results are similar to Sakurai *et al*. (2015) who showed that, local community believed that participation in conservation of green spaces will benefits them through increasing social interaction and collaboration among themselves and the government. Furthermore, related study by Sesabo *et al*. (2006) came with the same observation such that local community were positive on establishment of marine protected areas in coastal of Tanzania because of the expected perceived benefits.

The result shows that, level of education is statistically significant (P = 0.000) and positive (Beta = 0.225) regression coefficient with households' willingness to participate in conservation of open spaces (Table 13). This implies that people with higher level of education are more willing to participate in conservation of open spaces. These results are in agreement with the observations by Shan (2012) which showed that respondents with a university and higher degree had stronger willingness to participate than those with an upper secondary education in conservation of urban green spaces in China. Furthermore, positive influence of education towards conservation of environmental resources is similar to the findings of Steriani and Soutsas (2005), Thiruchelvam and Kirupakaran (2010), Mpokigwa *et al*. (2011) and Chun *et al*. (2012) who claim that education is positively influence local community's participation in environmental resources conservation.

Last factor which had positive influence and statistically significant (P = 0.001) and positive (Beta = 0.249) regression coefficient is duration of Residence, also known as duration of residence with households' willingness to participate in conservation of open spaces. This implies that as long as the household lived in the area the more is willing to participate in conservation of open spaces. These results are similar to the observations by Mpokigwa *et al.* (2011) which showed that, local community who stayed for longer in the village are more interesting in conserving environmental resources such as forest in Mufindi district, Tanzania.

However, the result shows some factors that negatively influenced households' willingness to participate in conservation of open spaces, include perceived cost, age, gender, marital status and source of income (Table 13). Perceived cost is statistically significant (P = 0.024) and negative (Beta = -0.147) regression coefficient with households' willingness to participate in conservation of open spaces. This implies that, the higher the perceived costs by households the more unwilling to participate in open spaces conservation. This result is similar to the observations by McConnell and Walls (2005) which show that the low the conservation costs the higher the willingness to participate in conservation programme and vice versa for the local community in Michigan, and Sesabo *et al*. (2006) found that the higher the households perceived costs associated with MPA establishment, the greater the unwillingness to support its establishment in Tanzania. Steriani and Soutsas (2005) also show that, the recreational demand is negatively associated with the cost of recreational trips in Greece.

Age was also statistically significant (P = 0.000) and negative (Beta = - 0.451) regression coefficient with households' willingness to participate in conservation of open spaces. This implies that, as households' age increase the more unwilling to participate in conservation of open spaces. These results are similar to the observations found by Steriani and Soutsas (2005), Thiruchelvam and Kirupakaran (2010), Mpokigwa *et al*., (2011), Shan (2012), Chun *et al*. (2012) and Sakurai *et al*. (2015) which showed that older people are unwilling to participate in or supporting environmental resources conservation compared to young people.

Gender was not statically significant (P = 0.513) and negative (Beta = - 0.064) regression coefficient with households' willingness to participate in conservation of open spaces. This result can be compared with other related studies like Sterian and Soustas (2005) who found that, sex had similar effect as age that is men are more interested in participating in recreation activities than female. Furthermore, participation of males in recreation activities could be influenced by increase in age, income and average family size (Sterian and Soustas, 2005). This result implies that, given the majority of respondents being males their willingness to participate in open spaces conservation will be decreasing with increasing in age under constant conditions of other factors.

Marital status was statistically significant (P = 0.000) and negative (Beta = - 0.293) regression coefficient with households' willingness to participate in conservation of open spaces. This result can be compared with related studies such as Chun *et al.* (2012) who found that willingness to participate in conservation was influenced by age and marital status likewise. It had been shown by Chun *et al*. (2012), single and younger respondents were very sensitive and concerned in environmental conditions compared to married respondents who were mostly elder. This result implies that, the more the number of married and aged people the less the sensitive and concerned people to environmental resources conservation like open spaces.

Source of income was statistically significant (P = 0.000) and negative (Beta = - 0.382) regression coefficient with households' willingness to participate in conservation of open spaces. Studies conducted by other researchers like Mwanyoka *et al.* (2006) claim that, respondents whose income depend most on the existing environmental resources will have low support on the particular environmental resource conservation initiatives. However, different result was obtained by Sesabo *et al.* (2006) who claim that, poor respondents and most dependent on coastal resources for their livelihood had supported marine protected area establishment for conserving marine resources. This result implies that, respondents whose income generating activities might hinder open spaces sustainability are worrying in supporting conservation of open spaces. Therefore, this information provides a base for fairness during planning and implementation of open spaces conservation initiatives.

Table 13: Coefficients of categorical regression

Predictor variables (Xj)	**Standardized Coefficients**		**$R^2 = 0.439$**		
	Beta	**Std. Error**	**df**	**F**	**Sig.**
Perceived cost	-0.147	0.086	4	2.963	0.024
Perceived quality	0.180	0.091	6	3.878	0.002
Perceived benefit	0.454	0.086	5	27.698	0.000
Respondent age	-0.451	0.108	5	17.418	0.000
Respondent's gender	-0.064	0.098	1	0.431	0.513
Respondents' marital status	-0.293	0.099	3	8.821	0.000
Respondent's education level	0.225	0.088	4	6.488	0.000
Duration of Residence	0.249	0.103	3	5.847	0.001
Major source of income	-0.382	0.099	2	14.832	0.000

Dependent variable: Willingness to participate in conservation of open spaces

CHAPTER FIVE

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The local communities in Ilala and Kinondoni Municipalities are aware of the types, functions and legislations governing conservation or management of various open spaces in Dar es Salaam. Majority of local communities were much conscious on the aspects of recreational parks, playing fields and playing grounds compared to other types of open spaces as they were directly connected to their daily life. On the responsibilities in conservation of open spaces the study showed that, majority of local community were aware that themselves, government bodies particularly ministry of land and municipal councils are highly responsible in conservation of open spaces. Also, the study revealed that open spaces were poorly managed under the government with marginal involvement of local communities.

The study further revealed the perceptions of local community on existing quality, conservation costs and benefits of open spaces. Local community believed that it is cost fully to conserve open spaces but the conservation costs could not outweigh the anticipated benefits. Furthermore, they believed that existing open spaces have poor quality and poorly managed by the government. On the willingness to participate local community were willing to participate in conservation of open spaces. The socio economic factors significantly influenced their willingness to participate were perceived conservation benefits, existing quality, duration of Residence and education. These results imply that local community are in a good position to accept appropriate participatory open spaces conservation initiatives if and only if efforts and resources will be channelled.

Participation of local community in management of open spaces is likely to improve the urban environment and the livelihoods of local community.

5.2 Recommendations

5.2.1 Specific recommendations

Based on the results and the conclusions above of this study, it is recommended that:

i. The government should provide education and explore ways of enhancing the contribution of open spaces to the environment and local community. This will increase their understanding and perceptions on various issues pertaining open spaces towards attaining standard urban environment and local community's livelihoods.

ii. The Modalities should be sought to empower and take into consideration the local community's interests in conservation of open spaces. The government should initiate a proper way for local community to participate in conservation or management of open spaces.

iii. The government should ensure that, planning authority engage other stakeholders including government and non government organization without excluding local community during planning and use values design of open spaces for sustainable urban development.

5.2.2 Recommendation for further research

It is recommended that, further research should be done to assess the attitude of urban planning authorities and institutional arrangement in planning, designing and location of open spaces. Also, further research is needed to assess the appropriate modality for highly involvement and empowerment of local community towards conservation of open spaces.

REFFERENCES

Abebe, T., Seyoum, A. and Feyssa, D. H. (2014). Benefit of wetlands interventions to local households in South-western Ethiopia: Empirical evidence from attribute-based valuation. *Journal of Environmental Science and Water Resources* 3(3): 60 – 68.

Active Living Research, (2010). The economic benefits of open space, recreation facilities and walkable community design. [www.activelivingresearch.org] site visited on 9/2/2015.

Adams, D. C., Allen, D., Borisova, T., Boellstorff, D. E., Smollen, M. D. and Mahler, R. L. (2013). The influence of water attitudes, perceptions and learning preferences on water Conserving Actions. *Journal for Natural Sciences Education* 42:114 – 122.

Adeleke, K. A. and Adepoju, A. A. (2010). Ordinal Logistic Regression Model: An application to pregnancy outcomes. *Journal of Mathematics and Statistics* 6(3): 279 – 285.

Ahmed, A. and Dinye, R. D. (2011). Urbanization and the challenges of development controls in Ghana: A case study of Wa Township. *Journal for Sustainable Development in Africa* 13(7): 210 – 235.

Akerlof, K. and Kennedy, C. (2013). Nudging towards a healthy natural environment; how behavioral change research can inform conservation. [http://www. academia .edu/4536294/Akerlof_Kennedy_Nudgesfor_Conservation_GMU_2013] site visited on 22/7/2014.

Ambrey, C. L. and Fleming, C. M. (2012). *Public green space and life satisfaction in urban Australia*. Griffith University, Australia. 38pp.

Anderson, S. T. and West, S. E. (2006). Open space, residential property values, and spatial context. *Regional Science and Urban Economics* 36: 773 – 789.

Babalola, A., Ishaku, H. T., Busu, I. and Majid, R. M. (2010). The practice and challenges of solid waste management in Damaturu, Yobe state, Nigeria. *Journal of Environmental Protection* 1: 384 – 388.

Babin, B. J., Chebat, J. C. and Michon, R. (2004). Perceived appropriateness and its effect on quality, affect and behaviour. *Journal of Retailing and Consumer Services* 11: 287 – 298.

Bailey, K. D. (1994). *Methods of Social Research.* The free Press Giller-Mac-Millan Publisher, New York. 813pp.

Balram, S. and Dragi´cevi´c, S. (2005). Attitudes toward urban green spaces: integrating questionnaire survey and collaborative GIS techniques to improve attitude measurements. *Landscape and Urban Planning* 71: 147–162.

Bhuiyan, M. S. I. (2011). Reduction of open space in urban planning: a case study of Osman Udyani. Dissertation for Award of MA degree at institute of Governance studies BRAC University in Dhaka, Ghana, 54pp.

Biswal, T. (2006). *Human Rights Gender and Environment.* Viva Books Private Limited., New Delhi, India. 508pp.

Boone, H. N. and Boone, D. A. (2012). Analyzing Likert Data. *Journal of Extensions* 50(2): 1 – 5.

Chun, M. H., Suleiman, W. N. A. and Samah, M. A. A. (2012). A case study on public participation for a conservation of a tropical urban river. *Political Journal of Environment Studies* 21(4): 821 – 829.

Faleyimu, O. and Akinyemi, M. (2014). Socio Economic Assessment of Urban Forestry Respondents' income in Okiti Pupa, Ondo State, Nigeria. *Journal of Applied Science in Environmental Management* 18(4): 603 – 607.

Forest Research, (2010). Benefits of green infrastructure. Forest research, farnham. [www.forestry.gov.uk/pdf] site visited on 9/2/2015.

Francis, M. (1987). Urban Open Spaces. In: *Advances in Environment, Behaviors, and Design*. (Edited by Zube, E. H. and Moore, G. T.). Environmental Design Research Association, New York. pp. 71 – 106.

Green, W. H. (2012). *Econometric Analysis.* Pearson Education Limited, Upper Saddle River, New Jersey. 1026pp.

Gujarati, D. N. (2004). *Basic Econometrics.* (4th Edition). Mc-Graw Hill Inc. New York. 1002pp.

Haq A. M. S. (2011). Urban Green Spaces and an Integrative approach to sustainable environment. *Journal of Environmental Protection* 2: 601 – 608.

Heinen, J. T. and Shrivastava, R. J. (2009). An analysis of conservation attitudes and awareness around Kaziranga National Park, Assam, India: implications for conservation and development. *Population Environmental* 30: 261 – 274.

Herzon, I. and Mikk, M. (2006). Farmers' Perceptions of Biodiversity and their Willingness to enhance it through Agric-environment Scheme: A comparative study from Estonia and Finland. *Journal of Nature Conservation* 15: 10 – 25.

Hosteller, M., Allen, W. and Meurk, C. (2011). Conserving urban biodiversity? Creating green infrastructure is only the first step. *Landscape and Urban Planning* 100(4): 369 – 371.

Jahdi, R. and Khanmohamad, M. (2013). Residents and urban green spaces: A case study in Rasht North of Iran. *African Journal of Agriculture Research* 8(23): 2918 – 2923.

Johns, R. (2010). Likert Items and Scales. Survey question bank methods fact sheet1. [http://www.surveynet.ac.uk/sqb/datacollection/likertfactsheet.pdf] site visited on 10/3/2015.

Kangalawe, R. Y. M. (2012). Land degradation, community perceptions and environmental management implications in the drylands of Central Tanzania [http://dx.doi.org/10.5772/45897] site visited on 8/6/2015.

Kingazi, S. P. (2002). Assessment of Socio-economic and institutional factors influencing the Management of chrome catchment forest reserve, south pare mountains, Tanzania. Dissertation for Award of MSc Degree at Sokoine University of Agriculture, Morogoro, Tanzania. 114pp.

Kooij, A. J. V. and Meulman, J. J. (2006). Prediction accuracy of regression with optimal scaling transformations: In: *Prediction Accuracy and Stability of Regressions with Optimal Scaling Transformations.* (Kooij, A. J. V.), Leiden University, Netherland. pp. 37 – 63.

Lazaro, M., Shemdoe, R. S. and Emma, L. (2013). Community Perceptions and Willingness to Accept and Execute REDD+ Initiative: The Case of Pugu and Kazimzumbwi Forest Reserves, Tanzania. *Cross Cultural Communication* 9(3): 48 – 54.

Lindgren, T. and Castel, P. (2008). Open space management in Residential areas - How it is organised and why. *International Journal of Strategic Property Management* 12: 141–160.

Livin, M. H. (2012). Housing and land challenges in Tanzania. *Prime Journal of Social Science* 1(6): 113 – 120.

Mariara, J. K., Linderhoff, V., Kruseman, G., Atieno, R. and Mwabu, G. (2006). *Household Welfare, Investment in Soil and Water Conservation and Tenure Security: Evidence from Kenya.* Institute for Environmental Studies, Vrije Universiteit, Amsterdam. 83pp.

McConnell, V. and Walls, M. (2005). The value of open space: evidence from studies of nonmarket benefits. [http://rff.org/RFF/Documents/RFF-REPORT-Open% 20S paces.pdf] site visited on 18/7/2014.

Mensah, C. A. (2014). Destruction of urban green spaces: A problem beyond urbanization in Kumasi city (Ghana). *American Journal of Environmental Protection* 3(1): 1 – 9.

Meulman, J. J. (1998). *Optimal Scaling Method for Multivariate Categorical Data Analysis.* SPSS White Paper No. 1. Leiden University, Netherlands. 12pp.

Mpokigwa, M. K., Sangeda, A. Z. and Iddi, S. (2011). Toward communication, education and awareness rising for participatory Forest management: A case study of Mufindi District, Tanzania. *International Journal of Social Forestry* 4(1): 17 – 31.

Mrema, L. K. (2013). Creation and control of public open spaces: Case of Msasani Makangira informal settlement, Tanzania. *Journal of Social Sciences Research* 2(7): 200 – 213.

Mwanyoka, I. R. (2006). Evaluation of Community Participation in Water Resources Management: The Case of the East Usambara Biosphere Reserve to UNESCO mab young scientists program. [http://www.unesco.org/mab/doc/mys/2005/tanzania.pdf] site visited on 10/6/2015.

Nasution, A. D. and Zahrah, W. (2012). Public open space's contribution to quality of life: Does privatisation matters? *Asians Journal of Environment-Behaviour Studies* 3 (9): 59 – 74.

Ntongani, W. A., Munishi, P. K. T. and Mbilinyi, B. P. (2010). Land use changes and conservation threats in the eastern Selous–Niassa wildlife corridor, Nachingwea, Tanzania. *African Journal of Ecology* 48(4): 880 – 887.

OECD and CDRF (2009). Trends in urbanization and urban policies in OECD countries: what lessons for china? [www.oecd.org] site visited on 24/09/2014.

Officha, M. C., Onwuemesi, F. E. and Akanwa, A. O. (2012). Problem and prospect of open spaces management in Nigeria: the way forward. *World Journal of Environmental Biosciences* 2 (1): 7 – 12.

Park, H. M. (2009). *Regression Models for Ordinal and Nominal Dependent Variables Using SAS, Stata, LIMDEP, and SPSS.* The University Information Technology Services. Working Papers No. 1. Center for Statistical and Mathematical Computing, Indiana University Press, Bloomington. 76pp.

Persson, M. and Liljestrom, C. (2014). *Development of Green Spaces in Dar es Salaam, Tanzania.* Swedish University of Agricultural Sciences, Swedish. 81pp.

Rahnama, M. R. and Akbari, M. (2013). Analysis the principles and Dimensions of Urban Parks with point on green spaces in Mashhad city, Iran. *American Journal of Engineering Research* 2(12): 136 – 143.

Roe, D., Nelson, F. and Sandbrook, C. (Eds.) (2009). *Community Management of Natural Resources in Africa: Impacts, Experiences and Future Directions*. Natural Resource Issues No. 18. International Institute for Environment and Development, London, UK. 190pp.

Sakurai, R., Kobori, H., Nakamura, M. and Kikuchi, T. (2015). Factors influencing public participation in conservation activities in urban areas: A case study in Yokohama, Japan. *Biological Conservation* 184: 424 – 430.

Sanga, H. K. (2010). Contribution of the civil society in conservation of Uluguru Mountains, Morogoro, Tanzania. Dissertation for Award of MA Degree at Sokoine University of Agriculture, Morogoro, Tanzania. 78pp.

Schmidheiny, K. (2007). Lecture notes in Micro-econometric: Multinomial choice basic model. [http://kurt.schmidheiny.name/teaching/multinomialchoice2up.pdf] site visited on 30/8/2014.

Sesabo, J. K., Lang, H. and Tol, R. S. J. (2006). *Perceived Attitude and Marine Protected Areas Establishment: Why Households' Characteristics Matters in Coastal Resources Conservation Initiatives in Tanzania.* Working Paper No. 99. Research unit sustainability and global change, Hamburg University. 39pp.

Sewando, P., Shimba, C. and Mndeme, D. (2011). An Assessment of Community Perception towards ownership of water projects. *African Journal of Social Sciences* 2(4): 73 – 81.

Shan, X. Z. (2012). Attitude and willingness toward participation in decision-making of urban green spaces in China. *Urban Forestry and Urban Greening* 11: 211– 217.

Sherer, P. M. (2006). *The Benefits of Parks*: why American need more city parks and open space. The trust for public land, San Francisco. 32pp.

Shrestha, S. L. (2009). Categorical Regression Models with Optimal Scaling for Predicting Indoor Air Pollution Concentrations inside Kitchens in Nepalese Households. *Nepal Journal of Science and Technology* 10: 205 – 211.

Steriani, M. K. and Soutsas, K. P. (2005). Recreation Demand Model Construction Through the Use of Regression Analysis with Optimal Scaling. *Mediterranean Journal of Economics, Agriculture and Environment* 4(4): 25 – 30.

Sutton, C. M. (2008). Urban Open Spaces: A case study of Msunduzi Municipality, South Africa. Dissertation for Award of MSc. Degree at Queen's University, Kingston, Ontario, Canada. 129pp.

Takon, T. J., Amalu, T. E. and Okpara, D. E. (2013). Assessment of local people's attitude towards natural resources conservation in bokilocal government area of Cross River State, Nigeria. *Research Journal on Organizational Psychology and Educational Studies* 2(2): 60 – 66.

Thiruchelvam, S. and Kirupakaran, S. (2010). Coastal communities' attitudes towards conservation of freshwater Turtle in Ampara District. *Tropical Agricultural Research* 21(4): 427 – 434.

Thompson, C. W. (2002). Urban open space in the 21st century. *Landscape and Urban Planning* 60: 59–72.

UN-HABITAT and UNEP, (2005). *The Sustainable Dar es Salaam Project 1992 – 2003. The Sustainable Cities Programme.* Documentation Series No. 3. United Nations Human Settlements Programme, Nairobi, Kenya. 28pp.

URT (2004). *Dar es Salaam City Profile*. Government Printers, Dar es Salaam, Tanzania. 83pp.

URT (2010). *Strategic Plan for 2010/11-2012/13 Dar es Salaam Region.* Government Printers, Dar es Salaam, Tanzania. 51pp.

URT (2011). *Urban Poverty and Climate Change in Dar es Salaam, Tanzania: A Case Study*. Government Printers, Dar es Salaam, Tanzania. 129pp.

URT (2014). *Dar es Salaam Region Socio-Economic Profile 2014.* Government Printers, Dar es Salaam, Tanzania. 171pp.

Vedasto, R. V. and Mrema, L. K. (2013). Architectural Perspective of Informalization of Formal Settlements: Case of Sinza Neighbourhood in Dar es Salaam. *Online Journal of Social Sciences Research* 2(6): 151 – 172.

Victor, M. A. M. and Makalle, A. M. P. (2003). Poverty and Environment: Impact Analysis of Dar es Salaam project on Sustainable livelihoods of urban poor. *Journal of Social Sciences Research* 2(6): 151 – 152.

Winship, C. and Mare, R. D. (1984). Regression models with ordinal variables. *American Journal of Sociological Review* 49: 512 – 525.

Wu, J. and Plantinga, A. J. (2003). The influence of public open space on urban spatial structure. *Journal of Environmental Economics and Management* 46: 288–309.

Zaghloul, A. A., Al-Hussaini, A. F. and Al- Bassam, N. K. (2008). Intention to stay and Nurses' satisfaction dimensions. *Journal of Multidisciplinary Healthcare* 1: 51 – 58.

Zelezny, L. C., Chua, P. and Aldrich, C. (2000). Elaborating on gender differences in environmentalism. *Journal of Social Issues* 56(3): 443 – 457.

APPENDICES

Appendix 1: Household questionnaire for assessment of Community's participation in conservation of open spaces in Dar es Salaam

A. Introductory information

Date of interview: **…..**………………………………………………………………….

Name of enumerator: …………………………………………………………………

Street: ………………………………………………………………………………

Ward: ………………………………………………………………………………

District: ……………………………………………………………………………

B. Information on Household's Characteristics

Household's head information:

Age: ……………………………………………………………………………...

Sex: ……………… 1= Male, 2= Female

Marital status: ……………………………………………………………………

Code: 1=Married, 2= Widow, 3=divorced, 4=Separated, 5=Never married

Education: …………………………………………………………………………….

Code: 1= No formal education, 2=Primary, 3=Secondary, 4=Tertiary, 5=adult education, 6=Higher learning

Number of years household head has been living in the area: ………………………...

What is your major source of income: ………………………………………………...

Code: 1=Employment, 2= Business, 3= others, specify…..…………………………...

What is your gross monthly income for your household: ….………………………….

Code: 1= less than 50000, 2=50000-200000, 3=210000-350000, 4= 351000-500000, 5= 510000 and above

C. Information on household's awareness towards conservation of open spaces (objective and rules)

1. The following features in Table 1 may be regarded as open spaces in urban area, Please rank according to your level of understanding.

Features		Agree	Neutral	Disagree
1.	Recreational parks			
2.	Forests wood trees			
3.	Sports grounds			
4.	Playing fields			
5.	Flooding area			
6.	Burial grounds			
7.	Wetlands			

2. The following are the possible environmental, social and economical functions of open spaces in urban area and individual life; please rank according to your level of understanding.

Functions of open spaces in urban area		Agree	Neutral	Disagree
1.	Conserving scenic resources			
2.	Conserving biological resources i.e. flora and fauna			
3.	Conserving water resources			
4.	Protecting development in hazardous areas i.e. flooding risk areas			
5.	Providing parks and recreational areas			
6.	Conserving Archeological resources			
7.	Providing buffer zone between different land uses in urban area			
8.	Providing improved air quality			
9.	Providing improved water quality			
10.	Providing health and psychological relief			
11.	Providing access for sports and playing for children and other social groups			
12.	Providing escapement from natural and artificial disasters i.e. flooding and fire			
13.	Providing access for research and learning on physical, biological and archeological sciences			

3. It is important to conserve open spaces in your area:

a) Disagree

b) Neutral

c) Agree

4. If you are aware of the following laws regarding management of open spaces, please rank according to your level of awareness.

Laws governing open spaces management		Agree	Neutral	Disagree
1.	Urban Planning Act, 2007			
2.	Environmental Management Act, 2004			
3.	Local Government Act No. (7)(8), 1982			
4.	Others rules and regulations			

5. Please state general requirement of any of the above law you know on the management of open spaces: ………………………………………………………..…………………………

……………………………………………………………………………………………

……………………………………………………………………………………………

6. Do people in your area comply with the rules and regulations towards open spaces conservation/management? Please, can you rank according to your observations:

a) Agree

b) Neutral

c) Disagree

7. The following institutions collaborate with the community in open spaces conservation related issues in your area.

Institutions		Agree	Neutral	Disagree
1.	Ministry of Land (MLHHSD)			
2.	National Environment Management Council (NEMC)			
3.	Municipal Council			
4.	Ward officials			

D. Information on household's perceptions towards conservation of open spaces (Costs, Benefits and Quality)

8. The following may promote conservation of open spaces in your area, please rank according to your level of understanding.

Conservation activities		Agree	Neutral	Disagree
1.	Awareness raising to the people about the important and functions of open spaces			
2.	Reporting non open space development activities			
3.	Conducting environmental cleanness activities to maintain hygienic state of open spaces			
4.	Collaboration with local people in planning and development of open spaces			
5.	Providing environment for poor people to generate income within or near the open spaces			
6.	Providing good environment for children and other social groups to play and enjoy in the open spaces			
7.	Paying entrance fee on accessing the services provided by improved open spaces			
8.	Enforcing the rule and regulations governing open spaces management			

9. The following are responsible on conserving open spaces in your area; please rank according to your level of understanding.

Name of institution		Agree	Neutral	Disagree
1.	Municipal Council			
2.	National Environment Management Council (NEMC)			
3.	Ministry of Land (MLHHSD)			
4.	Local community including you			
5.	Non Governmental Organization (NGOs)			

10. What do you perceive on the costs associated with open spaces conservation; please rank them according to your knowledge on conservation of open spaces.

Perceived costs from open spaces conservation		Agree	Neutral	Disagree
1.	It is costing to conduct cleanness and maintenance activities			
2.	It is costing to limit irrespective uses in open spaces			
3.	It is costing to provide and maintain security to the people accessing services in open spaces			
4.	It is costing to protect encroachments and vandalism against open spaces			

11. What do you perceive on the benefits obtained from open spaces conservation; please rank them according to your knowledge on conservation of open spaces.

Perceived benefits from open spaces conservation		Agree	Neutral	Disagree
1.	Providing scenic view service			
2.	Providing improved air quality			
3.	Providing improved water quality			
4.	Providing health and psychological relief			
5.	Providing access for sports and playing for children and other social groups			
6.	Providing habitat protection for flora and fauna			
7.	Providing escapement from natural and artificial disasters i.e. flooding and fire			
8.	Providing access for research and learning on physical, biological and archeological sciences			

12. What do you perceive on the quality of open spaces in your area; please rank according to the current situation.

Perceived quality of open spaces		Agree	Neutral	Disagree
1.	Poor hygienic condition			
2.	Spurring of non open spaces uses			
3.	Providing good security to the users and infrastructure			
4.	Provide services that meet the needs of surrounding community			
5.	Environmental condition have been well established in open spaces			

E. Information on household's willingness to participate on conservation of open spaces and the factors influencing households participation

13. The following are some of the actions could be employed to conserve open spaces in your area, please if you asked to participate in which actions will you prefer? Please rank accordingly.

Open spaces conservation		Agree	Neutral	Disagree
1.	Raising awareness to the people about the important and functions of open spaces			
2.	Paying entrance fee on visiting open spaces			
3.	Reporting any non open spaces development activities			
4.	Conducting environmental cleanness activities to maintain hygienic state of open spaces			
5.	Contribute cash money for improvement and maintenance of open spaces			
6.	Collaborate with government authorities in planning and development of open spaces in the favor of both			

Appendix 2: Interview Guide for key informants (MLHHD and Local Government Authorities) on community participation in open spaces conservation

1. What are the objectives of establishing open spaces in urban area?
2. Why it is important to conserve open spaces in urban area?
3. Is a provisional of open spaces in urban area a legal requirement?
4. What are the rules or law governing open spaces?
5. What should be done in order to conserve open spaces?
6. Who should be involved in order to conserve open spaces?
7. What are the challenges facing the efforts to conserve open spaces?
8. What are the associated costs for conserving open spaces?
9. What is your role in conserving open spaces in urban area?

Appendix 3: Interview Guide for Key informants (NEMC) on community participation in open spaces conservation

1. What are the environmental and socio-economic roles of open spaces in urban area?
2. Why it is important to conserve open spaces in urban area?
3. What is your role in conserving open spaces in urban area?
4. What should be done in order to conserve open spaces?
5. Who should be involved in order to conserve open spaces?
6. What are the challenges facing the efforts to conserve open spaces?
7. What are the associated costs for conserving open spaces?

Appendix 4: Interview Guide for Focused group discussion

1. Whom do you regard as the high income earner, middle income earner, or low income earner?

   High income: ………………………………………….

   Middle income: ……………………………………….

   Low income earner: ……………………………….…..

2. What is the major source of income in this street: ………………………….……..
3. What are open spaces in your area: …………………………………………..
4. What are the functions of open spaces in your area: ……………………….……..
5. What is the important of open spaces in your daily life: …………………….
6. Who is accountable in conserving open spaces: ……………………………..
7. How many times did you meet for discussing environmental issues in your area:

   ………………………………………………………………

8. What are the benefits associated with open spaces conservation: ……….……..
9. What are the cost of conserving open spaces: ……………………………….
10. How many times and why did you visit open spaces: ……………………….……
11. What can you say about the quality of open spaces: ……………………….……..
12. What are the factors limit the open spaces conservation efforts: …………….
13. What are the activities should be done to conserve open spaces: ……..……..
14. Why are you willing to participate in open spaces conservation in your area?

“THANK YOU FOR YOUR PARTICIPATION”