Perception of People Towards Urban Forestry: A Survey in Kano Metropolis, Kano State Nigeria

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ABSTRACT

This study was designed to assess Perception of People towards Urban Forestry in Kano Metropolis. This involved the examination of demographic nature of urban dwellers, assessing their level of awareness with regards to urban forestry as well as perceived benefits of urban forestry. Four (4) out of eight (8) Local Governments were randomly selected, proportional allocation was used in distribution of questionnaire based on the number of wards, 180 respondents were chosen at random. Descriptive statistics was used to present demographic information and Chi-Square test of association was used to test whether relationship exist between socioeconomic characteristics of the respondents and urban forestry awareness as well as the sources of information. From the results obtained on demography of the respondents, it shows more young people in the study area between (20-30yrs) at 55.5%, more males were interviewed (64%), most are single (65%), 65% of the population are graduates (HND/BSc), 75% of the population have 0-3 children, 77% are typically urban and 39% engage in business, 15% farmers, 15%civil servants and 31%others. Level of awareness shows that most people up to 81% are aware of urban forestry and the most common source of information is Radio (43%) followed by Internet (37%). Majority of the people (60%) believe that Government is responsible for indiscriminate cutting of trees. 47% of the individuals are of the opinion that

government should impose tree planting among the urban dwellers, 64% suggested road plantations as a necessary means to ameliorating micro-climate and 46% strongly believed on punishment for those cutting trees illegally. Chi-square results revealed that, demography has no significant association with the level of awareness (P>0.05) while Age, Education and Residence shows significant association (P<0.05). demographic information has no significant association with source of information (P>0.05) with the exception of marital status which portray significant association (P<0.05).

1. INTRODUCTION

Urban trees play an important role in ecology of human habitats in many ways. Urban trees are the unsung heroes of our environment which renders a number of services. The presence of tree reduces stress, and trees have long been seen to benefit the health of urban dwellers, the shade of these trees and other green spaces make place for people to meet ad socialize (Molla, and Mekonnen, 2019). The world is undergoing massive urbanization due to natural population increase, migration and redistribution of economic activities. The population of urban areas have changed dramatically from 750 million people globally in 1950s to over half of the 7.6 billion people as at 2015 and it is expected that this number will rise to 60% by the year 2030. It is important to note that close to 2/3 of the world's economy emanates from the towns and cities and by 2030 this will rise to over three-fourths, with close to $90 trillion a year of economic output coming from cities across the world (Revi, 2017). The growth of these cities has come at a huge price: large environmental impacts, air and water pollution, and unsustainable forest and resource extraction. Cities also concentrate risk due to natural hazards such as the earthquake in Haiti, Hurricane Sandy or Cyclone Hainan as well as technological hazards such as Bhopal, Chernobyl and more recently Fukushima. Preparing our cities for disasters and reducing vulnerability by strengthening housing and improving services can protect lives, improve livelihoods and the quality of life for hundreds of millions of

people across the world (Revi, 2017). In both developing and developed countries, urban growth has been accompanied by severe social and economic problems, some of which appear likely to worsen as overall population growth is accompanied by the trend towards greater urban growth (Dankani, and Abubakar, 2016).

The major challenges of urban growth is reduction in trees and vegetation covers across cities. Expansion of the built environment is often at the expense of vegetation cover and species. It is noteworthy to state that green cover has now been replaced by grey cover of concretes and slabs in most of urban areas of developing societies. Tree species across cities and towns are being diminished to provide spaces for housing and infrastructure. This growth not only affects individual species of trees around plots of land but also the various designated greenbelts around the metropolis resulting in diminishing urban forest as well as plant cover (Benedine *et al.*, 2017; Ladipo, 2015). The geographical location of Kano (being a Sudan Savannah vegetation region as well as a tropical arid zone) placed it at a disadvantage position forest and vegetation wise. Trees in this zone need to be preserved, protected and enhanced to deal with the ever-increasing threat of climate change and global warming to which the study area is highly vulnerable. Nesbitt, *et al.* (2017) defines "Urban forestry as the management of trees for their contribution to the physiological, sociological, and economic well-being of urban society. Urban forestry deals with woodlands, groups of trees, and individual trees, where people live - it is multifaceted, for urban areas include a great variety of habitats (streets, parks, derelict corners, etc) where trees bestow a great variety of benefits and problems". Kano Metropolis, Local Governments within the urban and the most populated LGs in the State. Due to rapid and unplanned urbanization, commercial development, along with population pressure, the overall city environment is being worsened seriously day by day. But the city was once known for its serenity, beautiful parks, clean roads and lush greenery, but at present that tree covers are almost transformed to urban habitats to accommodate excessive population due to high rate of rural–urban migration. In

addition, industrialization in the urban fringe areas and transformation of different land use within the city as well as the surrounding urban fringes caused to the depletion of existing tree covers so rapidly during the last half century. The depletion process of green resources got impetus, as the government had no long-term planning to keep city green except establishment of few parks and road side plantation under the city beautification programme. In some instances, government acted as the clearing agent of the greeneries. On the other hand, people in general are not properly aware of the importance of tree covers' existence in and around their living premises (Benedine *et al.,* 2017). Moreover, the absence of plantation process of trees in the past sites is also another important reason to remain the diminishing state of the existing tree cover in the city. Now a day, very few green spots exist within city boundary as the reminiscence of past green glory. However, in a stage of transition, struggling with the challenges of urban expansion, over population, poverty alleviation and improve the quality of life and environment, all these fact raise questions about the future planning and management strategies for Urban Forestry within multiple and rapidly changing urban demands and particularly, what opportunities exist for the development of urban forestry and what challenges should be overcome in the future for enhancing the overall urban green resource in and around Kano Metropolis (Maconachie, 2016).

2. MATRIALS AND METHODS

2.1 Study Area

Kano metropolis is the capital city of Kano state, Nigeria. It is located between latitude 11°59′59.57′′N to 12°02′39.57′′N and longitude 8°31′19.69′′E to 8°33′19.69′′E, with a total land area of 636km^2 area. It is made up of six Local Government Areas (Dala, Fage, Gwale, Kano municipal, Nasarawa, and Tarauni) and some parts of Kumbotso, and Ungogo local government area. Kano metropolis has an estimated population of over 4 million people as of 2021 Population Projection (National Population Commission) (Ibrahim, 2014a). Over 70% of the adult workforces draw their livelihoods off agriculture. Kano is the

biggest commercial and industrial center in Northern Nigeria. It has 43 existing marketplaces and over 400 privately owned manufacturing industries. The environment is conducive to different species of livestock production such as cattle, sheep, goat, rabbit, horses and poultry. The crops grown in the zone includes; cowpea, groundnut, soya beans and a number of cereals like millet, maize, sorghum etc. The people of Kano meteropolis are traders, civil servant and politicians (Ibrahim, 2014a).

Kano metropolis is about 481 meters (1580 feet) above sea level. The climate is hot, semi-arid with an annual average rainfall of about 690 mm (27.2 in); majority of which falls from June through September. The temperature is generally very hot throughout the year, though from December through February, the city is relatively cool. The average night time temperatures in the cold months range from 11° to 14°C. Jakara, Kano and Challawa rivers are the major water bodies that drained the metropolitan area. The soils are mostly sandy-loam with little clay content, the vegetation is mainly savanna, climatically defined into Northern guinea savanna and Sudan Savanna. Northern guinea savanna is characterized by woodland or bushes with shorter grasses while the southern guinea svanna has taller grasses. The Sudan savanna has scattered trees in grassland. Some common trees found in this region are; *Azadirachta indica, Mangifera indica, Ceiba pentandra, Adansonia digitata, Parkia biglobosa, Tamarindus indica, Anarcadium occidentale, Ziziphus spina-christ, Diospyros mespiliformis etcetera.*
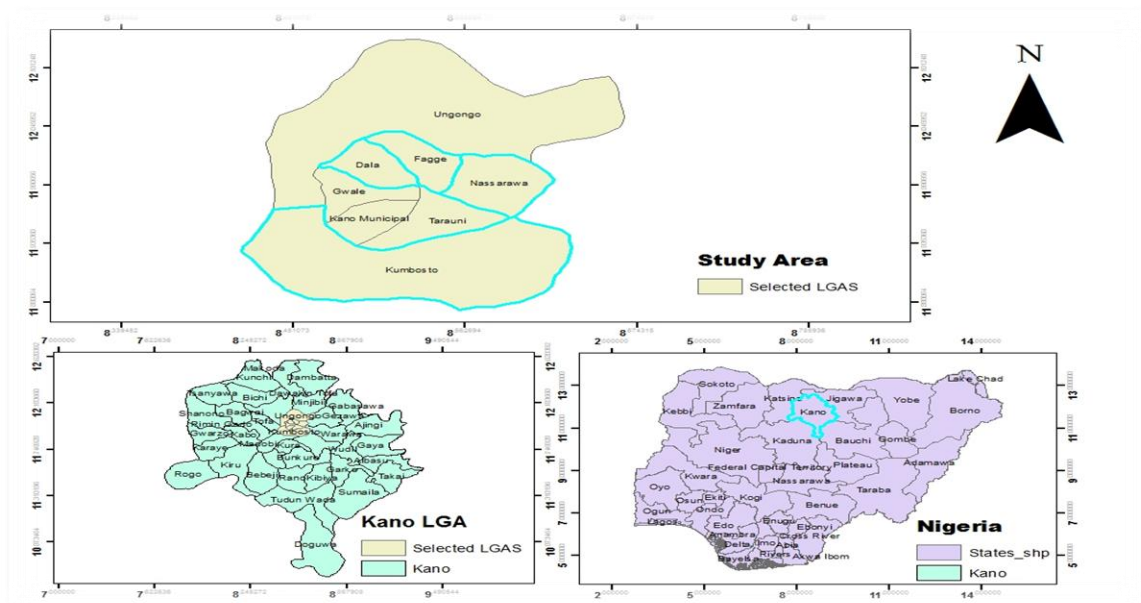
Fig. Map of the Study Area (Kano Metropolis

Table 1: Kano metropolis by local government and their populations

S/N	L.GA	Population
1.	Fagge	278,300
2.	Gwale	497,700
3.	Nasarawa	829,600
4.	Kano Municipal	516,400
5.	Tarauni	308,600
6.	Ungogo	508,700
7.	Kumbotso	409,500
8.	Dala	582,500

2.2 Sampling Procedure and Sampling Size

Two-stage sampling was used in selecting four local governments. All the selection was done at random, ensuring each local government was given equal chance of selection.

Table 2: Selected local government and their populations

S/N	LGAs	Sample Frame	Sample Size
1.	Fagge	278,300	24
2.	Nasarawa	829,600	71
3.	Kumbotso	409,500	35
4.	Dala	582,500	50

Therefore, as described above, four local government were selected i.e. Kumbotso, Nassarawa, Fagge, and Dala Local Government Area of Kano. A sample size of 180 is enough to represent the whole population. Therefore, using a simple percentage, the following will represent the quota of questionnaire to be distributed in each local government;

1. $Dala = \frac{582,500}{2,099,900} \; X \; 100 = 27.74$ 2. $Fagge = \frac{278,300}{2,099,900} X \; 100 = 13.25$

3. $Kumbotso = \frac{409,500}{2,099,900} X \; 100 = 19.50$ 4. $Nassarawa = \frac{829,600}{2,099,900} X100 = 39$

2.3 Data collection and Analysis

The primary and secondary data were used in this research, 180 questionnaires were administered and retrieved. Secondary data was obtained from relevant literatures (Journals, text books, conferences, past projects) as well as internet resources. The data obtained were screened, organized and analyzed, descriptive statistics was used to present demographic information using frequency, percentages and pie/bar chart. Chi-square will be used to test for the socio-economic characteristics of dependent variables. SPSS version 23 will be used for the analysis

3. RESULTS OF THE STUDY

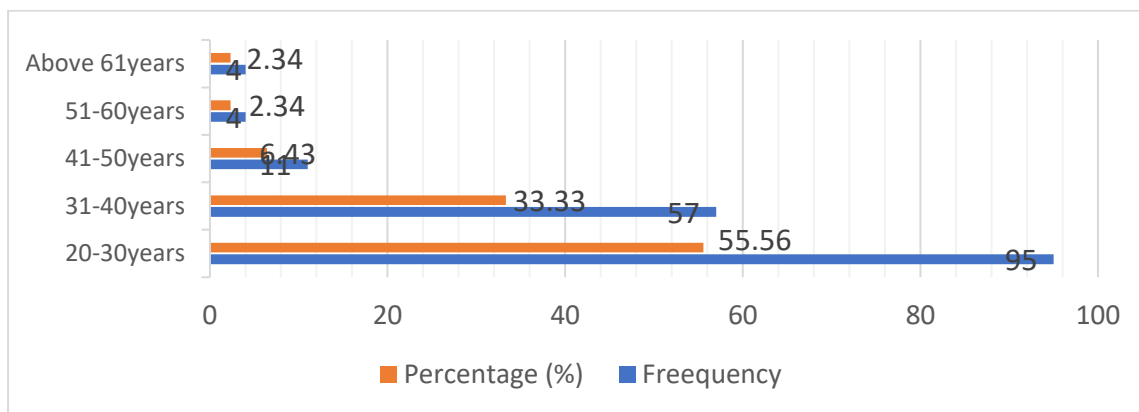3.1 Socioeconomic Characteristics of the Respondents

Fig. 1: Age of the Respondents

Fig. 1 above shows the age distribution of the respondents, where the age group between 20-30years has the highest frequency of 95 (55.56%) and age group of 31-60years and above 61years has the lowest responses of 4(2.34)
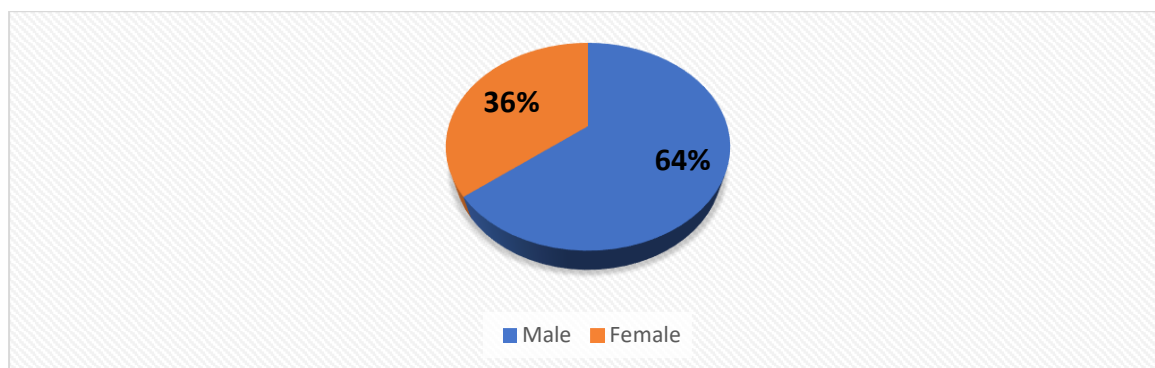

Fig. 2: Sex Distribution of the Respondents

Fig. 2 above shows the sex distribution of the respondents, where the male respondents have the highest response of 110 (64%) and female 60 (36%) with least the response.
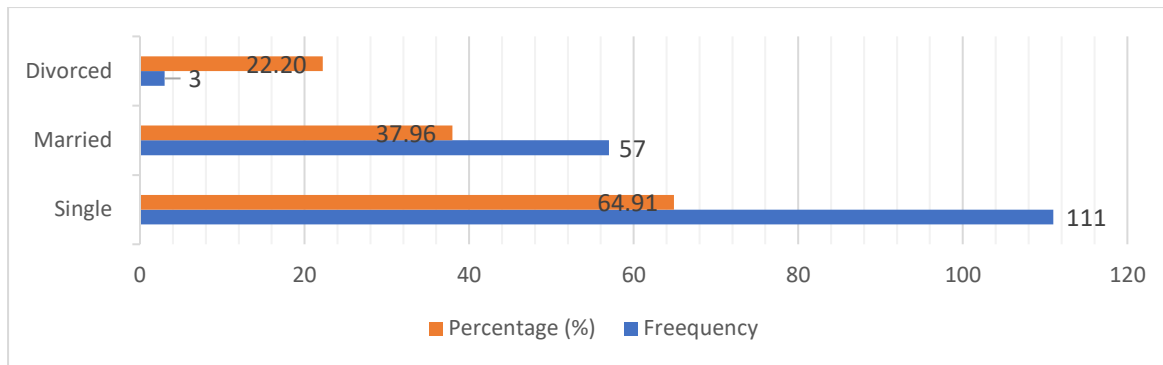
Fig. 3: Marital Status of the Respondents

Fig. 3 above shows the marital status of the respondents, those who are single have the highest frequency of 111 (64.91%) and those who are divorced constitutes the lowest frequency of 3 (22.20%).
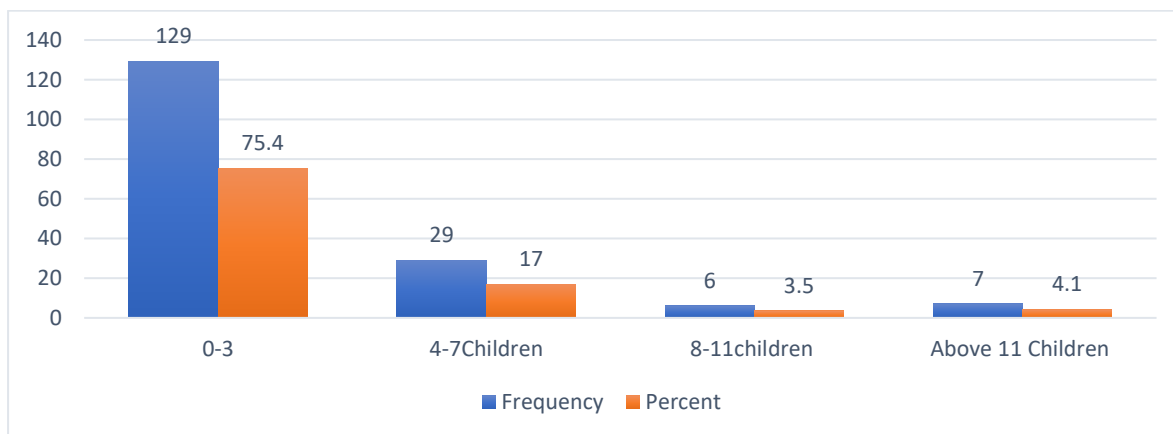

Fig. 3: Number of children of the Respondent

Fig. 3 above shows the number of children of the respondents, where respondents with 0-3 children has the highest respondents of 129(75.4%) and respondents with children above 11 has the least responses of 7(4.1%)
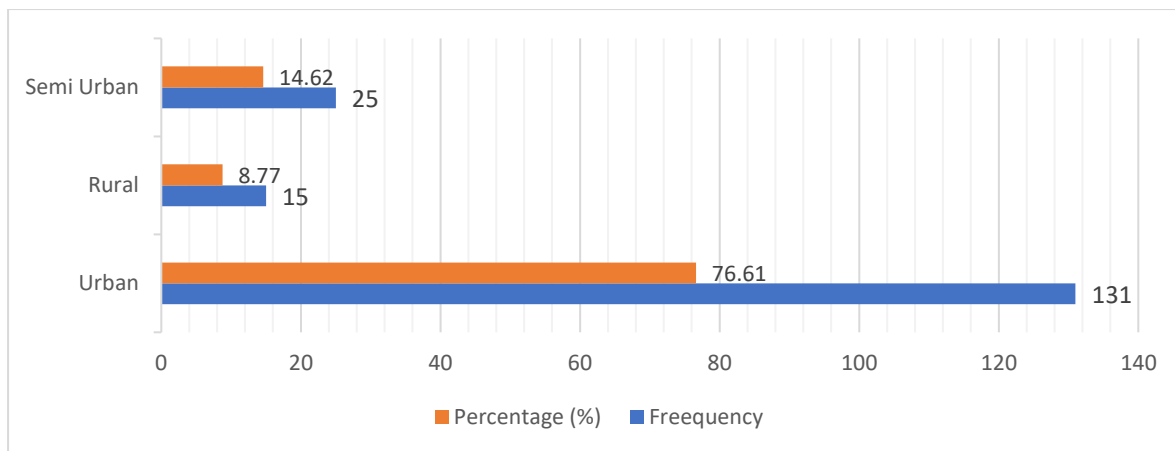
Fig. 4: Residents of the Respondents

Fig. 4 above shows the residents distribution of the respondents where it revealed that 131 (76.61) of the respondents are urban dwellers followed by semi-urban dwellers with 25 (14.62) and rural dwellers with least response of 15 (8.7&%)

Fig. 5: Occupation of the Respondents

Fig. 5 above shows the occupational status of the respondents, where 39% which is the highest percentage are business men, while farming and civil service share the same percentage of 15% represent the least responses.

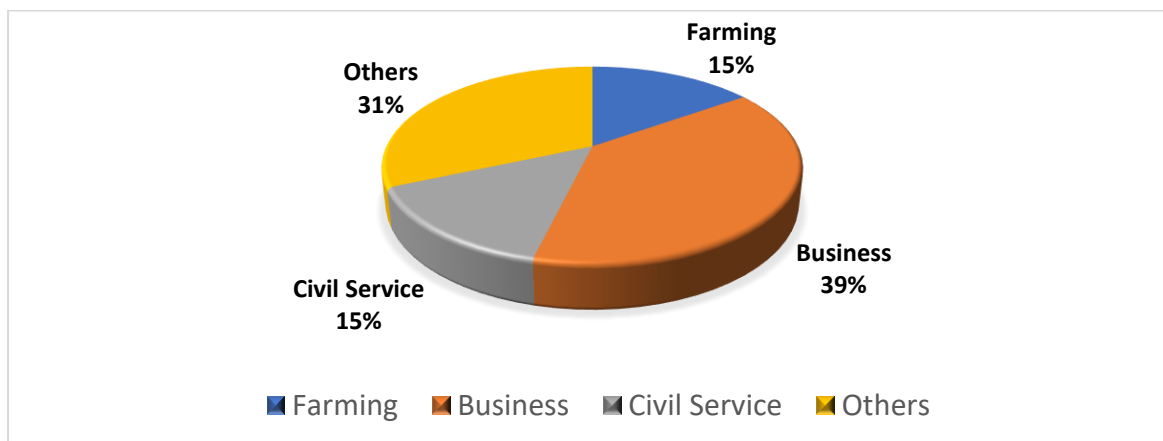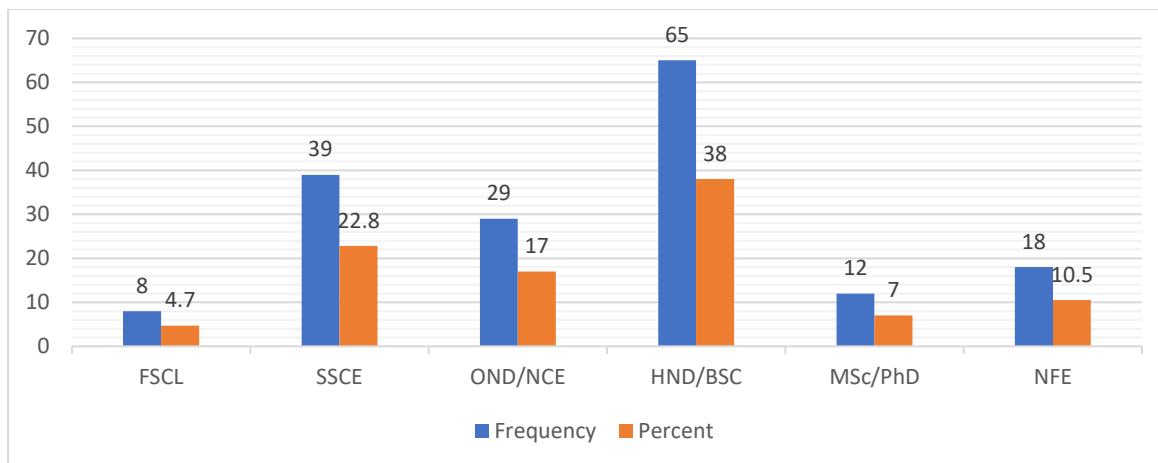**Fig. 6: Educational Status of the Respondents**

Fig. 6 above shows the educational status of the respondents, where the respondents with the highest respondents is HND/BSc with 65(38%) and FSCL has the lowest respondents with 8(4.7%).

Table 4: Level of Awareness and Source of Information on Urban Forestry

Are you aware of Urban Forestry?	Frequency	Percent
Yes	140	81.9
No	31	18.1
Total	**171**	**100.0**
Sources of Information	Frequency	Percent
TV	19	11.1
Radio	74	43.3
Newspaper	14	8.2
Internet	64	37.4
Total	**171**	**100.0**

Table 4 above shows level of awareness and source of information. Where 140 (81.9% know about the urban forestry, while the remaining respondents, i.e. 31 (18.1%) did not. It also revealed the sources of information used by the respondents. Where 74 (43.3) of the respondents know about urban forestry via radio and has the highest respondents and TV as a source of information of urban forestry has lowest response of 19 (11.1%).

Table 5: Responsibility for cutting of trees

Who is responsible for cutting of trees?	Frequency	Percent
Individuals/ Families	40	23.4
Government	104	60.8
Property Developers	27	15.8
Total	171	100.0
Is the Government doing enough to tackle deforestation?	**Frequency**	**Percent**
Yes	65	38.0
No	106	62.0
Total	**171**	**100.0**

Table 5 above shows the view of the respondents on who should be responsible for cutting of trees, where 104 (60.8%) respondents agreed to be government, while the least respondents 27 (15.8) agreed to be property developers. The view of the respondents on whether the government is doing enough to tackle deforestation or not, where respondents 106 (62%) disagreed that government are doing enough while the remain 65 (38%) of the respondents agreed that government are doing enough.

Table 6: What is your opinion about tree planting/Tree cutting in Urban Areas

What is your opinion about tree planting in urban areas?	Frequency	Percent
Good	140	81.9
Bad	13	7.6
No Idea	18	10.5
Total	**171**	**100.0**
What is your view on massive cutting down of Tree? Frequency		Percent
Good	20	11.7
Bad	131	76.6
No Idea	20	11.7
Total	**171**	**100.0**

Table 6: above 140 (81.9%) respondents perceived tree planting as a good idea and 13 (7.6%) as bad idea. 20 (11.7%) suggest tree cutting as a good idea while 131 (76.6%) as a bad idea and the remaining 11.7% remained neutral.

Table 7: Have you ever planted a tree?

	Frequency	**Percent**
Yes	50	29.2
No	121	70.8
Total	171	100.0
If yes, how many?		
1-5	9	18
6-10	20	40
11-15	13	26

	Frequency	Percent
Yes	50	29.2
No	121	70.8
16-20	5	10
Above 20	3	6
Total	50	100

Table 7 above shows that 121(70.8) of the respondents have never planted a tree(s) while 50(29.3%) of the respondents planted tree(s) in their life. The distribution of the respondents on number of trees planted were 20 (40%) between 6-10, while those planted above 20 have the lowest 3(6%)

Table 9: Perceived Benefits of Urban Forestry

S/N	Statement	SA	A	D	SD	Likert Score
1.	Provision of food such as fruit, nuts	76	73	12	10	3.3
	and vegetable leaves	44.4%	42.7%	7.0%	5.8%	100%
2.	Employment opportunities	76	73	12	10	3.3
		44.4%	42.7%	7.00	5.80	100%
3.	Prevent Soil Erosion	78	62	21	10	3.2
		45.6%	36.3%	12.30	5.80	100%
4.	Provision of firewood	1	104	56	10	2.6
		0.6%	60.8%	32.70	5.80	100%
5.	Provision of medicinal plants	101	55	9	6	3.5
		59.1%	32.2%	5.30	3.50	100%

		Frequency				Percent
Yes		50				29.2
No		121				70.8
6.	Provision of shade along the streets	72	78	16	5	3.3
	and roads	42.1%	45.6%	9.40	2.90	100%
7.	Provision of recreational opportunities	73	71	15	12	3.2
		42.7%	41.5%	8.80	7.00	100%
8.	Improvement of microclimate	102	52	13	4	3.5
		59.6%	30.4%	7.60	2.30	100%
9.	Reduction of Environmental hazards	56	52	39	24	2.8
	(pollution, erosion)	32.7%	30.4%	22.8%	14.00	100%
10.	Religious Injunctions	62	69	29	11	3.1
		36.3%	40.4%	17.0%	6.40	100%
	Likert Mean					**3.18**

Table 8 above revealed that some of the benefit drive from urban forestry are; provision of food such as fruit, nuts and vegetable leaves, employment opportunities, prevent soil erosion, provision of medicinal plants, provision of shade along the streets and roads, provision of recreational opportunities, improvement of microclimate, reduction of environmental hazards (pollution, erosion), and religious Injunctions with an Likert mean of 3.18 which shows agreement of the respondent out of 4 point of Likert-scale

3.2 People Perception on Urban Forestry (Tree Planting)

Table 9: Perception of Urban Forestry

S/No	Statement	SA	A	D	SD	Likert Score
1.	There is need to impose tree-planting	57	81	29	3	3.1
	among people	33.30	47.40	17.00	1.80	100%
2.	Road plantations are necessary	111	39	15	5	3.5
		64.90	22.80	8.80	2.90	100%
3.	There should be punishment for tree	79	71	11	10	3.3
	cutting without permission from	46.20	41.50	6.40	5.80	100%
	relevant authorities					
	Likert Mean					**3.30**

Table 9 above revealed the perception of urban forestry, as the likert grand mean of 3.30 shows their agreement that there is a need of impose tree-planting among people, road plantation should be necessary and people should be punished for cutting down trees without permission from authorities.

Table 13: Urban Forestry Awareness and Socio-economic Status of the Respondents

Variable	X^2	Df	P-value
Gender	3.076	2	0.215
Age	30.447	8	0.000
Marital Status	3.699	4	0.448
Educational Status	28.819	10	0.001
Occupation of the Respondent	8.755	6	0.188
Place of Residence	9.882	4	0.044

* Significant (P<0.05)

Table 13 above has shown the relationship between awareness and socio-economic status on urban forestry where it revealed that gender, marital status, has no relationship with awareness on urban forestry. While Age, educational status and place of the residence shows a relationship with urban forest awareness.

4. DISCUSSION OF THE RESULTS

4.1 Demographic Nature of the Respondents in Kano Metropolis.

Result found out that; age group between 20-30years has the highest response of 95(55.56%) and age group of 31-60years and above 61years has the lowest responses of 4(2.34%) in the study area where 110(64%) are male and female 60(36%) and the marital status shows that singles has the highest respondents of 111(64.91%) and divorced has the lowest respondents with 3(22.20%). It also shows that 131(76.61%) of the respondents are urban dwellers followed by semi-urban dwellers with 25(14.62) and rural dwellers with least respondents of 15(8.70%) and the same time its shows the occupational status of the respondents, where 39% which is the highest percentage are business men, while farming and civil service share the same percentage of 15% which represent the least respondents and finally it has shown that HND/BSc with 65(38%) has the highest respondents and FSCL has the lowest respondents with 8(4.7%).

4.2 Level of awareness of urban forestry among urban dwellers in Kano Metropolis.

The result shows that 140(81.9%) are aware of urban forestry, while the remaining respondents, i.e. 31(18.1%) are not. This shows that majority of the respondents are aware of urban forestry and 74(43.3) of the respondents know about urban forestry via radio and those who are aware of it via TV has lowest response of 19(11.1%). 140(81.9%) of the respondent perceived it as a good idea and 13(7.6%) which represents the lowest category though it as bad idea and only 29.3% of the respondents where at least per take in urban forestry and 62.0% though government are not doing enough to urban forestry. According to Straka. (2005) financial assistance is the most effective means to promote urban forestry programs and different kinds of activities in urban and community

forestry programs are provided through most important activities include tree planting and public awareness.

4.3 Perceived benefits of urban forestry among urban dwellers in Kano Metropolis

The result found out that respondents agrees that of all the benefits of urban forestry, there is provision of food such as fruit, nuts and vegetable leaves, provision of employment opportunities, prevention soil erosion, provision of firewood, provision of medicinal plants, provision of shade along the streets and roads, provision of recreational opportunities, improvement of microclimate, reduction of environmental hazards (pollution, erosion) etc. with a Likert mean of 3.18 which shows agreement of the about the benefit of urban forestry.

According Beckley (2008) forests provide an assorted range of benefits and these benefits increase human dependence upon forests. This dependence can occur at many levels, including individual, household, community, and regional. Both the urban and hinterland forests provide a range of benefits and values at all levels. Numerous past studies have identified the values and value categories associated with forests (Owen *et al*. 2009). These categories normally include a division separating the two main categories, such as instrumental and non-instrumental, material and nonmaterial, and anthropogenic and biocentric (Owen *et al*. 2009). Moyer *et al*. (2008) describe the forest value typologies and forest value categories. The categories may include anthropogenic and biocentric, material and non-material, instrumental and non-instrumental, ecosystem outputs and amenity, and protection. There are hundreds of forest values that fit into one or more of these groups. Examples of forest values include, but are not limited to, ecological/environment, economic, recreation, aesthetic, cultural, intrinsic, spiritual, therapeutic, scientific, and respect and admiration (Moyer *et al*. 2008).

5. CONCLUSION AND RECOMMENDATION

In conclusion, the study was designed on the assessment people perception on urban forestry in Kano Metropolis, Kano State Nigeria based on four objectives; demographic

nature of urban dwellers, level of awareness with regards to urban forestry, challenges of urban forestry as well as perceived benefits of urban forestry. It was depicted from the study that there is less of awareness of urban forestry in the study area, there is lack of public enlightenment, low private involvement, poor government policy, lack of funding, planting materials, tendering to maturity etc. And some of the agreed benefit of urban forestry were; provision of recreational opportunities, improvement of microclimate, reduction of environmental hazards.

The findings of this research point to a number of recommendations based on values hold in relation to the urban forest.

1. Adequate funding by the state government should be provided to the sector for enhanced and sustainable projects implementation including the establishment of woodlots in the state metropolis would help in ameliorating the environmental hazards occasioned in the metropolis.

2. Tree nurseries should also be established across the state where seedlings could be produced at large quantities for projects implementation and public procurement to enhance private participation.

3. Increase the dialogue among residents, academics, and professionals to encourage improvements to the quality and sustainable management of the urban forest.

4. Provide learning experiences for residents of all ages regarding the roles, values, and benefits of the urban forest.

5. Incorporate priority values of residents in urban forest management. Values are a reflection of what really matters to society, while sensitivity to values provides insights for setting goals by identifying areas of priority, gaining stronger public support for policies, and allowing decision-makers to discover opportunities and new ideas.

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