Public Awareness and Attitudes Toward the Roles of Urban Trees in Mitigating Climate Change, Enhancing Economics and Ecosystem Services in Oyo Metropolis

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Abstract

Urban trees provide numerous benefits in mitigating climate change and enhancing economic and ecosystem services in cities. However, public awareness and attitudes towards the role of urban trees are often underappreciated, making it challenging to garner support for urban forestry initiatives. Therefore, this study aims to assess public awareness and attitudes towards the role of urban trees in mitigating climate change and enhancing economic and ecosystem services in Oyo metropolis. This cross-sectional study used a "Public Awareness and Attitudes toward Urban Trees" questionnaire (n=300, α=0.77) to address four research questions. Data were analysed using descriptive statistics and binary logistic regression to determine people's attitudes towards urban trees. The study revealed a demographic imbalance with 68% male and 32% female respondents, predominantly aged 46-55 years. Respondents showed moderate awareness of urban trees' role in climate change mitigation (mean score of 3.06) but lacked understanding of other benefits. Positive attitudes were noted for energy cost reduction and soil erosion prevention. Age and education significantly influenced attitudes, while gender did not. Concerns about pests and planning integration were also highlighted. In conclusion, the study revealed a mixed level of awareness and attitudes towards urban trees. The study recommends implementing targeted educational campaigns, integrating urban forestry into urban planning, and collaborating with stakeholders to enhance awareness and support for sustainable urban tree conservation practices.

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Introduction

Urban trees, defined as trees growing in urban areas, including parks, streets, and private properties, are increasingly recognized for their multifaceted benefits, particularly in urban environments where they contribute significantly to ecological, social, and economic resilience (Climate Central, 2023). They play a crucial role in enhancing the liveability and sustainability of cities. They provide a wide range of ecosystem services, including air purification, carbon sequestration, temperature regulation, and storm water management (Koricho *et al.,* 2022; Rahim *et al.,* 2024). Urban forests contribute to biodiversity conservation and create recreational opportunities for residents (Wolf *et al.,* 2020; Muluneh and Worku, 2022). Urban trees serve as vital carbon sinks, absorbing carbon dioxide (CO_2) from the atmosphere and storing it in their biomass. According to Nowak & Crane (2002), urban trees in the United States sequester approximately 22 million tons of CO_2 annually, significantly contributing to greenhouse gas reduction efforts. Furthermore, trees mitigate the urban heat island effect, which exacerbates temperature increases in urban areas. By providing shade and releasing moisture through evapotranspiration, trees help lower ambient temperatures, thereby reducing energy consumption for cooling (Akbari *et al.,* 2001). This cooling effect is particularly important as urban populations are projected to increase, leading to heightened vulnerability to heat-related health issues (Climate Central, 2023). A study by the U.S. Forest Service estimated that urban trees save approximately $7 billion annually in energy costs across the United States (Nowak *et al.,* 2014).

Urban trees also play a critical role in improving air quality by filtering pollutants and capturing particulate matter. According to a study by the U.S. Forest Service, urban trees remove about 17.4 million tons of air pollutants annually, which translate to significant health benefits, including the prevention of respiratory illnesses and related healthcare costs (Nowak *et al.,* 2014). Trees intercept rainfall and reduce runoff, thereby preventing flooding and water pollution

(Davis & McPherson, 2012). A single mature tree can absorb up to 2,380 gallons of rainwater each year, significantly mitigating the impacts of heavy rainfall events (Center for Urban Forest Research, 2008). Urban trees contribute to biodiversity by providing habitats for various species, including birds, insects, and other wildlife. The presence of trees in urban environments fosters ecological resilience and supports ecosystem services that are vital for maintaining urban biodiversity (Holt *et al.,* 2015). Furthermore, urban forests enhance recreational opportunities, promoting physical and mental well-being among residents. Studies have shown that access to green spaces, including urban forests, is associated with improved mental health outcomes and increased physical activity (Kuo, 2003). These ecosystem services of urban trees are essential as cities face increasing challenges related to climate change, urbanization, and public health.

The socio-economic importance of urban trees cannot be overstated. They provide aesthetic value, enhance community cohesion, and promote social interactions among residents. Urban green spaces, including parks and tree-lined streets, create inviting environments that encourage outdoor activities and community engagement (Kuo & Sullivan, 2001). Additionally, trees can reduce crime rates by increasing natural surveillance and promoting a sense of safety in neighborhoods (Troy *et al.,* 2010). The psychological benefits of interacting with nature, including stress reduction and improved mood, further underscore the importance of urban trees in fostering healthy communities (Kaplan & Kaplan, 1989). Urban trees enhance property values, improve business environments, and attract tourism. A study by Wolf (2007) indicates that trees can increase property values by up to 15%, making neighborhoods more desirable and that the growing demand for urban green spaces has led to initiatives aimed at increasing tree canopy cover, which not only enhances the aesthetic appeal of urban areas but also fosters community engagement and social cohesion. Moreover, investments in urban forestry can stimulate local economies by creating jobs in tree planting, care, and education, ultimately contributing to the overall well-being of urban populations (Ecotrust & PolicyLink, 2022). As cities continue to evolve, integrating urban trees into urban

planning and policy frameworks will be vital for promoting sustainable development and enhancing the quality of life for residents.

Despite their numerous benefits, urban trees face significant challenges, including climate change, urbanization, and pests. Climate change poses risks to tree health and survival, necessitating adaptive management strategies to ensure the resilience of urban forests (Sjoman *et al.,* 2016). Effective urban forest management requires collaboration among stakeholders, including government agencies, non-governmental organizations, and residents, to develop and implement sustainable practices that protect and enhance urban tree canopies (Forest Research, 2020). However, the ecosystem services provided by urban trees are often underappreciated by the public (Rahim *et al.,* 2024). To address this gap, researchers have conducted studies to assess public awareness and attitudes towards urban trees. In a systematic review of existing literatures on ecosystem services provided by urban forests for climate change adaptation and mitigation, it was found that while urban forests play a significant role in climate change mitigation, convincing stakeholders to manage urban forests and engage in initiatives is challenging without sufficient scientific knowledge and comprehensive studies (Rahim *et al.,* 2024).

Empirical studies have shown that urban residents generally have a positive perception of urban trees due to their numerous benefits, including climate regulation, air quality improvement, and aesthetic appeal (Schroeder *et al.,* 2006; Zhang *et al.,* 2007; Arabomen *et al.,* 2020). For instance, a study in Benin City, Nigeria, found that residents appreciate urban trees for their ecosystem services, such as heat regulation and scenic beauty, and are motivated to participate in conservation efforts primarily for social benefits (Arabomen *et al.,* 2020). Urban trees also contribute significantly to economic benefits by increasing property values and supporting local economies through tourism and recreation (Dwyer *et al.,* 2002a; McPherson *et al.,* 2011).

Theoretical frameworks can help explain the dynamics of public awareness and attitudes towards urban trees. The Social-Ecological Systems Framework emphasises the interconnectedness

of social and ecological components in urban environments, suggesting that public awareness and attitudes are influenced by social factors (e.g., gender, age, education) and ecological benefits (e.g., climate regulation, biodiversity). The Human Rights-Based Approach views urban trees as critical infrastructure essential for human rights, such as the right to a healthy environment, highlighting the importance of equitable access to urban green spaces and trees (Nowak *et al.,* 2010). Understanding these frameworks is essential for developing effective conservation strategies that align with community values and needs. The nexus of gender, age, and level of education significantly influences public awareness and attitudes towards urban trees. For example, younger individuals and those with higher education levels tend to have a greater appreciation for the environmental benefits of trees and are more likely to support conservation efforts (Lorenzo *et al.,* 2000; Zhang *et al.,* 2007). Gender differences also exist, with women often showing a stronger willingness to invest in tree preservation (Zhang *et al.,* 2007).

The interplay between demographic factors and public attitudes towards urban trees underscores the need for tailored conservation strategies. By recognising how gender, age, and education influence perceptions of urban trees, policymakers can design more effective public awareness campaigns and community engagement initiatives. For instance, targeting educational programmes at younger demographics and incorporating gender-sensitive approaches can enhance support for urban forestry initiatives. Moreover, integrating urban trees into broader environmental policies can leverage their role in mitigating climate change and enhancing ecosystem services, ultimately contributing to more sustainable urban environments (Nielsen *et al.,* 2012; Arabomen *et al.,* 2020). By adopting a comprehensive approach that considers theoretical frameworks and demographic factors, urban planners can foster greater community involvement and ensure the long-term sustainability of urban tree populations. Therefore, this study aims to assess public awareness and attitudes towards the role of urban trees in mitigating climate change and enhancing ecosystem services in Oyo Town, Nigeria. The study will evaluate the level of public knowledge and perceptions regarding the benefits of urban

trees, particularly in the context of climate change adaptation and mitigation. It also seeks to investigate barriers to public engagement and participation in urban tree conservation and management initiatives. By understanding the public awareness and attitudes, the study can help inform communication strategies and educational programme to promote the importance of urban trees and encourage greater involvement in urban forestry efforts. The ultimate goal is to enhance the resilience of Oyo Town to climate change impacts and improve the quality of life for residents through the ecosystem services provided by urban trees.

Research Questions

This study provided answers to these research questions:

i. What are the demographic characteristics of the residents in Oyo Town?
ii. What is the level of public awareness regarding the benefits of urban trees in mitigating climate change and enhancing economic and ecosystem services in Oyo Town
iii. What are the determinants of people's attitudes towards the role of urban trees in mitigating climate change and enhancing economic and ecosystem services in Oyo Town?
iv. What are the barriers to public engagement and participation in urban tree conservation initiatives in Oyo Town?

Methodology

Study area

Oyo Town, the focus of this research, ranks among the larger towns in Oyo State and is positioned in the hierarchy of settlements below Ibadan, the state capital. Historically, Oyo served as the administrative centre of the Oyo kingdom during the twelfth century, giving it a rich cultural heritage (Adeyeri, 2019). Geographically, it is located in south-western Nigeria, specifically between latitudes 7° 47'N and 7° 55'N and longitudes 3° 54'E and 3° 59'E. The town is divided into three local government areas: Atiba, Oyo West, and Oyo East. According to the 2006 National Population Census, Oyo East has a population of 124,095, Oyo West has 136,457 residents, and

Atiba has 168,246, resulting in a total population of 428,498 for Oyo Town (Balogun, 1986). The climate in the region is classified as tropical savanna, characterized by distinct wet and dry seasons along with high humidity levels. Annual rainfall typically ranges from 1,000 to 1,400mm, with the rainy season extending from April to October. The wet season usually begins in late March and concludes around mid-October, followed by a dry season lasting from November to March. The local vegetation is representative of the Southern Guinea Savannah, often marked by a combination of grasses and trees, receiving between 1,000 and 1,500 mm of rainfall over six to eight months (Mueller-Dombois & Fosberg, 1998). The economy of Oyo Town is predominantly driven by agriculture and artisanal crafts, with the community well-known for its intricately carved calabashes, leather goods, and mat-making.

Data Collection

The study employed a cross-sectional survey design to assess public awareness and attitudes towards urban trees in Oyo Town. A total of 300 questionnaires were administered across the three local government areas of Atiba, Oyo West, and Oyo East. A combination of random and purposive sampling techniques was used to select respondents from various age groups, occupations, and socioeconomic backgrounds. The questionnaire comprised a multi-item scale assessing public awareness and attitudes toward urban trees. The scale of the questionnaire items is self-constructed for the study. The questionnaire's reliability, measured by Cronbach's alpha, was 0.77, indicating acceptable internal consistency. The questionnaire was face and content-validated by consulting experts in urban forestry to ensure comprehensive coverage of the key constructs. The questionnaire included questions on demographic information, awareness of urban trees' benefits, attitudes towards urban trees, participation in tree-related programme, and perceived barriers to engagement. The questionnaire was pre-tested with a small sample of respondents to ensure clarity and validity of the questions.

Data Analysis

The collected data was analysed using descriptive and inferential statistics. Descriptive statistics, such as frequencies, percentages, means, and standard deviations, were used to summarize the demographic characteristics of the respondents and their awareness levels, attitudes, and participation in tree-related programme. The average score was computed using a 5-point scale, where 1 represented "strongly disagree" and 5 represented "strongly agree." The mean attitude score was calculated to determine the attitude towards urban trees. The analysed data was presented in the form of tables to facilitate easy interpretation and comparison of results.

Binary Logistic Regression Model

The binary logistic regression model was employed to examine the determinants of people's attitudes towards the role of urban trees in mitigating climate change and enhancing economic and ecosystem services in the study area. The model is a linear regression tool with a binary response variable. The binary logistic regression is the appropriate tool when the dependent variable is dichotomous and it is used for prediction of the presence or absence of dichotomous variable based on values of a set of predictor variables (Borooah, 2002).

The logistic regression model used in the analysis can be expressed as:

$$Log\left(\frac{p}{1-p}\right) = \beta 0 + \beta 1\text{gender} + \beta 2\text{age} + \beta 3\text{level of education}$$

Where:

p is the probability of having a positive attitude towards urban trees

β_0 is the intercept term

β_1, β_2 and β_3 are the regression coefficients for gender, age, and level of education respectively

The model estimates the log odds (logit) of having a positive attitude as a linear function of the predictor variables. The coefficients represent the change in the log odds associated with a one-unit change in the corresponding predictor variable, while holding the other variables constant.

Results and Discussion

Demographic Characteristics of the Respondents

Table 1: Socio-Demographic Characteristics of the Respondents

VARIABLES	FREQUENCY	PERCENTAGE (%)
GENDER		
Male	204	68.00
Female	96	32.00
Total	300	100.00
AGE (YEARS)		
18-25	24	8.00
26-35	48	16.00
36-45	69	23.00
46-55	111	37.00
56 or older	48	16.00
Total	300	100.00
RELIGION		
Christian	129	43.00
Muslim	153	51.00
Traditional	15	5.00
Others	03	01.00
Total	300	100.00
LEVEL OF EDUCATION		
	15	05.00
Primary	57	19.00
Secondary	33	11.00
Diploma	72	24.00
NCE	108	36.00
First Degree	12	04.00
Master Degree	03	01.00
PhD	300	100.00
Total		
OCCUPATION		
Student	27	09.00
Civil servant	117	39.00
Entrepreneur	111	37.00

Unemployed	09	03.00
Retired	27	09.00
Others	09	03.00
Total	300	100.00
NUMBER OF YEARS LIVED IN OYO TOWN		
	00	00.00
<1 year	03	01.00
1-3 years	39	13.00
4-6 years	81	27.00
7-10 years	177	59.00
>10 years	300	100.00
Total		

The survey respondents were predominantly male, accounting for 68% of the total, while females made up 32%. This gender imbalance in the sample may reflect broader societal patterns or differences in participation rates between genders in the study area (Table 1). The age distribution of the respondents showed that the largest group was those aged 46-55 years, comprising 37% of the total. The next largest groups were 36-45 years (23%) and 56 years or older (16%). Younger age groups, such as 18-25 years (8%) and 26-35 years (16%), were relatively underrepresented in the sample (Table 1). The religious affiliations of the respondents were predominantly Muslim (51%) and Christian (43%), with smaller proportions identifying as traditional (5%) or other religions (1%). The educational attainment of the respondents was diverse, with the largest group holding a first degree (36%), followed by those with an NCE qualification (24%) and secondary education (19%). Higher levels of education, such as master's degrees (4%) and PhDs (1%), were less common among the respondents (Table 1). The occupational profile of the respondents showed that the largest groups were civil servants (39%) and entrepreneurs (37%), followed by students (9%) and retirees (9%). A small proportion was unemployed (3%) or had other occupations (3%). The majority of respondents (59%) had lived in Oyo town for more than 10 years, indicating a relatively stable and long-term resident population.

Shorter durations of residence, such as 7-10 years (27%) and 4-6 years (13%), were less common among the survey participants.

Public awareness regarding the benefits of urban trees in mitigating climate change and enhancing economic and ecosystem services.

Table 2: Public awareness regarding the benefits of urban trees in mitigating climate change and enhancing economic and ecosystem services in Oyo Town.

S/N	ITEMS	SA	A	N	D	SD	MEAN	St. D
1	I am aware that urban trees help mitigate climate change by absorbing carbon dioxide from the atmosphere.	58	72	49	78	43	3.06	0.73
2	Urban trees help in reducing air pollution in the city	12	28	39	91	130	1.76	1.02
3	Urban trees increase the values of properties in the city	19	27	54	82	118	1.84	0.95
4	I know that urban trees can help reduce crime rates by increasing natural surveillance and promoting a sense of safety in neighbourhoods.	11	22	46	84	137	1.70	0.89
5	I am aware that the maintenance and management of urban forests create job opportunities in various sectors, including forestry, landscape design, and urban planning.	14	17	52	88	129	1.79	0.98
6	Urban trees can help reduce energy costs for cooling buildings by providing shade.	62	79	51	63	45	3.12	0.69

7	Urban trees prevent soil erosion in the city	64	76	47	52	61	3.14	0.66
8	Urban trees improve mental health and well-being of the people	55	68	58	67	52	2.94	0.71
9	Urban trees provide habitats for various species, including birds and insects, thereby enhancing biodiversity.	59	62	53	61	65	3.00	0.64
10	Urban trees enhance the aesthetic appeal of cities and promote community engagement and social cohesion.	63	74	44	66	53	3.05	0.72
	Weighted Mean						**2.54**	

The findings from the survey on public awareness and attitudes towards urban trees in Oyo Town reveal how residents perceive the benefits of urban trees, particularly in relation to climate change mitigation and ecosystem services (Table 2). The data indicates a mixed level of awareness and attitudes towards urban trees, with some positive perceptions but also significant gaps in understanding their multifaceted benefits. One of the major findings is the moderate level of awareness about the role of urban trees in climate change mitigation, with a mean score of 3.06 for the item "I am aware that urban trees help mitigate climate change by absorbing carbon dioxide from the atmosphere." This suggests that many respondents recognize the importance of urban trees in addressing climate issues. This is supported by WRI (2023) who found that urban forests are recognized as vital components in reducing greenhouse gas emissions and enhancing urban resilience. However, the survey reveals significant gaps in awareness regarding other benefits of urban trees. For instance, item two shows a mean score of 1.76 for the awareness of urban trees' ability to reduce air pollution. This aligns with studies that highlight a lack of public knowledge about the specific environmental benefits of urban trees, particularly in developing countries (Escobedo & Wagner, 2011).

Urban trees play a crucial role in filtering pollutants and improving air quality, yet this benefit appears underappreciated

among the respondents. Similarly, items three and four, which address the impact of urban trees on property values (mean score of 1.84) and crime reduction (mean score of 1.70), reveal low awareness levels. Studies indicate that urban trees can enhance property values by up to 15% and contribute to safer neighbourhoods through increased natural surveillance (Wolf, 2007; Taylor, 2023). The findings suggest that residents may not fully understand these economic and social benefits, highlighting an area for targeted educational efforts. The awareness of urban trees creating job opportunities in various sectors received a mean score of 1.79, further illustrating a lack of understanding of the economic benefits associated with urban forestry. Research indicates that urban forestry initiatives can create jobs in landscaping, maintenance, and environmental management, which are crucial for sustainable urban development (American Forests, 2023).

Despite these gaps in awareness, the survey findings reflect some positive attitudes towards urban trees. Items six and seven, which discuss urban trees' roles in reducing energy costs (mean score of 3.12) and preventing soil erosion (mean score of 3.14), indicate that respondents recognize these benefits (Table 2). This is consistent with findings that highlight the cooling effects of urban trees, which can significantly lower energy consumption during hot months (McPherson *et al.,* 1999). The ability of trees to stabilize soil and prevent erosion is also well-documented, emphasizing their importance in urban planning and environmental management (Forest Research, 2023).The responses to items eight and nine indicate a moderate awareness of the mental health benefits (mean score of 2.94) and the role of urban trees in enhancing biodiversity (mean score of 3.00). Studies have shown that access to green spaces and urban forests can improve mental well-being, reduce stress, and improve social interactions (Kaplan & Kaplan, 1989). Additionally, urban trees provide crucial habitats for various species, contributing to urban biodiversity and ecological health (Beckett *et al.,* 2000).The final item, which addresses the aesthetic appeal of urban trees and their role in promoting community engagement, received a mean score of 3.05. This finding aligns with Raja *et al.* (2017) who emphasized the importance of urban greenery in enhancing the visual

appeal of cities and fostering community cohesion. Urban trees can create inviting spaces that encourage social interactions and community activities, which are essential for building resilient urban environments.

Determinants of people's attitudes towards the role of urban trees in mitigating climate change and enhancing economic and ecosystem services

Table 3: Logistic Regression Analysis of Attitudes towards Urban Trees

Variable	β	S.E.	Wald	df	Sig.	Exp(β)
Gender	0.108	0.256	0.179	1	0.673	1.114
Age	0.754	0.219	11.888	1	0.001	2.124
Level of Education	0.620	0.157	15.692	1	0.000	1.860
Constant	-2.191	0.552	15.741	1	0.000	0.112

The logistic regression analysis was conducted to examine the determinants of people's attitudes towards the role of urban trees in mitigating climate change and enhancing economic and ecosystem services. The analysis included three independent variables: gender, age, and level of education, with the dependent variable being the attitude towards urban trees (coded as negative = 0 and positive = 1). The analysis revealed that age and level of education were significant predictors of positive attitudes towards urban trees, while gender did not significantly influence attitudes (Table 3). The positive coefficient (β = 0.754) and significance (p = 0.001) suggest that as age increases, the likelihood of having a positive attitude towards urban trees also increases. This finding aligns with that of Gifford, (2011) which indicates that older individuals tend to have more pro-environmental attitudes, possibly due to increased awareness of environmental issues and the benefits of urban greenery. Similarly,

the level of education was a strong predictor ($\beta = 0.620$, $p < 0.001$), indicating that individuals with higher educational attainment are more likely to hold positive attitudes towards urban trees. This is consistent with the findings of Kollmuss & Agyeman, (2002) which suggests that educated individuals often have better access to information about environmental benefits and are more likely to engage in pro-environmental behaviours. The variable gender did not show a significant effect ($p = 0.673$), which suggests that attitudes towards urban trees are not significantly different between males and females in this sample. This finding contrast with Zelezny *et al.,* (2000) that have reported gender differences in environmental attitudes.

Barriers to public engagement and participation in urban tree conservation initiatives in Oyo Town

Table 4: Barriers to public engagement and participation in urban tree conservation initiatives in Oyo Town

S/N	ITEMS	SA	A	N	D	SD	MEAN	St. D
1	Urban trees are vulnerable to pests and diseases in Oyo town	11	14	125	85	65	2.52	0.88
2	Urban trees are not integrated into urban planning in Oyo town	9	13	120	90	68	2.46	0.62
3	Lack of funds hinders urban tree planting and maintenance in Oyo town	10	12	140	80	58	2.42	0.48
4	Urban trees compete with other urban infrastructure in Oyo town	38	22	37	14	11	3.05	0.90
5	Climate change poses a significant threat to urban trees in Oyo town	15	10	130	100	45	2.50	0.65
6	Limited space is a significant challenge to urban tree planting in Oyo town	42	37	22	11	8	3.06	0.82

7	Urban tree planting and maintenance are not prioritized in Oyo town	63	32	6	12	7	3.38	0.80
8	Public awareness about urban tree benefits is limited in Oyo town	72	81	24	10	3	3.60	0.66
	Weighted Mean						**2.87**	

The findings from this study reveal significant challenges that hinder community involvement in urban forestry efforts (Table 4). The perception of vulnerability to pests and diseases, which received a mean score of 2.52 suggests that many respondents are concerned about the health and management of urban trees, which can deter their participation in conservation efforts. Urban trees are susceptible to various pests and diseases, and effective management strategies are crucial for their long-term survival (Escobedo and Wagner, 2011). By addressing this concern through targeted forestry education, urban planners can alleviate public fears and encourage greater involvement in tree conservation initiatives. Another significant barrier identified in the survey is the lack of integration of urban trees into urban planning processes, which received a mean score of 2.46. This finding aligns with studies that emphasize the importance of incorporating urban forestry into broader urban development strategies (Miller and Hobbs, 2015). When urban trees are not adequately considered in planning decisions, they may be perceived as competing with other infrastructure, as reflected in the mean score of 3.05 for item 4. By prioritizing the integration of urban trees into urban planning, urban planners can demonstrate their commitment to sustainable development and foster greater public support for conservation efforts.

The item "Urban tree planting and maintenance are not prioritized in Oyo town" received a mean score of 3.38, suggesting that many respondents feel that urban tree initiatives are not given adequate attention by local authorities. This perception can lead to a lack of community involvement and support for tree planting and conservation efforts. Research indicates that prioritizing urban forestry in local policies is crucial for fostering sustainable urban environments and enhancing community engagement (Miller and

Hobbs, 2015). Another significant barrier identified is the perception that "Limited space is a significant challenge to urban tree planting in Oyo town," which received a mean score of 3.06. This finding reflects a common concern in urban areas where space is often at a premium, leading residents to believe that there may not be enough room for trees to thrive alongside existing infrastructure. Urban trees require careful planning and integration into the urban landscape to ensure their survival and effectiveness (Nowak and Dwyer, 2006). To address this barrier, innovative urban planning strategies that incorporate green spaces and tree planting into new developments and renovations should be involved. By demonstrating how urban trees can coexist with infrastructure, local authorities can alleviate public concerns and foster greater community support for urban forestry initiatives.

Lastly, the item "Public awareness about urban tree benefits is limited in Oyo town" received a mean score of 3.60, indicating recognition among respondents that a lack of awareness exists regarding the multifaceted benefits of urban trees. This finding underscores the need for targeted educational campaigns that inform residents about the ecological, social, and economic advantages of urban trees, such as improved air quality, enhanced property values, and increased community well-being (Gonzalez, 2018). By raising awareness and understanding of these benefits, local authorities can empower residents to engage more actively in urban tree conservation efforts, ultimately leading to more sustainable urban environments.

Conclusion

The findings from this study on public awareness and attitudes towards urban trees in Oyo Town reveal a mixed level of understanding regarding the multifaceted benefits of urban trees in mitigating climate change and enhancing ecosystem services. While some residents recognise the role of urban trees in climate change mitigation, there are significant gaps in knowledge about their contributions to air purification, property values, crime reduction, job creation, and biodiversity enhancement. The logistic regression analysis identified age and level of education as significant predictors

of positive attitudes towards urban trees, underscoring the need for targeted educational campaigns to raise awareness among younger and less educated segments of the population.

Recommendations

To address the challenges identified in this study and foster greater public engagement in urban forestry initiatives, these recommendations were made:

1. Implement targeted educational programmes to inform residents about the diverse benefits of urban trees, particularly their roles in improving air quality, enhancing property values, and contributing to community safety. These programmes should be tailored to different age groups and educational levels to effectively reach and engage the entire community.
2. Integrate urban forestry into broader urban planning and development strategies to demonstrate the commitment of local authorities to sustainable development and to foster greater public support for conservation efforts. By prioritizing urban trees in planning decisions, the competition between urban trees and other infrastructure can be minimized.
3. Collaborate with stakeholders, including government agencies, non-governmental organizations, and residents, to develop and implement sustainable urban forestry practices that protect and enhance urban tree canopies. This collaborative approach will ensure that the needs and concerns of all stakeholders are addressed and that the benefits of urban trees are equitably distributed throughout the community.
4. Allocate adequate resources and prioritize urban tree planting and maintenance in Oyo Town to demonstrate the commitment of local authorities to urban forestry and to encourage greater public participation in conservation efforts. By investing in urban forestry, local authorities can create job opportunities and stimulate the local economy while enhancing the resilience of the community to climate change impacts.

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