An Assessment of Benefits and Reasons for Urban Trees Flattening in Nigeria Garden City

Ayagere Selete Ayebaeni¹, Amakiri-whyte Belema Henry², Neebee Bonny³

^{1,2}Department of Architecture Ken Saro - Wiwa Polytechnic Bori, Nigeria, Ken Saro - Wiwa Polytechnic Bori, Nigeria

³Department of Urban and Regional Planning Ken Saro - Wiwa Polytechnic Bori, Nigeria

Abstract: Hasty urban improvement and agglomeration with their connected anthropogenic actions have a tendency to be associated with demolition of urban planted trees, hitherto the available trees and greenery zones plays significant role in the environment. The recent study assessed urban trees benefits and demolition causes in Nigeria garden city of Port Harcourt, capital of rivers state with possible replication in other cities in Nigeria. Primary and secondary data sources were used whereas the former sources include designed questionnaire and conversation survey, the later sources comprise of related literature. The data was analysed using accurate percentage, mean, standard deviation and regression. The findings showed that unplanned urban areas (t = 11.240), hasty urban development (t = 7.786), poor tree planting consciousness (t =7.738), non-enforcement of urban trees laws (t = 3.432), fetching of fossil fuel and lumbering actions (t =2.991). Also considered are hasty urban development (t = 7.786), poor tree planting consciousness (t = 7.738), non-enforcement of urban trees laws (t= 3.432), fossil fuel and lumbering actions (t = 2.991) exist as the major causes or reason behind the illegitimate loss of urban trees. The result lay forward that significant variation exists among the urban land uses that effect loss of urban greenery at $\{F = 29.483, P < 0.001\}$. The result rated protection from sum ray, air pollution prevention, preventing the city from heat; physical aesthetics, comfort and quality environ etc. are the environmental benefit of the available natural and urban planted trees in Nigeria. They accounted for 85.99 percent of positive benefits experienced in the city. The study recommends among others for the formulation of the appropriate policies in this direction, government through relevant authorities such as urban planning and other environmental protection agency should monitor and enforce relevant regulations on trees planted to protect the urban environment.

Keywords: Assessment, Benefits, Reasons, Trees, Garden and City

I. INTRODUCTION

The development and maintenance of green plants within and around layout of an urban settlement involves planning, environmental management, monetary and statutory commitment that, in utmost conditions, will keep on improving the superiority of urban areas, including the aesthetics and protections that balanced its ecological system. Investing on tree planting and reservation of forestry in urban communities can show case countless arrangement about the social, economic, physical and environmental importance of various land uses of the cities. Moreover, the protection and undying importance that tress and forest have in urban and

suburb centres balance the appreciative reasons behind urban planning globally.

In Nigeria, mega cities are suffering tremendous spatial extension and such has resulted to the tampering of planted trees and deforestation of reserved zones. As the urban areas are beset by undesired effects of unlawful destruction of trees and forestry, Nigeria government at various levels have enacted relevant law on tree planting and reservation of forest and focused the implementation on relevant agencies. Regrettably, the problem associated with the disappearance of the greenery appears to engulf the statutory agencies vested with the control and management of city planted trees. These ill-fated and unpleasant circumstances might not be link with the disappointment in formation of urban forestry and tree planting laws by the decision makers. However, the trees and forestry protect the city from pollution and as well other beautiful functions in the environment. That is why luttge (2020) confirmed that urban trees are subjected to pressure not lone from pollution but also from heat, drought and foundation of arid settings and the trees out of aggressiveness adapted and perform other important urban ecosystem services. The trees further serve as bio-indicators of urban vicinity through physical landscapes including dendrochronology and dendrobiochemistry. As proper administration tree planting and preservation in the urban ambient may be beneficial and contribute to natural productivity and the comfort of life in cities. The implication is that urban trees and forest reserved zone performs multipurpose functions that cannot be eliminated in the urban settlement apart from serving as a buffer and wind breaker.

Considering the environmental functions of trees in urban landscapes of Monika, Anna and Piotr (2020) noted that tree growth situations in urban and suburb are deteriorating as a result of hasty urban development rates and identified that trees planted in urban settlement can properly alleviate the pressure related issues they are facing including the size and importance of trees connected to the environmental services such trees may deliver. Accordingly, they demonstrated that environmental quality produces or subject urban tree stress which may be efficiently relieved by the planted trees. The work maintained that rapid development deters plant communities and increases the death rate of urban trees and forestry. The next analysis spelt that the normal bio-prospect of urban trees are short and based on elements such as location, proper care and municipal connection including the

natural and economic rewards of urban trees when comes to issues of city building. The way tree contributes to safety and health of urban pollution as well as advance the air and soil of any particular locality. The work concluded that the drawback of contemporary tree planting and evaluated if the causes emanated from trees or through indecorous tree supervision. They obtained the present information about complex condition of township trees, giving fresh understandings towards the compound matters about trees conditions in urban areas, harassed by way of pressure issues while the entire difficulties have grown more than three decades and pointed the significance of planted tree over the urban areas and its spatial arrangement.

Away from each, the presence of urban tress and forest in the environment influence densities, housing and other facilities by encouraging the appreciation of other land use. In 2012 and 2013, Mfrekemfon and Konwea (2014) updated the entire population of Nigeria on clearance frequency of urban trees but focused on increasing threat. Their analysis showed that Nigeria came first as a nation known for maximum degree and loss of urban greenery. The authors maintained that Poverty will continue to increase such ugly practices and call for strong need to handle problems that has to do with poverty to decline human actions threating planted trees. While all the citizens of federal republic of Nigeria to be inclusive in revamping misuses and destructions carried out on the vicinity. The authors also stressed that deforestation is about elimination of planted trees without regards for re planting fresh ones. As the activity continue to cause global warming, climate change, water, air pollution and soil erosion leading to adversities. The destroyed trees are equivalent to city life since they harvest oxygen that serves as a means of humans' survival and cleanse the thermosphere from the engagement of carbon dioxide that threating's public health whenever it occurs in great quantity. However, loss of urban trees deters environmental sustainability worldwide and appears to retain higher disadvantageous situation all over Nigeria.

The presence of trees and forestry's in urban areas enhance the social, physical, economic and environmental importance of the entire lower, middle and higher densities or quarters to extent that planned city in developing nations compete with their counterpart. In further discussion and explanation, Elegbeleye (2015) opined that loss of urban greenery within and around nations of the world prompted the decaying and degeneration of woodland zones by way of extraordinary consequences of susceptibility about the forest territory, foliage assemblies and loss of desolate animal. However, the disappearances of planted trees lead to loss of future environment at global degree with additional harmful issues especially in unindustrialized nations. He added of loss of planted trees caused by world-wide warming, flooding, climate change, and water and air contamination while Human life faces more danger because destroyed trees occur frequently without replanting measures. The research summarised that exactly 70% of the under developed countries dwell underneath poverty line.

The recent analysis of Emeodilichi (2018) noted that the frequent loss of urban reserved forestry outside plans for replanting initiatives and strategies continue to increase and caused by poor consciousness, incapability of government to afford basic facilities and poor implementation of environmental protection. He pointed out that deficiency and dissimilarity of income continue to increase to the extent that intermediate group of income households including hurried population increase, home weakness determined by political, economic and social arrangement, corrupt management, unplanned urban areas and lack of elementary facilities which include electricity, kerosene and cooking gas, inadequate replanting consciousness and others led to uncontrolled level of urban tree cutting for the purpose of fire-wood and charcoal creation. The analysis later reported that charcoal creation is serving as a king pine for the uncontrolled urban tree cutting in Nigeria as well as desertification and urban expansion. However, the article suggested the need for Nigeria as nation to build community mindfulness, supervising the necessary environmental protection policies together with some amenities availability to decline charcoal and fire-woods creations in city and commonly used by central and least group of households in Nigeria through scientific spatial and arrangement of land uses.

A number of studies have been carried out in many on the consequences of urbanizations on the planted trees of urban environment. Heusinkvelt (2016) applied data from comparative locations to identify the consequence of suburbanization towards tree growth in near stream banks. The study proved that urban growth influence tree growing that performs as carbon loader, shade, invaluable erosion control and barriers for flash floods. The work reiterated that urban trees are so significant to urban physical environment and the population that dwell init.

The impact of developed trees in urban and the method of their management differ from one city to another. Significantly Helen, Kieron, Malcolm, and Kate (2017) look at the encounters facing tree officers to augment the endowment of monitoring ecosystem services from urban forests. The research purposely establish the scope to which British municipal system vigorously applied to succeed their urban forests and classified the resources municipal government utmost required in demand to improve availability of ecological facilities through Britain's urban tress. The study sampled the entire staff in charge of planted tree policy control in the 15 key municipal establishments of Britain and also determined the urban locations and population rate/ density of neighbourhood. The work added that moderate effort supervened for the delivery of controlling environmental facilities irrespective of tree officer's carefulness on the major functions of urban tress that lessened the lingering air pollution, flood risk and urban heat anomalies. However, the research was design to serve as a spring board for further studies based on fact that standing limitation such as inadequate thoughtful about environmental facilities in the midst of principal participants, constrained political provision, lack of finance may be incredulous. Their study recommended for embracing the hands-on urban wooded area measures supported by calculated and respected cities forest with environmental facilities that gives for information and advanced private subdivision financing instruments to simplify a variation and pre-emptive environmental amenities method for controlling forest zones in areas.

In the same way, Livesley, McPherson, Calfapietra (2016) identified that storm water, runoff and flood risk, chemical and particulate pollution of urban air, soil and water, the urban heat islet, and temporary heat sprays are the environmental problems confronting urban centres. According to their explanations, urban trees and forest in totality can bring about effect on the city rain water, heat, carbon and effluence phase and called for experiential prove for the scale of the influences, together with advantageous and opposing aspect that city planted trees offer and functions that climatic county and built scenery condition perform in adapting those effects. That fourteen dissimilar researches involved offers international viewpoint on the purposes of trees within towns and cities from five regions. Some of the research analysis confirmed that greenery space enhanced refrigeration advantage in municipal microclimate in urban area. Further investigation concentrated merely on cooling gains of city tree diffusion at a cooling within the covering gloom at a street and pedestrian degree. Additional readings focused on tree types and variances in canopy interference of rainfall, filter systems, and water superiority enhancements by nutrient approval from rainstorm water runoff. Other examination also testified that both significant and insignificant effect of trees on air quality by the functions of trees that decline air contaminants like ozone towards freeing future damaging of unstable carbon-based mixtures and allergenic particulates. A cross corrective agenda to care for forthcoming urban forest studies is planned to recovered and realize responsibilities of cities trees within and outside urban bio land compounds sequences that concerned and achieved supreme prominence to population fitness and well-existence of the society.

Wayne, Susan, Richard, and Timothy (1997) assessed tree protection for the central and non-central urban area that beaconed on cover subtleties. They continue that trees zoned are categorized according to sources, arrangement and administrative strength. While a cover method assist environmentalists in appraising natural decorations and developments of the total urban scenery and to inspect manner of public impact for the entire natural arrangements and procedures. Therefore, urban tree protection is by and large constrained to accounts of tree edifice and conformation on community domains. The method also gave respected data aimed at handling resource and did not interpret the whole tree protection inside the urban ambient and spelt out statistical deficiencies continuously in green designs and courses.

John, Lowry, Matthew, Baker and Douglas (2012) Applied multi-model interpretation technique to appraise the virtual influence of the issues of experiential heterogeneity within urban tree sun shade and deliberate the inferences of the exploration across Salt Lake County, Utah. Their work aimed at providing planners with data that determines the upgrading of inhabited neighbourhood planning or guide tree planting crusades cheering the farming of urban trees. The authors detailed that appealing, profitable, and ecological welfares of trees found in urban areas are standard. As past studies concentrated on considerate about diversity of public and ecological issues are connected to urban flora. The analysis was held with regression as interface positions to determine the impacts of fifteen (15) anthropological and conservational variables about the tree sunshade wealth despite the fact of croft region phase and continuous. The findings explained that district phase stood as powerful covariate which disturbs hominid and environmental issues that relay profusion in areas with tree cover. (ie strong connection occurs among street density and residential tree shelter, nevertheless the connexion moderates as the region eternities. The significant input made know in this research work remains the unambiguous effort to explain the mystifying impact for vicinity oldness while gaining insight about the association pertaining the hominoid and ecological issues and urban tree areas. their work settle about improved apprehension and causes of urban tree areas in dwelling arena and deem it fit in contemplating the population and eco-friendly issues on the course of calculating for district stage.

Delphis. Darryl, Shin,, Beate, Michalzik and Alexander (2020) Noted that urban trees adjust precipitation before it touches the land surface and it comprises street trees, trees found on private property, urban forests, parks, and arboreta, intercept .To intercept contaminants in urban spaces, the trees distillate compound contributions within the urban pounded exterior. The authors concluded that the technical municipal try to search related subject matter since forty years ago, that much work is expected direction to expatriate the impacts of the urban tree cover on urban water superiority and to use the considerate to make best use of urban tree sunshade advantages.

Zheng, Kevin and Edward (2016) identified urban tree design methods for justifying daylight urban hotness land mass impacts in a high-density urban environment. The study intention was built on explained project approaches designed for built-up greenery to make best use of thermal advantages and moderate the day urban heat island impacts. The study recognized proposed design policies for planted tree in the urban community which comprises blue observed influence (BOI)-based strategy repetition and the wind-path strategy technique are assessed in the district scale in two climate-sensitive areas with different urban morphologies. The analysis specified the level cooling impacts of urban trees is very much connected with SVF. The study further resolved that the protection of air hotness and practical warmness existed double as greater flora settled in wind flight route than

the ones for sheltered spaces. The research confirmed that planted tree in combination with appropriate arrangement stood as active quantity to moderate hours of daylight.

Xia, Ping, Yanting, Lei, Liwei, and Guangyan (2019) concentrated on mathematical assessment of area coverage trees and how the cooling impact may lead to the assortment of proper tree classes that improve warmth island impact in municipal zones. The study targeted on the exploration of canopy functions of make cold contribution of the Schima superba, Eucalyptus citriodora and Acacia auricular forms urban tree types all over the city of Guangzhou built on ecofriendly issues supervision. The findings revealed robust canopy transpiration and cooling important of the above mentioned trees were perceived to be favourable environmental friendly in the summer along with factors. Additionally, the results pinpointed that ways to encourage the ecological assistances of urban forests through proficient administrative applicability at all levels.

Clas(2000) examined lands in locations of planned avocado areas around built up zones throughout building and successive use, changes in vegetation habitatyearlyfrom1972 – 1981 on yearly basis. He explained that the applicability of natural and semi-natural forests, meadows, pasture land, heaths) and park tree including other greenery areas are kept upcoming development zones, as the proposed techniques bring economic, social and other benefits while some trees were injured during building development. In furtherance, the destruction urban trees was principally caused by enlarged wind haste most any time the nearby trees were pull-down and damage to root systems as a result of diggings and increases landfill. However, the study concluded that program performance about connections between planning, construction, use, habitat variations and foliage were untaken together irrespective of certain harm incurred on course of vegetation dilapidated at the indigenous inhabitants that were extremely grow as a recreation capacity.

According to Lisa, Stephan, Klaus, and Sjerp-de (2005), the changes, sizes, shape and colour, the trees are the highest or key constituent of urban environment. Their work expressed advantages and application series from imperceptible and beautiful advantages to reduce urban temperature mitigation of air contamination. Archeologically, the focal advantages of urban trees and forestry connected to health, aesthetics and frivolous benefits in a particular urban centre. Moreover, emerald areas have been producing food, fodder, fool, wood and timber for construction. However, the authors explained that woodland, woods and trees were imperative to particularly through signifying indigenous, province and artistic meaning. By providing attractive pleasure and generate a please environment different outdoor undertakings. While timber land may produce an incidentals of the nature in the medium of urban life. Specifically, ancient wood environment may give birth to big trees and provide the population with the opportunity to recover from constant worry regain consciousness retentions and improvement sureness. The also work recalled the important of informative importance of urban forestry. The work concluded that trees e particularly children help people to absorb flora and normal process in an otherwise artificial environment and to the attraction of green townscape and connect confident imagine.

Jared, Kathleem, Desiree, Raymond, Cynthia, Jariah and (2016) applied high resolution LiDar and Lawrence descriptions information to enumerate tree shade on 250 metres based on 7910 population participants in the California through or with the aid of consultation survey. The purpose of the analysis anchored on the considerate for encouraging health possibilities emanating from trees found in developed areas of United States. In view of this, their analysis considered tree shade and multiple health measure and indicated that other district tree refuge, independent from green interplanetary admittance, were connected to positive overall condition, primarily arbitrated by inferior overweight obesity and decent social interrelation, and to smaller extents the type 2 diabetes, higher blood pressure, and asthma. The result recommended and pointed the key role of trees and nature for encouraging universal population's health in urban

II. METHODOLOGY

The exploration enclosed Port Harcourt metropolis as a study area. The cogent for considering the city beaconed on the reason that it is an industrial developing urban area with seaport and colonial background like some urban centres in developing nations and regarded as an environment with inadequate tress and urban forestry in the interior and external parts of the planned settlement.

The study is important in numerous methods. Principally, it made effort to identify zones or densities of the dominance spatial arrangement of trees in the area under investigation. In addition, it made an effort to discover the reasons behind the absence and destructions of urban trees and forestry. The research recognized and drew out areas or densities or neighbourhoods without trees and forest and to assist those who arbitrate between the existing environment and proposed development to focus on densities that can be improved through planting of trees and forest. It detailed further that the findings of this particular investigation can assist in clarifying the importance, aesthetics and superiority of trees and forestry in urban areas, since it can give sensible measure to manage other areas without or with little tress to recommend measures for policy makers, urban planning authorities, and academicians can rely upon while building resolutions in managing area with and without trees in their relevant neighbourhood.

The study is an experimental research that constitutes both quantitative and qualitative information while the analysis was conducted in dissimilar approach. Data was obtained and analysed through environment observation of the study area and the administration of questionnaires to cover the both

neighbourhoods and areas with planted trees and areas existing without the presence of trees. The research surveyor was held with the assistance of 251 questionnaires. The quantity of questionnaire disseminated was gotten with the deployment of direct techniques since there is no data base for densities developed with trees and urban forestry. The sample size was determined through 5 percent of the residents and the respondents were randomly nominated. This was completed to have equal representation of trees and non-trees designated densities in the study areas and escape analytical prejudice. Relying on previous studies, seven major reasons for feeling planted and natural trees in developing urban and suburb areas of Nigeria were applied in this particular study (Gbenga, Micheal and Felix, 2020). However, the sampled population were directed to specify the degree to which trees existence and destruction occur. A particular variable had 4-point likert scale decision (very strong reason, strong reason, undecided and not a reason at all) for respondents to complete the questionnaire form. Further alternative was prepared for the respondents to classify other variables and individual actions that influence the policies on their density of resident were not part of the set of variable available to the public or respondents. The data was analysed using accurate percentage, mean, standard deviation and regression method. The rational for the use of these techniques was to ascertain and determine the benefits and reasons behind demolition of urban trees.

III. RESULT AND DISCUSSION

The Combined Reasons for felling urban Trees in Garden City Nigeria

The findings of the research as shown in the regression table identified the major causes or reason behind the illegitimate loss of urban trees in Nigeria. However, the significant findings showed that unplanned urban areas (t = 11.240, P =0.000<0.05) demonstrated the highest reason for felling of urban trees in garden city Nigeria. Also considered are hasty urban development (t = 7.786, P = 0.000<0.05), poor tree planting consciousness (t = 7.738, P 0.000<0.05), nonenforcement of urban trees laws (t = 3.432, P = 0.000 < 0.05) fossil fuel and lumbering actions (t = 2.991, P = 0.003 in that imperative. The implications is that various factors are behind the losses of trees and other greeneries in many urban zone, densities and core areas of Port Harcourt metropolis while very little trees can be found at the edge and middle of main roads, swamps and some public areas etc. the findings uphold the current work of Gbenga, Micheal and Felix (2020) who identified that planted trees dominated the major roads, meridians, and public parks though the core areas of Akure was neglected and maintenance of trees was very poor. Beauty was the most benefit identified by other respondents. Others believed that giving more attention on greenery environment might assist for development of smart environment in Akure town.

Table 1: Integrated Reasons for Loss of Trees and Greeneries in Garden City of Nigeria

| Unstandardized Cod | Standa | Standardized Coefficient | | | |
|-----------------------------------|--------|--------------------------|-------|--------|------|
| Model | В | Std.Erro | Beta | T | Sig |
| (Constant) | 54.950 | 2.539 | | 23.114 | .000 |
| unplanned urban areas | .559 | .050 | .597 | 11.240 | .000 |
| hasty urban development | .818 | .093 | .777 | 7.786 | .000 |
| Poor tree planting consciousness | .665 | .086 | .4035 | 7.738 | .000 |
| non enforcement of urban tree law | .671 | .203 | .218 | 3.432 | .000 |
| fossil fuel and lumbering actions | .190 | .065 | .265 | 2.991 | .003 |

Source: Field analysis 2021

Environmental Benefits/Advantages of Available Trees in Garden City of Nigeria

The second findings in Table 2 revealed percentage analysis on the environmental benefit of the available natural or planted trees in Port Harcourt metropolis of Nigeria. The regular percentage of the positive and negative responses was 85.5% and 14.5% respectively. In furtherance, the result outlined that protection from sum ray with the mathematical percentage value of (82.35%) was rated as the fundamental environmental benefits of the available and scarce trees in developing urban areas. Others are air pollution prevention (78.23%), preventing the city from heat (70.49%), physical aesthetics (67.92%), comfort and quality environ (62.74%). This means that trees in the study area are prone to tedious environmental services caused by the inability of municipal and regional government to mandate and implement tree planting on existing and proposed development from corner to corner of land uses. The finding is similar to Schroeder (2014), who reports that awareness on economic, social, environmental and health benefit of urban trees has improved whereas urban forestry promoters appear to have to agree that beauty does not really matter as an intention for tree planting.

Table 2: Environmental Benefits/Advantages of Available Trees in Garden City of Nigeria

| S/N | Benefit/Advantages | N | PR | % | NR | % |
|-----|-------------------------------|-----|-------|-------|-----|-------|
| 1 | protection from sum ray | 251 | 240 | 82.35 | 11 | 17.67 |
| 2 | Air pollution prevention | 251 | 232 | 80.23 | 19 | 19.27 |
| 3 | preventing the city from heat | 251 | 228 | 79.50 | 23 | 20.50 |
| 4 | physical aesthetics | 251 | 218 | 75.92 | 33 | 19.08 |
| 5 | comfort and quality environ | 251 | 210 | 70.74 | 41 | 29.26 |
| | TOTAL | | 1,128 | 85.99 | 127 | 14.01 |

Source: Field analysis 2021

Land Use Variation for Felling/Loss of Urban Trees and Forestry in garden cities of Nigeria

With the mean groove acquired from different land uses that demolish urban trees and forestry in Port Harcourt Nigeria from the analysis, four (4) land uses were determined or esteemed as the maximum and imperative land uses that demolish urban planted trees and forestry zone. The result put forward that significant variation exists among the urban land uses that effect loss of urban greenery in Port Harcourt metropolis at $\{F = 29.483\}$, P<0.001 $\}$. The analysis of variance report for different land uses revealed that the degree of urban greenery demolitions varies according to developed or proposed development differs for residential, industrial, transportation, commercial institution, agricultural and recreation land uses/development as they appear in dissimilar subcategory with the assessment of 2.83, 2.74, 2.70, 2.69, 2.60, 2.55 and 2.35 respectively. The findings contrast the practical results of Lisa, Stephan, Klaus, and Sjerp-de (2005) who observed that the focal advantages of urban trees and forestry connected to health, aesthetics and frivolous benefits in a particular urban centre while those emerald areas have been producing food, fodder, fool, wood and timber for construction. They emphasized that woodland, woods and trees were imperative to resident particularly through signifying individual, indigenous, province and artistic meaning. By providing attractive pleasure and generate a please environment different outdoor undertakings. As timber land may produce incidentals of the nature in the medium of urban life. Specifically, ancient wood environment may give birth to big trees and provide the population with the opportunity to recover from constant worry regain consciousness retentions and improvement sureness. They recalled the important of informative importance of urban forestry. However, they concluded that trees particularly children help people to absorb flora and normal process in an otherwise artificial environment and to the attraction of green townscape and connect confident imagine. Therefore, for natural, planted and forest areas to succeed, government should build strong monitoring and evaluation to minimize the four (4) popular and important land uses (residential, industrial, transportation and commercial) land uses that demolish urban planted trees and forestry zone all over the garden city of Nigeria.

Table 3: Variation for Felling/Loss of Urban Trees and Forestry in garden cities of Nigeria

| RD. dev. | ID. dev. | TS. dev. | CM .dev. | IS dev. | Ag. dev. | Rec. deve. | F | P. val u |
|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------|----------------|
| mean ± SD | mean ±SD | mean ±SD | mean ±SD | mean ±SD | mean ±SD | mean± SD | 29. | <0. |
| 2.83± 0.29 | 2.74± 0.22 | 2.70± 0.32 | 2.69± 0.22 | 2.60± 0.42 | 2.55± 0.45 | 2.35± 0.49 | 48 3 | 00 1 |

Source: Field analysis 2021

IV. RECOMMENDATIONS

There is need for rivers state government to prepare a land use plan to guide further development harmless to natural, planted trees and forest earmarked zone in to enhance social, economic, and environmental and aesthetics contributions of planted and natural tree in urban and suburb zones of Port Harcourt. The physical plan should include an advance agenda for improving already developed areas with trees and other greenery and provide trees mandatory development in the entire new layout. It should also stipulate and supervise best practice measures to regulate land use activities that demolish planted on higher frequency in other to safeguard the health benefits as well as environmental protection. Occupants of the various layouts or communities should be involved in the security and reservation of planted trees and other greenery environment. Active land use planning that guarantees the involvement of urban communities and relevant stakeholders can strengthen decision making procedure on provision and usage of trees resources.

In addition to formulating appropriate policies in this direction, government through relevant authorities such as urban planning and other environmental protection agency should monitor and enforce relevant regulations on trees planted to protect the urban environment. Vaguely, the municipal government should ensure that land use developers adhere to strict safe garden of planted trees during and after development of any land use as planted trees mitigate air pollution and heat. The municipal government ought to carryout environmental review on the safety and maintenance of planted trees in various land uses. Such review must vigorously inspire the stakeholders, government, horticulturist, community members in other to advance sustainable development strategies for the planted trees.

V. CONCLUSION

The study assessed in totality the benefits and reasons behind the demolition of naturally earmarked and planted urban trees in garden city of Port Harcourt. Based on the findings of this research, the major causes or reason behind the illegitimate loss of urban trees unplanned urban areas, hasty urban development, poor tree planting consciousness, nonenforcement of urban trees laws, fossil fuel and lumbering actions. It also concluded that the helpful and advantages of available natural or planted trees in garden city of Nigeria embrace protection from sum ray, air pollution prevention, averting the city from heat, physical aesthetics, comfort and quality environ etc. Put forward that strong and significant variation exists among the land uses contributing enormously in the direction of loss and elimination of urban trees and forestry. Though four (4) strategic land uses (residential, transportation, industrial and commercial were the dominated and highly respected land use development that deserted urban planted trees and forestry zone in Nigeria.

REFERENCES

- [1] Clas, F.(2000). Long-term changes in indigenous vegetation preserved in urban areas, Landscape and Urban Planning, (52) 2–3, 101-116.
- [2] Delphis, F.L, Darryl, E., C. M., Shin, I., Beate, M., Michalzik N, and Alexander, T. (2020) Urban Tree Canopy Effects on Water Quality via Inputs to the Urban Ground Surface Ecological Studies book series (240), 433-457.
- [3] Elegbeleye, O. (2015). Global Impact Of Environmental Sustainability On Deforestation. International Journal of Scientific and Engineering Research, 6 (9) 103-113.

- [4] Emeodilichi H. M. (2018). Assessment of Environmental Impact of Deforestation in Enugu, Nigeria. Resources and Environment, 8(4) 207-215.
- [5] Gbenga, E., Micheal, O.A., and Felix, K.O(2020). Tree Planting as a Means For Urban Aesthetics and Development in Nigeria. Journal of Nigeria Institute of Town Planners, 26 (1)55-68.
- [6] Helen J.D. ,Kieron, J.D.,Malcolm, D.H., and Kate,S.,(2017). Challenges for tree officers to enhance the provision of regulating ecosystem services from urban forests. Environmental Research, 156, 97-107.
- [7] Heusinkvelt, B.(2016).Studying The Effect Of Urbanization On Tree Growth Surrounding Streams In Lincoln, Nebraska. Published undergraduate thesis University of Nebraska-Lincoln,1-30
- [8] Jared,M.U.,Kathleem, L.W., Desiree, R.B., Raymond, L.T, Cynthia, J.A.B, Jariah, P.M.O.N.D and Lawrence D.F. (2016).Multiple Health Benefit of Urban Trees Canopy: The mounting evidence for a green prescription. Health and Place, 42, 54-62.
- [9] John H. Lowry Jr., Matthew E. Baker & R. Douglas Ramsey (2012).Determinants of urban tree canopy in residential neighborhoods: Household characteristics, urban form, and the geophysical landscape. Urban Ecosystems 15, 247–266.
- [10] Livesley, S.J, McPherson, E.G, and Calfapietra, C (2016) The Urban Forest and Ecosystem Services: Impacts on Urban Water, Heat, and Pollution Cycles at the Tree, Street, and City Scale 45(1) 119-124.

- [11] Lisa,T, Stephan,P., Klaus, S., and Sjerp-de V (2005). Benefits and Uses of Urban Forest and trees; in book urban forests and Tree (81-114) Doi:10.10073-540-27684-x5
- [12] Mfrekemfon, P. I., and Konwea ,P. E. (2014). Deforestations, Environmental Sustainability And Health Implications In Nigeria: A Review international Journal of Science, Environment and Technology, 3 (2) 502 – 517
- [13] Monika, C., Anna, K., and Piotr, M. (2020). The Complex Issue of Urban Trees—Stress Factor Accumulation and Ecological Service Possibilities, 1-21.
- [14] U. luttge (2020) Trees: structure and function and the challenges of urbanization
- [15] Department of Botany, Institute of Biosciences, University of São Paulo, São Paulo Brazil, 1-26.
- [16] Wayne, C. Z., Susan M. S., Richard, V. P, and Timothy, W. F. (1997) .Urban tree cover: an ecological perspective .Urban Ecosystems 1, 229–246.
- [17] 13. Xia, C., Ping,Z., Yanting, H., Lei, O., Liwei, Z., and Guangyan,N.(2019). Canopy transpiration and its cooling effect of three urban tree species in a subtropical city- Guangzhou, China Urban Forestry and Urban Greening, 43, https://doi.org/10.1016/j.ufug.2019.126368
- [18] Zheng, T., Kevin, K.L. L., and Edward, N (2016). Urban tree design approaches for mitigating daytime urban heat island effects in a high-density urban environment. Energy and Buildings, 114, 265-274.