



## The Role of Trees in True Development

O. E. Unanaonwi<sup>1\*</sup>

<sup>1</sup>*Department of Biological Science, Federal University Otuoke, Bayelsa State, Nigeria.*

### **Author's contribution**

*The sole author designed, analyzed and interpreted and prepared the manuscript.*

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### **ABSTRACT**

**Aims:** This review article discusses the importance of trees in development and highlights how development activities such as road construction, building of housing estates, industries, airports and agriculture led to forest trees depletion, which in effect negates sustainable development. Trees have been the biological tool that drives development and will continue to remain so. However, some of our developmental activities turn to hinder future development. Continuous destruction of forest or urban trees for developmental purposes is only a short-term development. Sustainable development makes way for future generation to share and enjoy from the present benefits. The consequence of indiscriminate removal of trees from our environment today will arise tomorrow if not checked. Important global bodies like the United Nations Organization are considering that trees are global heritage and a very significant factor about the world of well-being. They plan and execute development programmes with consideration for tree preservation and sustenance.

**Conclusion:** There can be no true development whether human, structural and economic without the important roles of trees. Trees should be accorded a high priority in all aspects of development planning and programmes.

\*Corresponding author: Email: [okpoesio2002@yahoo.com](mailto:okpoesio2002@yahoo.com);

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## 1. INTRODUCTION

Trees and development are inseparable entities right from the Biblical times, before Christ. Bible [1] recorded the sequence of creation which was developmental in structure; first was the light, second was firmament or heaven, third the dry land or earth, then the forest or trees (verse 12), and up to the creation of man in verse 27. Also recorded in the Bible [2] is when King Solomon wanted to build the temple, which was a structural development, the first and foremost building material of top priority and high consideration was the timber from cedar trees (*Lovoa tricoloides*), from Lebanon. This indicated how important tree was economically and how sub-standard and low rated such an edifice would have been without timber from cedar trees.

In the past those who dominated development programmes and policies makers viewed development as economic growth such that cutting of trees for export became very attractive, not knowing that it was an act that could deny the livelihood of the people of tomorrow. Development is the process of making human welfare available or the means of meeting basic human needs [3] and if an action of meeting present need does not ensure preservation for future use, then such development is not sustainable. Forest trees are tools for development, providing various material that meet basic human needs such as food, fuel, fiber, shelter, medicine, and environmental protection [4]. Unfortunately whenever new policies on expansion of housing and urban development are formulated, forest trees are completely removed. The question is whether there could be real urban development without the trees.

There is nowhere in the world where sitting of projects (be it industrial or agricultural) would not mean clearing existing forests and trees for construction. When these giant structural designs are completed and in use, there will be employment for the people. To some school of thought, this is development. But the impacts of trees that have been removed on the people of today and those of tomorrow required some assessment [5]. Those nations of the world who claim to have attained a level of development as a result of industrialization would be making mistakes if they excluded a robust data on their

tree population. There is a need for the United Nations (UN) to revise its current development indices to embrace technological, industrial, urban expansion alongside forests and tree protection and preservation. Contemporary, human development activities led to the destruction of trees, which is causing one of the most profound environmental problems facing the world, and which directly impinged on human survival [6]. True development is all activities that lead to enhancement of human wellbeing while ensuring sustainability of the tools, and availability for the people of tomorrow. If the developmental activities of today do not ensure the human survival of tomorrow, then there is no development at all, it is mere resource depletion. The rate at which changes take place in the environment, which include the removal of trees, is much faster than it was in the past.

Global warming and the melting ice made the United Nations Organization (UNO) to convene a conference called 'Earth Summit' in 1992, in Rio de Janeiro. In that conference, the UNO participants met development as increase in food production or agriculture only. Consequently, the UN agenda 21 was ratified which contained programmes of activities that nations have to follow for sustainable development, with emphasis on food production, tree preservation and forest protection. Subsequent conferences and world conventions have also mentioned reforestation and increase tree population as an index of national and global development that member nations should pursue.

It is worthy to note that environmental health ensures physical and mental health, and trees are among the most important source of health. The UN has also acknowledged this by setting aside The World Environmental Day, with emphasis on tree planting. Apart from domestic fuel demand in Africa, the next highest cause of deforestation in the region is timber export to the West [7,8]. The UN should intensify efforts in monitoring and evaluation of the nations forested land areas (the abode of trees), prevention of deforestation for fuelwood extraction and export (especially in Africa), and provision of alternatives, as part of the global campaign. The view that trees had nothing to do with human health is not true, as envisaged by past leaders and lawmakers. This paper therefore reviews the importance of trees in development and how developmental activities led to forests and urban

trees depletion, which is an act against true development.

## 2. THE ROLE OF TREES IN DEVELOPMENT

As earlier stated, trees play a major role in human development which is the foremost, before any other form of development, be it technological, economic, etc. The role of trees in true development could be appreciated in following ways: as industrial raw material, for local use and environment preservation.

### 2.1 Trees as Industrial Raw Material

Trees are the most important raw material of all the forest resources. Solid wood forms the basis of numerous labour intensive industries like sawmills, plymills, industrial and residential constructions, furniture and manufacture. All these help to sustain the economy and socio-economic well-being. They also create employment and earn foreign exchange for the nation, which is a vital aspect of economic development.

A nation's level of development could be measured by the number of Universities, research institutes and centers, which offer learning opportunities to the people. That means that development could be measured by the number of literate individuals in the society. Books are the mainstay of the education industry, and are manufactured from wood fibers. Cellulose and lignin are among these, which are being converted into sugars, pentosans, alcohol, fodder, yeast, and other products through various biochemical substitutes or other industrial chemicals. America's Coca-Cola Company derives 80% of its emulsifier from gum-Arabic, a product from a semi-arid tree, *Acacia senegal* which is being imported from Sudan [9,10].

### 2.2 Trees for Food and Local Use

Wood is the major cooking fuel for nearly half of the world's population [11]. In some parts of West Africa, availability of fuelwood is an essential element in community welfare [12]. Nwoboshi [12] reported that three-quarters of the world's people rely on wood as their main source of energy. As a basic daily need, its constant availability is a factor in development. According to FAO [13], more than 90% of trees cut in Africa are burnt as firewood. Mederski et al. [14]

mentioned the importance of trees in development by stating that the three basic human needs as far as development is concerned are food, clothing and shelter.

Non-wood components of trees and associated shrubs form significant portions of food supply for both human and wildlife populations. Seed, pulp, wood and leaves of some trees such as *Irvingia gabonensis* and *Parkia biglobosa* are widely used in Nigeria for food, medicine and as inputs in local industries [15]. In 1981, the FAO Forestry Division commissioned a systematic survey of forest fruit trees in Tanzania, Brazil and the Philippines with the aim of enlightening on preserving and using, instead of destroying forest trees for their immediate food and ecological functions. An outcome of that survey was the adoption of FAO 'Forestry for Community Development Programme' to promote tree plantation as source of fuelwood, building material, food and fodder to the rural population. By setting up that commission, the FAO had acknowledged the importance of, and the inextricability of trees from true development.

Most of the best known fleshy fruits the world over come from trees. Fruits such as Apples, pears, plums, cherries, citrus and lots more are commercial fruits found in the temperate and tropical environments. They are high in nutritive value and contain high quality protein, vitamins and minerals as well as dietary fibre, and many rural areas of the world collect fruits from forest and urban trees Asinwaju et al. [16], Mackenzie [17] and Campbell [18] reported that walnuts (*Juglans regia*) are very beneficial to health and contain a higher level of antioxidants than do other nuts.

Flowers of many trees are rich in nectar which attracts bees, thus, making the production of forest honey an important industry in rural areas of the developing world, usually carried out by small-scale beekeepers. The leaves of trees are widely gathered and used as fodder for livestock and some types are consumed by humans. Many trees contain sap, which are very high in sugar content. In Alaska, Asinwaju et al. [16] reported that sap of the sweet birch (*Betula lenta*) is made into a syrup with a sugar content of 67%, and that various parts of tree are used as spices which include cinnamon, made from bark of cinnamon tree (*Cinnamom zeylanicum*) and allspice, the dried small fruits of the pimento tree (*Pimenta dioica*). Nutmeg, a seed found in the fleshy fruit of the nutmeg tree (*Myristica*

*fragens*), cloves from the clove tree (*Syzygium aromaticum*), and sassafras oil (a flavour) from the sassafras tree (*Sassafras albidum*).

### 2.3 Environmental Functions of Trees

Trees remain an integral part of the terrestrial ecosystem [19]. They play indispensable roles in creating and preserving a quality environment. They form various types of forests that in turn house many communities of organisms. They build and protect the soil and filter water, providing effective buffer against damaging effects of cyclones and tsunamis in the mangrove swamps [20]. Through the provision of obstacles such as roots, logs and decaying litter, which act as spongy absorbents, trees drastically reduce surface run-off [21]. They lower air temperature and induce rainfall by evaporating water from their leaves [22]. Numerous benefits of trees have also been reported which include beautification of landscape, they play a major role in helping to conserve the intensity of the Earth's magnetic field [23] and act as sound barriers to reduce noise pollution [24]. Trees are reported to support specific invertebrates. Thomas [25] reported that 284 different species of insects have been found on the English oak (*Quercus robur*), and 306 species of invertebrate found on the Tasmanian oak (*Eucalyptus oblique*) as their natural habitats. This ensures a stable environment without which there would be no significant development. Trees play significant role in climate stability. It releases oxygen upon which man and animal take profit on without which there would be no life on earth. Trees assimilate carbon dioxide and modulate temperature [26]. It controls green house effects of global warming. Urban trees enhances urban comfort, purifies air and act as noise abatement. At the global level, trees absorb much of the solar radiation and reduce the reflectivity of the earth surface [27]. All these functions of trees increase the quality of life and living. A good quality of living is the highest stage of human development.

The following benefits of trees have been summarized by Brickell [24] which include reducing flooding and low flow events by intercepting runoff and encouraging infiltration, improve water quality by slowing the rate at which rainfall runoff flows to rivers and streams and trapping, using, or breaking down some of the pollutants and nutrients that are harmful to water quality, improve water quality by lowering water temperatures with shade over streams,

provide fallen leaves to feed soil and aquatic organisms, improve ground water quality by increasing the amount of rainfall runoff that percolates into the soil and replenishes our main source of drinking water, and by breaking or capturing toxins, improve air quality, especially in the summer when air quality is often compromised, by lowering temperatures, filtering dust, and absorbing ozone, carbon monoxide, sulphur dioxide, nitrogen oxides, airborne ammonia, and heavy metals, and by releasing oxygen.

Benefits also listed are that trees help counteract the greenhouse effect and global climate change by taking carbon out of the atmosphere and storing it in form of wood, and by reducing winter heating and summer cooling energy demands, reduce summer temperature extremes and air conditioning costs by providing shade and the cooling effects of evapotranspiration, particularly in the cities, reduce winter discomfort, energy loss and heating bills and snow movement with windbreaks; increase crop and livestock productivity and soil sustainability by sheltering fields with windbreaks, diversify the rural economy by providing income for harvesting forest products such as firewood, fence posts, maple syrup, pulpwood, and lumber, provide homes for wildlife, preserve and increase the diversity of plants and animals (biodiversity) which in turn improves the overall health of the community ecosystem; encourage healthy open-air activities, and filter out harmful UV rays.

### 3. DEVELOPMENTAL ACTIVITIES THAT ACT AGAINST TRUE DEVELOPMENT

Recent trends have shown that rapid developmental activities cause reduction in tree populations, which is expected to stand against development in the future if unchecked. Some of these activities are urbanization, road construction and agriculture or food production.

#### 3.1 Urbanization

Civilization and evolving culture led the modern world into industrial revolution and global commerce. Much of the activity in heavy industries and factories, and large cities led to air, land and water pollution. The industrial revolution and its technological marvels were enlivened by fossil fuel, coal and then, oil and gas. As the world turned to the forest for raw

materials to sustain the industries, pollution and exploitation of bio-resources become alarming. Pollution is among the consequences of industrialization, apart from climate warming.

### 3.2 Road Construction

When thousands of kilometers of forest land is cleared for road and rail construction, trees are directly destroyed. The present danger facing the world today such as the rise in global temperature, the melting ice and the imminent rise in sea level is because much carbon has been and is being released into the atmosphere while the world tree population is rapidly decreasing. There is a gradual reductive reaction between the ozone layer that shields the earth from direct radiation and the released carbon. This reaction erodes the ozone layer, giving way to easy penetration and increase amount of sun radiation on the earth, and consequent rise in temperature. It would be appropriate to agree as stated, that development cannot be sustainable without trees, and in consonance, developmental activities should be matched alongside trees regeneration. This therefore calls for sustainable development activities. If development is sustainably pursued, the roles of trees would be jealously guarded and no developmental activity may result into loss of trees.

### 3.3 Agriculture or Food Production

Food production, according to Mderski [14], in support of the UNO Earth Summit 1992, is one of the bases for measuring development. No nation can be said to have attained any form of development if it cannot feed its people. Food production is as result of farming activities that take place on the land. However, this action of development has led to the loss of vast forest trees thus ushering in negative impacts that awaits man.

Clearing by subsistence farmers accounted for 80% of deforested land in Nigeria [15]. Many undisturbed and unlogged forests are being clear-felled to provide land for food crops. Unfortunately, greater percentage of these outputs enriches the industrialized countries in the name of export, otherwise, foreign exchange earnings. Of course that is a level of development, but the local populace is usually left in hunger. As an example, the application of pesticides leads to soil toxicity such that trees can no longer subsist to form forests. There should, therefore, be a balance between

developmental actions and tree populations in any environment. This would ensure sustainability.

The United Nations cited by FAO [13] identified the integration of economic and ecological objectives in every process of decision making in the economy as one of the main factors of sustainable development. Nations of the world would borrow a leaf from Poland in terms of giving the right priority to the forest for true development. FAO [13] reported that since 1991 the Polish Government had passed a Bill of Forest by Decree No.11 and 11A. In that decree, the traditional approach of seeing the forest as just a timber producing unit was replaced with present reality namely, forest preservation, protection, and enlargement of forest resources in conjunction with other environmental issues in consonance with the national economy.

## 4. CONCLUSION

There can be no true development whether human, structural and economic without the important roles of trees. Ancient civilizations showed forest tree preservation as one the key indices of development. The global environmental problem that the world is facing should take into consideration that trees are the pivot for development.

The destruction of trees should not be an alternative to development. There is a call for concerted effort for nations of the world to wake up and plant trees. The UNO should devise means to ensure total compliance to the various protocols that give priority to tree conservation in nation's development plans. Afforestation for tree development should be prioritized especially in Africa, China and South America.

## COMPETING INTERESTS

Author has declared that no competing interests exist.

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