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The innovative use of poetry in tree planting education for sustainable environment in Nigeria

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Abstract

Climate scientists working for the IPCC believe human-induced global deforestation is responsible for 18-25% of global climate change. The United Nations, World Bank and other leading non-governmental organizations are encouraging tree planting to mitigate the effects of climate change. Tree planting is grounded in forest science, and if performed properly can result in the successful regeneration of a deforested area. This study identified tree planting as a climate change adaptation strategy for sustainable development and the need for tree planting education in Nigeria. It further identified how poetry can be used innovatively in tree planting education for sustainable environment in Nigeria.

Keywords: Climate change, education, poetry, sustainable environment, tree planting

Introduction

Tree-planting is the process of transplanting tree seedlings, generally for forestry, land reclamation, or landscaping purpose. It differs from the transplantation of larger trees in arboriculture, and from the lower cost but slower and less reliable distribution of tree seeds. Trees contribute to their environment over long periods of time by providing oxygen, improving air quality, climate amelioration, conserving water, preserving soil, and supporting wildlife (Vander *et al*, 2019, Charles, 2012) ^[22]. During the process of photosynthesis, trees take in carbon dioxide and produce the oxygen we breathe. In silviculture the activity is known as reforestation, or afforestation, depending on whether the area being planted has or has not recently been forested. Tree planting involves planting seedlings over an area of land where the forest has been harvested or damaged by fire, disease or human activity. Tree planting is carried out in many different parts of the world, and strategies may differ widely across nations and regions and among individual reforestation companies (Vander *et al*, 2019, Charles, 2012) ^[22]. Because trees remove carbon dioxide from the air as they grow, tree planting can be used as a geo-engineering technique to remove CO₂ from the atmosphere (Anabaraonye, Okafor & Hope, 2018) ^[8].

Methodology

This paper examined current progress with “the tree planting activities as a climate change adaptation strategy for sustainable environment in Nigeria” through existing literature review. It further examined the “innovative use of poetry in tree planting education for sustainable environment in Nigeria”. The main purpose of this research work was to survey theoretical backgrounds and previous studies on the subject above in Nigeria and the current progress with the implementation of tree planting and tree planting education strategies in Nigeria.

Results and Discussion

Climate researcher’s estimate that between 18 and 25 percent of the world’s deforestation is caused by human’s actions (Ganiat, 2019) ^[17]. According to Dettenmaier *et al*. (2017) ^[13], the amount of carbon dioxide in the atmosphere has increased to previously unheard-of levels during the past 20 years and is still rising. There are two ways that individuals can reverse this trend: Carbon dioxide (and other greenhouse gas) emissions can be reduced or reabsorbed from the atmosphere, respectively. The authors claim that trees can assist us in doing both. Trees for long-term carbon storage and carbon sequestration planting and

maintaining urban, suburban, and rural forests and trees is a simple approach to remove carbon dioxide from the atmosphere since trees utilize it as part of the photosynthetic process (Dettenmaier *et al.*, 2017) ^[13]. The majority of the carbon dioxide is moved to the stem and other parts of the plant, where it is stored, primarily as wood. Some of the absorbed carbon dioxide is utilized for energy and released back into the atmosphere. As long as the tree has a physical shape, it serves as a carbon "pool" or "sink," storing carbon. For instance, if a tree is cut down and used to create a building, the carbon that was stored in the tree is still "locked up" in the building. (Houghton *et al.*, 2015; Dettenmaier *et al.*, 2017) ^[18, 13].

Negative net CO₂ emissions are therefore included in the majority of IPCC's fifth assessment report scenarios that are consistent with the 2 °C objective (Clarke *et al.* 2014; Fuss *et al.*, 2014) ^[15, 16]. This was also recognized in the most recent UNFCCC Paris Agreement, when parties pledged to strive for a balance between anthropogenic emissions and GHG sinks in the second half of the century (UNFCCC, 2015) ^[19]. In order to achieve the clear goal of reducing the consequences of climate change, the United Nations, World Bank, and other significant non-governmental organizations have continued to support reforestation and other initiatives that stimulate tree planting. (Smith *et al.* 2014; Gainat, 2019)

In climate change mitigation policies, attempts have been rife on dynamic solutions such as carbon crediting. (Anukwonke and Abazu, 2021) ^[11] in which tree planting is a necessity and an approach. Different writers have suggested afforestation in a variety of ways as a way to stop the global warming that is escalating on a worldwide scale. (Badmus, 2019; Akanwa *et al.*, 2019; Kreidenweis *et al.*, 2016) ^[11, 6] The benefits of trees include the storage of carbon, wind protection, contribution to the hydrologic cycle, reduction of soil erosion, creation of natural shelter, and preservation of sustainable biodiversity, among other things (Aba *et al.*, 2017) ^[5]. The "lungs" of the planet are also referred to as trees, and they help to slow down global warming. (Chukwuji *et al.*, 2020; Aba *et al.*, 2017) ^[12, 5].

All plants store carbon during photosynthesis, however interestingly, trees, shrubs, and woody vines store the carbon for a longer period of time due to their longer life spans. Annual plants that store carbon, like maize, tomatoes, and some grasses, also do so for a year before releasing it as they rot and decompose or burn in a fire. While some of the carbon they have stored remains in the soil, the majority rapidly returns to the atmosphere (Smith *et al.* 2009; Badmus, 2019) ^[11].

The 2015 Paris climate negotiations, attended by more than 150 international leaders, had a significant impact by highlighting the need of protecting forests. The importance of trees in preventing climate change has been publicly acknowledged, and many people feel that maintaining existing forests or promoting replanting is one of the most effective and economical ways to do so. The new climate pact established targets for lowering emissions caused by global forest degradation and deforestation (Dettenmaier *et al.*, 2017) ^[13].

Trees and forests act as carbon sinks by Planting trees is crucial for the ecosystems they support and keeps the ability to counteract the negative effects of climatic factors on various terrains. Promoting healthy forests will

consequently result in the absorption of carbon dioxide and assist to mitigate the effects of carbon emissions. Although planting trees and maintaining existing forests won't completely eliminate excess carbon emissions, they can contribute to greenhouse gas emissions reduction, the negative consequences of climate change, and the threats that climate change poses to other sustainable development goals. (Badmus, 2019; Anukwonke *et al.*, 2022) ^[11].

By 2050, afforestation and reforestation strategies may boost carbon sequestration from a baseline scenario of 323 to 469 teragrams of carbon dioxide equivalent year. This is according to USDA (2021) ^[20]. According to the EPA's Greenhouse Gas Equivalents Calculator, this increase is comparable to the carbon emissions needed to power 17 million households for a year. Calvin *et al.*, 2014 ^[14] provided evidence that afforestation is a financially advantageous course of action. Accordingly, it would need 67 years for all U.S. fossil fuel emissions to match the amount of carbon sequestered by U.S. forests (Woodall, *et al.* 2015) ^[21]. U.S. forests currently offset around 15% of the domestic carbon dioxide produced by burning fossil fuels each year (Woodall, *et al.* 2015) ^[21]. In 2010, forests comprised 31% of the planet's geographical surface, with Russia, Brazil, Canada, the United States, and China having the highest concentrations. Global trees stored over 1.1 billion tons of carbon annually between 1990 and 2007. From a carbon perspective, as well as for a variety of other reasons, it makes sense to conserve these priceless resources. Even more trees might potentially be planted in order to mitigate the effects of climate change. Increased reforestation initiatives (growing forests in formerly wooded regions) or direct promotion of afforestation might both benefit from further efforts. The implementation of reforestation programs will counteract drastic climatic changes and externalities generally, particularly as they relate to Nigeria's food supply. By trapping atmospheric carbon as a byproduct of photosynthesis, which transforms sunlight into energy by dissolving a carbon dioxide molecule into its component parts, trees might indirectly reduce the consequences of climate change. While carbon is converted into a carbohydrate that is needed to fuel growth, oxygen is discharged into the environment. All plants store carbon, but trees are able to sequester considerable amounts of carbon during their lifetime due to their size and longevity. (USDA, 2021) ^[20].

Tree planting as a valuable strategy for ecosystems restoration in Nigeria

The poem "Plant a Tree" below advanced by the Benji Poetry And Music Global Concepts vividly outlines in a poetic manner the benefits of tree planting which is one of the climate change adaptation strategies for global sustainability (Anabaraonye, Nji & Hope, 2018) ^[4]. It further highlights how poetry can be used innovatively in tree planting education for sustainable environment in Nigeria (Anabaraonye, Ewa, & Hope, 2021) ^[5].

Poem: plant a tree

Trees provide us with oxygen.
 Trees help keep the environment clean.
 Trees help to purify the air;
 Increasing moisture as they transpire.
 Trees help to prevent water pollution.
 Trees help to prevent soil erosion.

Trees conserve energy.
It is so beautiful to plant a tree.

Trees absorb odors and pollutant gases.
Trees provide shade for the masses.
Trees cool the streets and the cities.
Trees create economic opportunities.

Trees are like the lungs of the planet.
Preserver and greener of the earth.
Trees matter beautifully and truly.
Be dutiful to plant a tree.

Trees provide a canopy.
A shade for the hungry.
A shade from the raging heat.
A beautiful place for retreat.

Trees provide food.
Trees provide wood.
Trees combat climate change.
When properly managed.

Trees slow runoff and hold soil in place.
As beauty and bliss, they embrace.
Trees help us appreciate nature.
Plant a tree for the future (Anabaraonye, 2018) ^[3].

Conclusion

Educating communities and institutions in Nigeria on the benefits of tree planting is an urgent task which needs to be undertaken by educationists, governmental agencies, NGOs, community leaders, and passionate climate change professionals for our sustainable development in Nigeria. Leadership summits on climate change and environmental sustainability, intensive awareness outreach, climate change poems and blogs, have been recommended as important tools which can be used in tree planting education for environmental sustainability in Nigeria.

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