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DEFORESTATION IMPACTS, ROLE OF CLIMATE CHANGE-EDUCATION FOR SUSTAINABLE ADAPTATION STRATEGY AMONG LOCALS OF KUKAR-GADU, FIKA LGA, YOBE STATE, NIGERIA

Emmanuel Bulus[1,*] , Chilamzi O. Eweh.[2] Hadiza Zumami Waru.[3]
[1]Department of Biology, School of Secondary Education (Sciences), Umar Suleiman College of Education Gashua, Yobe state
ECWA Beckett Memorial College Kukar-Gadu, Yobe State.

Corresponding Author:
E-Mail: emmanuelbulus1213@gmail.com
Phone No. : 08064991213

ABSTRACT

It is no longer news that climate change is real and highly aggravated at both local, regional and at global scales, due to increase human activity such as incessant cutting down of trees. With the increasing population and urbanization, there is a significant increase demand for agricultural land expansion for food, and housing thereby impacting consequently in the disruption of the natural atmospheric and climatic patterns, thus enhances the devastating impacts on natural environment and global mean surface temperature consequently leading to climate change. Despite increasing attention by international conventions on the impacts of deforestation on the climate change by the successive governments, incessant cutting down of trees in Kukar-Gadu remains a major concern, thus threatening the sustainability of the immediate environment which in turned affecting the well being of the locals and their livelihood. Unless urgent positive steps are taken to mitigating this menace, it will continually pose more devastating threats. This paper concluded by outline some key drivers of the deforestation such as agricultural expansion, wood fuel collection and their impacts on climate change, which include delay in onset of rain, excessive heat, drought, decline in rainfall amount, possible incidence of dry spell and low crop yield. The role of climate change-education was identified with the aim to create more awareness, by educating the local people in understanding the deforestation impacts on climate change. Sustainable adaptation strategies such as change in values and the attitudinal behavior towards illegal and poorly regulated act of indiscriminate fallen of trees has been recommended for sustainable development in the area.

Keywords: **Deforestation, Impacts, Climate Change, Education, Sustainable, Adaptation, Strategy**

INTRODUCTION

Forest play a critical role in protecting the earth from climate change thus regulating climate patterns by absorbing and storing of $C0_2$ serving as a natural reservoir for Green House Gasses (GHG). Climate of any area is virtually influenced by spatial characteristics such as vegetation cover. Forest as one of the main natural factors that regulates and determines climate, and weather patterns of an area, also provides protection to the biodiversity, soil cover and regulates hydrological cycle, atmospheric temperature, which help in militating against the impact of climate change. Obi, (2014) opined that forest increases the oxygen and moisture in the air, absorbs sun radiation, gives shade, cools the surrounding environments and generally improves the climate of a given area. The consequences of deforestation do not only affect the biodiversity, but also influences climate of an area. Incessant removal of forest cover, amount to risking the overall climate pattern, consequently leading to climate change. It is observed that climate pattern of an area shapes the lifestyle, livelihood and culture of any community (Ali, Riaz, & Iqbal, 2014). Deforestation as one of greatest challenge to the sustainability of the global environment in recent times has affects quality of life, hence further pose threats to human survival. Rapid and unchecked fallen down of forest cover has resulted in some of the worst disaster in the last decades.

Over the years the world has experienced unprecedented loss of it forest particularly tropical areas of Africa thereby accelerating extreme weather events. The consequences of deforestation are numerous but climate impacts caused by the recurrence of deforestation called for further investigation. Therefore the knowledge of the impact of deforestation and its resultant effects on climate change which give rise to extreme weather events such as delay in onset of rain, excessive heat, drought, and decline in rainfall amount, incidence of dry spell and increased wind storm is of great significance to mitigating the impacts of deforestation. Deforestation is driven by anthropogenic activities either directly by agricultural expansion or indirect climate change induced disturbance can result in changes in earth's radiation balance and atmospheric composition (Allen, 2010). Ali, Riaz, & Iqbal, (2024) posited that in recent years deforestation has been a serious problem globally, especially in Africa as a result of population explosion with increasing demand for food, shelter, social amenities, fossil fuel and wealth creation. Rapid and unchecked fallen down of forest cover has resulted in some of the worst disaster in the last

decades. There is overwhelming evidence and consensus that deforestation is one of the major causes for climate change. When tresses are indiscriminately cut down a gap in the production of natural oxygen initially held in the forest is created with increasing quality of carbon dioxide that floats the air, thus contribute to the carbon emission thereby aggravating global warning (Olagunji, 2015). One of the consequences of deforestation is that the carbon originally held in the forest is released to the atmosphere either immediately if trees are burned or removed slowly as unburned organic matters decay, (Mountinho, & Scwartzman, 2005). Umar, Adebayo and Abubakar, (2019) stated that climate change is real thus present dangers to the future well being.

The Need for Climate Change-Education

Climate change is expected to intensify existing problems such as drought, desertification, low precipitation, global warming and create new combination of health risk and low crop yield. The presence of vegetation cover in general modifies the climatic parameters. Climate change is a major treat to agriculture, as agricultural production activities are more vulnerable to climate change (Safdar, 2022). Liu, Zheng and Yin, (2018) are of the view that increasing evidences indicates that anthropogenic changes in the land scape are likely to lead to regional and global climate change such as changes in precipitation and temperature patterns will likely have significant impact on the sustainability of agriculture. And that evidence of climate change includes delayed onset of rain, increase in number of dry days, the rainy seasons and increase in maximum temperature. This could lead to warmer seasons, increased frequency and intensity of extreme weather events such as drought, decline in rainfall amount, and increased evidence of dry spell, (Orunoye,2013, Adebayo, and Oruonye, 2013). The emission of carbons deforestation is determined by two factors, the rate of land cover change (including harvest of wood and other forms of management. The situation is made worst due to factors such as increased for fossil fuel, shelter, and agricultural land for food, (Akinnagbe & Irohibe, 2014). The emission of carbons deforestation is determined by two factors, the rate of land cover change (including harvest of wood and other forms of management.

According to Akubode Oluwafemi, (2022) posited that we must not under score the training and capacitation; there is need for the formation of Nigerian climate watch dog comprising frontline

communities, civil society, development, experts, academic and the media among other crucial stake holders. Climate change education should form part of school curriculum and be made compulsory for all students at all levels of education. Climate change-education is crucial to promoting climate action. The International community on climate change recognizes the importance of education and training to addressing climate change impacts, UN Framework Convention on Climate Change, (UNFCCC, 2023). Climate change education should be included in the Nigerian education curriculum at all levels of educational system. This can encourage people to change their attitudes and behavior so as to make informed decisions related to indiscriminate fallen of trees. Therefore there is need to educate people so as to create more awareness on the present and future impacts of deforestation this will go a long way helping the local people understand the impact of global warming and also increase climate change literacy.

There is need to educate the local people in the area so as to create more awareness on the present and future impacts of deforestation this will go a long way helping the local people understand the impact of global warming and also increase climate change literacy. Hence this paper put forward some the following as part of awareness toward efficient and effective adaptation strategy for sustainable development.

Deforestation Activity Around Kukar-Gadu Area

Yobe State is considered to be prone to the worst hit area in Nigeria and highly vulnerable to most environmental degradation such as desert encroachment, flooding, erosion, wind storm and drought which may not be unconnected to deforestation impacts such as climate change. Climate change as the key driver of extreme weather events and poverty, there is no doubt that Kukar-gadu is vulnerable to the catastrophic transformation in the climatic system causing productivity loss, soil degradation, water scarcity, and vegetation resources depletion due to illegal and poorly regulated increased wood fuel collection and timber extraction. As observed over some decades and historical facts. Proved beyond reasonable doubt that fertile arable agricultural lands in Kukar-Gadu and it's environs have been taken over by deforestation activity. Presently Heaps and piles of firewood logs from the already over exploited forest are pact house by house and door gates as a means for fossil fuel without replacement of new trees. Rich fertile arable lands that in history have been productive with high yield have now turned into bare lands that can

only be supported with either organic manure or fertilizer to maintain it fertility. A long stretched forest area from south to east of Kukar-Gadu that used to serve as wind breaker to strong winds, game reserve and local tourist area to the local people has now turned to agricultural land and housing. Evidence have indicated that tree trunks and roots are completely uprooted for fire wood without replacing it with new ones hence pose future threats to more extreme weather events such as drought, excessive heat and wind storm with high chances of extreme poverty. The most devastating situation in Kukar-Gadu if not properly addressed is that much pressure is been exerted on the scars vegetation which had already suffered extinction due to deeper water table that manage to sustain plant existence. Constant removal of forest and other vegetal cover by the local in such for fire wood, agricultural land expansion over cultivation of land and open-grazing system in Kukar-Gadu area is and will continue be a threat to life existence.

Conclusion

Humans are naturally made to work it environment and to earn a living out of it. But the attitude of over exploiting the natural environment through indiscriminate cutting down vegetation resources pose more hostile environmental conditions thereby in turned impacting negatively on his general well being. Hence call for caution for sustainable life living. It is evident that situation in Kukar-Gadu is indifference. Unless positive steps are taken and also change in attitudinal behavior, the future implication resulting from indiscriminate deforestation will be un bearable.

Recommendation

Climate change awareness obviously determines the nature, quality and strength of climate adaptation. Increasing climate awareness is often considered necessary in the first stage of the adaptation process to manage its impacts and reduce overall vulnerability. This is to enhance awareness through dissemination of authentic and need based information which will significantly help the locals to undertake relevant, effective and efficient adaptation strategies.

Government should educate, and empower the locals and engage all stake holders and major groups, policies, and actions related to climate change.

Climate change awareness will empower the Kukar-gadu locals to take proactive measures to mitigate the negative consequences to this phenomenon.

Government in collaboration with community leaders should come out with modalities on how to encourage the people to change their attitude and behavior by replacing new trees where the existing ones are cut down through incentives.

Also there most be a deliberate collaborative efforts from individuals, community leader and government agencies geared towards coping the devastating environmental resource degradation especially vegetal resource.

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