**OSUN STATE UNIVERSITY**

**FACULTY OF LAW, IFETEDO CAMPUS**

**GROUP 3 ASSIGNMENT**

**COURSE TITLE: ENVIRONMENTAL LAW II**

**COURSE CODE: PUL 503**

**LECTURER- DR. MMBENG**

**QUESTION: "The continuous desertification of the land environment in Nigeria and Africa generally makes the 1994 UN Convention to combat desertification a Legislative piece that should be taken seriously and domesticated by Nigeria."**

**Discuss the implications of desertification and the causes in Nigeria. Suggest 4 ways to combat desertification in Nigeria**

**GROUP MEMBERS**

**1. ADEDIRAN FAWAZ.............................................LAW/2019/0007 (GROUP LEADER)**

**2. ABIMBOLA OLAMIDE.............................................LAW/2019/0002**

**3.ATANDA HABIB ADEKUNLE............................................LAW/2019/0028**

**4.ADENLE AYODEJI PAUL............................................LAW/2019/0012**

**5.SOLOMONRICHARD ABAYOMI.............................................LAW/2019/0062**

**6.AKINTAYO RACHAEL OYEBOLA.............................................LAW/2019/0023**

**7. FASASI MAYOKUN EMMANUEL..........................................LAW/2019/0038**

**8. OPADOLA OLASILE ABRAHAM.............................................LAW/2019/0055**

**9.OYERINDE DOLAPO ESTHER.............................................LAW/2019/0058**

**10.OLAITAN ABDUL-MALIK ADEBOBOLA.............................................LAW/2019/0048**

**11.OGUNGBEMI DAMILARE SAMUEL............................................LAW/2019/0044**

**12.AZEEZ MUHAMMED KIKIOPE..............................................LAW/2019/0034**

**13. SALAWU FAROUQ OLAWALE............................................LAW/2019/078**

**14.AWOGBADE ADEYEMI SAMUEL............................................LAW/2019/0030**

**15. OBATERU ADESINA DANIEL..........................................LAW/2019/0043**

**TABLE OF CONTENTS**

**1.0 THE CONCEPTUALIZATION OF THE TERM "DESERTIFICATION"........................................................4**

**2.0 CAUSES OF DESERTIFICATION IN NIGERIA.......................................................6**

**3.0 IMPACTS AND EFFECTS OF DESERTIFICATION.......................................................11**

**4.0 EFFORTS BY THE NIGERIAN GOVERNMENT TO COMBAT DESERTIFICATION.......................................................17**

**5.0 RECOMMENDATIONS OF RELEVANT AND VIABLE SOLUTIONS.......................................................20**

**6.0 CONCLUSION & IMPORTANCE OF ADDRESSING DESERTIFICATION.......................................................23**

**1.0 THE CONCEPTUALIZATION OF THE TERM "DESERTIFICATION"**

Desertification can be defined as a phenomenon of impoverishment of the terrestrial ecosystem under the impact of adverse weather and population activities. The progressive deterioration of the fertile land and loss of its productive capacity renders it unsuitable for human and animal habitation[[1]](#footnote-1).

Desertification is a type of gradual land degradation of fertile land into arid desert due to a combination of natural processes and human activities. This spread of arid areas is caused by a variety of factors, such as overexploitation of soil as a result of human activity and the effects of climate change. Geographic areas most affected are located in Africa (Sahel region), Asia (Gobi Desert and Mongolia) and parts of South America. Drylands occupy approximately 40–41% of Earth’s land area and are home to more than 2 billion people.[5] Effects of desertification include sand and dust storms, food insecurity, and poverty.

Desertification has become one of the most pronounced ecological disasters, affecting arid and semi-arid areas of Nigeria. This phenomenon is more pronounced in the northern region, particularly the eleven frontline states of Nigeria, sharing borders with the Niger Republic. This has been attributed to a range of natural and anthropogenic factors. Rampant felling of trees for fuelwood, unsustainable agriculture, overgrazing, coupled with unfavourable climatic conditions are among the key factors that aggravate the desertification phenomenon.

This study applied geospatial analysis to explore land use/land cover changes and detect major conversions from ecologically active land covers to sand dunes. Results indicate that areas covered by sand dunes (a major indicator of desertification) have doubled over the 25 years under consideration (1990 to 2015).

 Even though 0.71 km2 of dunes was converted to vegetation, indicative of the success of various international, national, local and individual afforestation efforts, conversely about 10.1 km2 of vegetation were converted to sand dunes, implying around 14 times more deforestation compared to afforestation. On average, our results revealed that the sand dune in the study area is progressing at a mean annual rate of 15.2 km2 annually

Desertification in Nigeria is a significant environmental issue, primarily affecting the northern regions. It’s driven by factors like overgrazing, deforestation, and unsustainable agricultural practices. Droughts and climate change exacerbate the problem, leading to soil degradation and loss of vegetation. This process reduces land productivity, threatens food security, and displaces communities. Nigeria has implemented initiatives to combat desertification, including reforestation programs and land restoration projects, but challenges persist due to population pressure and limited resources.

That land is one of the most cherished resource of Nigeria is a fact often taken for granted to the extent that not much care is given to adverse conditions that affect this vital resource either through man made causes or natural phenomena. Land is a symbol of identity in most African countries, a means of cultural affiliation, social and economic survival.

This means that people tend to go into extinction when they are deprived of this resource. The resourced endowment associated with land makes attractive for human settlement, while that absence of same makes such land uninhabitable. It is against this background that we must appreciate the magnitude of the degradation of the land through the impact of climate change and man made causes in various parts of Nigeria.

The Northern part of Nigeria Is endowed with a large expanse of arable land that has over the years proved a vital resource for agriculture and other economic activities. But the Sahara desert is advancing south wards at the rate of 6.0 percent every year[[2]](#footnote-2).

Consequently, Nigeria loses about 350,000 hectares of land every year to desert encroachment[[3]](#footnote-3). This has led to demographic displacements in villages across 11 states in the North. It is estimated that Nigeria loses about $5.1billion every year owing to rapid encroachment of drought and desert in most parts of the north.

**2.0 CAUSES OF DESERTIFICATION IN NIGERIA**

The consequences of desertification are far-reaching and diverse. All aspects of human lives are either directly or indirectly impacted wherever the phenomenon exists. It ranges from food insecurity, water scarcity, and socio-economic hardship to political unrest. Other scholars reported that desertification also causes alteration of ecosystem services locally and globally, loss of biodiversity, habitat loss and species endangerment, changes in hydrological and climatic cycle, reduced agricultural yield and socio-economic welfare.

**Natural Causes**

The natural causes of desertification include the poor physical conditions of soils, vegetation, topography as well as the inherent extreme climatic variability as evidenced in periodic droughts. Climate variation is perhaps the most important natural cause of desertification and drought in the dry lands of Nigeria.

The history of the sudano-sahelian zone of Nigeria is replete with severe and prolonged drought events, some lasting several years. The zone started the 20" century with a prolonged drought of 1903 culminating in that of 1911-1914. Other droughts included those of 1919; 1924; 1935 and 1951-1954. Rainfall was relatively abundant in the late 1950s and the early 1960s. Since then average rainfall has fallen below the 1930-1960 mean for almost three decades with lows in both 1972-1973 and 1984-1985. In terms of rainfall deficiency, river discharges and Lake Chad level, the period 1983-1985 was the driest period in this century in this zone as the lake fell to its lowest level and shrank to its smallest area[[4]](#footnote-4).

Evidence seems to suggest that the 1979-85 drought was a function of tropical anomalies associated with the global atmospheric pattern. There is growing tendency to treat the 1969-1985 drought as one and to regard that of 1972-73 and 1983-85 as lows in the continuum. Rainfall in the sudano-sahelian zone barely improved in 1975 over that of 1972-73 but was still much below 1941-77 mean value. In 1976, large rainfall was recorded throughout the region while the length of the rainy season was unusually long[[5]](#footnote-5). The slight recovery was immediately followed by a rainfall deficiency in 1977-78, which was at least as low as that of 1972. The year 1984 was the driest in the sudano-sahelian region within the period of instrumental records and this was evident from low rainfall, low river discharges and low water level in the Lake. With series of severe and prolonged droughts as witnessed since the 1950s, the sudano-sahelian environment, already a fragile environment has become more vulnerable than ever[[6]](#footnote-6).

**Human Activities**

The anthropogenic factor is mainly the disruption of the ecological system caused by poor land use and ever-increasing pressure put upon the available resources by the expanding population. More specifically there are four primary causes, notably over-exploitation, over-grazing, deforestation and poor irrigation practices, and these are influenced by factors such as changes in population, climate and socio-economic conditions. It is obviously a complex inter-relationship, which includes: poor physical conditions in terms of soils, vegetation, topography and inherent extreme variability of climate as manifested in frequent drought; disruption in ecological balance caused by poor land use and ever increasing demand being made on the available resources by the expanding population and socio-economic systems of the affected areas; and improper land-use practices and poor land management.

**Other Palpable Causes**

**Wood Extraction for fuel and Construction**

Without alternative sources of energy in the sudano-sahelian zone, the demand for fuel wood has been on steady increase by the increasing population and rapid urbanization despite the existing Felling of Trees (Control) Edict in the various States. In addition, wood is also exploited for building, arts and crafts in this environment. The United Nations Sudano-Sahelian Office (UNSO) has identified forest depletion as the major agent of desertification in Nigeria. As a result of the demand for wood for construction, building, fuel, fishing industry and other uses, the removal of trees, shrubs, herbaceous plants and grass cover from the fragile land of the Sahel will continue to accelerate the degradation of the soil to desert-like conditions[[7]](#footnote-7). The people in the surrounding countryside find the sale of wood to the town people a useful supplement to their meager cash incomes.

It has been estimated that nearly three-quarters of Kano City's yearly firewood requirement, which is about 75,000 tones, are brought in by donkeys mainly within a radius of about 20-km[[8]](#footnote-8). As the degree of urbanization increases rapidly at rates of between 5- 10 per cent per annum, one can expect the woodland to become very sparse. This situation is further compounded by the people, who clear areas for the purpose of making and transporting charcoal to urban centres for additional income. Pastoralists also contribute significantly to woodcutting as they cut foliage to feed their animals and use branches to build enclosures. The consequence of human dependence on Wood for fuel and construction is that about 350,000ha of land is under the threat of deforestation annually while the annual rate of reforestation is estimated at about 30,000ha[[9]](#footnote-9).

**Grazing**

Livestock population in Nigeria has been estimated to consist of 16 million cattle, about 13.5 million sheep, some 26 million goats, approximately 2.2 and 150 million pigs and poultry respectively. The dry lands of Nigeria is said to support much of the country's livestock economy, hosting about 90 % of the cattle population, about two-thirds of the goats and sheep and almost all donkeys, camels and horses. In the Sudan and the Sahel zones, which carry most of the livestock population, nomadic herdsmen graze their livestock throughout the area and are constantly in search of suitable pastures.

Additional pressure is also put on pasture resources by livestock from neighbouring countries, notably Cameroon, Chad and Niger respectively.

**Cultivation of Marginal Land**

Cultivation of marginal areas is one of the causes of desertification. In periods of higher than normal rainfall, people tend to extend farming activities into the marginal areas. When the years of plenty is followed by dry years, exposed land with very little vegetal cover is at the mercy of the winds. The fine clays and silts are carried away as dust, and the sand drifts into dunes. The effect of this could be irreversible except through carefully planned rehabilitation programme.

**Faulty Irrigation Management**

Irrigated cropping can turn land into desert if not properly designed and managed as a result of waterlogging, salinized or alkalinization. This scenario is already a reality on a number of irrigation projects in Nigeria today, such as the Bakolori Irrigation, South Chad Irrigation and the Hadejia - Jamaare Irrigation Projects[[10]](#footnote-10).

 **Poverty**

 Perhaps the most subtle and often neglected cause of desertification is poverty. Although statistical data are resources of the area. Thus, the well known interrelationship between Poverty and Environmental, degradation obtains whereby poverty generates environmental degradation (desertification) which in turn accentuates poverty.

Overall, the drylands of Nigeria are the least developed in terms of the ability to meet basic needs. Per capita income is not only low, but the population growth rate is high, morbidity and mortality rates, are high, medical services are lacking, the transportation system is chaotic and food security is not guaranteed.

Therefore over-stocking, overgrazing, overpopulation, cultivation of marginal land, and poaching are seen as possible responses to a harsh and inhospitable environment and poverty. For any conservation measure to be successful in this environment, it must address the issue of poverty squarely.

**3.0 IMPACTS AND EFFECTS OF DESERTIFICATION**

**A. Environmental Impacts**

An environment is said to be ecologically sustainable when it conserves biological diversity and the life supporting systems for the use of present generation without compromising its use by the future generations. Desertification has resulted to alteration of the ecosystems in the arid and semi-arid zones, which affect the habitat, habitat composition, abundance, distribution and relationships in the communities of living organisms. Perhaps the best way to understand the impact of drought and desertification can be seen in the massive death of persons, cattle and vegetation in Northern Nigeria and other parts of West African countries in 1973-1975, which became an international issue at that time. The Buhari administration in 1984, launched a tree planting campaign in Nigeria as a way to bring to national consciousness to the dangers of rapid depletion of the nation’s vegetation and the need to adopt a more sustainable use of forest resources by replanting trees to recover the fading cultivatable lands owing to desert encroachment[[11]](#footnote-11).

It must be observed that the failure in agriculture production, forces people in the affected villages to migrate to more favourable areas, thereby creating new settlements where they have to compete with the indigenous population for the scarce resources. A careful study of the migratory trend in Nigeria shows that there has been a significant displacement of numerous farming and nomadic population in the northern states especially those states that are ravaged by droughts and desertification. Desertification and drought have severe impact on food security, livelihood, economic, social and cultural activities of the affected people. This has aggravated the food situation in the area resulting in low food security index.

Drought causes a lot of economic disruption, for example, it was held responsible for the drastic fall in the GDP of 18.4 percent in 1971-72 and of 7.3 percent in 1972-73. It was also seen as causing the rapid rise in price index for foodstuff and relative decline in non-oil exports[[12]](#footnote-12).

Above all, Environmental impacts include;

**Habitat destruction and loss of biodiversity**

Diversity is a measure of the amount of variability in the species composition of a community. Nigeria drylands contain a large number of species of plants and animals that are important to humankind as a whole, but which are threatened as a result of desertification process occurring in the area. NAP (2000) revealed that some important animal species such as the sitodunga antelope, cheetah, giraffe, lion and elephants in the northern states of Nigeria have become endangered and indigenous plant species especially those with medicinal values e.g. Mitrogina spp (known as Giyaya in the area) are now difficult to locate.

**Global warming.**

Bruce et al. (1996) defined global warming as an increase in earth’s mean global temperature[[13]](#footnote-13). A part of earth’s outgoing infrared radiation is retained by several trace gases in the atmosphere whose concentrations have been increased because of human activities.

Vegetation and soil play a great role in sequestrating carbon; an important greenhouse gas (Olagunju, 2015b). When desertification occurs, the carbon sequestration ability of vegetation and soil is greatly lost making carbon to be increased in the atmosphere thereby aggravating global warming. An increase of at least an average of 1°C has accompanied the temperature in the northern states of Nigeria bordering the Sahara when comparing the data of 1901 to 2010.

**Increased erosion**

Soil erosion is the movement and transport of soil by various agents particularly water and wind leading to soil loss. Impoverishment of soil’s natural vegetation cover has been a primary cause of soil erosion. Soil erosion is caused by deforestation, as well as poor farming practices. Deforestation removes the leaf canopy which would have shaded the soil below and stopped from it drying out, and means there is no leaf litter to return nutrients to the soil, making it dry out further. Additionally there will be no roots to bind the soil together - this means that the top layer can be blown or washed away easily, leaving the soil vulnerable and exposed.

Poor farming practices also lead to soil erosion. Overgrazing means that animals trample the land and strip the vegetation so that there is nothing left to bind the soil together. Overcultivation means that the land is exhausted of water and nutrients so it completely dries out, meaning that it can be blown or washed away much easier.

When land is deforested, the soil anchorage provided by trees and other plants is lost and the soil is rapidly eroded. Because of the nature of desertification prone area, soil erosion by wind is occurs but erosion by water is more disastrous during the unusual heavy rainfall. Gully erosion, that hitherto was not a major threat in Nigeria has increased, threatening about 18, 400 km2 compared to only about 122 km2 in 1976 and 1978. A survey conducted in Katsina State revealed that 30% of agricultural land has been severely damaged and lost from further productive use due to erosion which has resulted to crop yield out by 30 to 60%.

**Vector-borne diseases**

Desertification results into increase in ambient temperature, altered precipitation and climatic variability which would alter geographical range and seasonality of transmission of many vector borne diseases. Also, insufficient water supply is typical of desertifying area; this forced the people living in such area to utilize any available water source especially in the developing countries where portable water is lacking. More so, desertification process leads to increased contamination of available sources of water and enhances the transmission of waterborne diseases such as typhoid, infectious hepatitis and cholera (Betterton and Gadzama, 1987). Currently, the World Health Organization (WHO) estimates more than one billion people to be without access to safe drinking water, and that every year approximately 1.7 million die prematurely because they do not have access to safe drinking water and sanitation.

**B. Socio-economic Impacts**

Desertification is not only unanimously acknowledged to have significant adverse effects on flora and fauna population, the topographic and edaphic components of the ecosystems or the micro-climate variability, but also, the socio-economic impacts has also be documented. Desertification has severe impacts on food security, livelihood, economic and socio-cultural life of the affected people[[14]](#footnote-14).

**Reduced agricultural productivity and food insecurity**

Agriculture is the economic mainstay of the majority of households in Nigeria and is a significant sector of Nigeria’s economy. Food security in its most basic form is the access of all people to the food needed for healthy life at all times. Factors that affect soil quality affect agricultural productivity also and indirectly on food supply. Loss of soil structure and cohesion, soil crusting, soil compaction and soil erosion especially in arable lands has been enumerated as consequences of desertification which also reduce agricultural output, hence food insecurity[[15]](#footnote-15).

Desertification has a huge impact on the food supply of local communities. Soil degradation and a lack of water means that soil will lose fertility, and without nutrients it will struggle to sustain plant growth. This often leads to crop failure where whole harvests are lost. If crops fail this has an impact on food supply, leading to malnutrition, making people weaker and more vulnerable to illness and diseases. In extreme cases this can lead to widespread famine, putting communities at risk of starvation.

Food insecurity means that farmers will also lose their only income - this will have many long-term impacts such as not being able to afford essential medication, which will lead to an increase in deaths, as well as not being able to afford to send children to school, meaning that children are unable to gain qualifications which may help them get out of poverty in the future.

On a global scale desertification can lead to increased food prices in other countries as crops become scarce.

**Economic loss and reduced economic growth**

Desertification has economic consequences. It weakens populations and institutions rendering them more vulnerable to global economic factors. Short fall in earned tax receipts occurs due to low productivity, and has consequences on the capacity of government to reimburse their foreign debt and develop national socio-economic programmes. The persistence of desertification reduces national food production and furthers the need to rely on foreign imported products. Also, government expends so much on ameliorating the effects of desertification, revenues which could have been used for other developmental projects. For example, more than 65 and 55% of Sokoto and Borno States are said to be afflicted[[16]](#footnote-16).

**Migration**

A major consequence of desertification is migration causing separation of families as men usually abandon the women and children to seek for employment in the urban centres due to unproductive agricultural practice at the rural areas. For example in Nigeria, people living in drylands usually the herdsmen of the north migrate into towns and villages down south and neighbouring countries that are wetter. More so, migration could enhance disease transmission from an epidemic area to another area.

**Unemployment**

Unemployment occurs when a qualified person is actively searching for employment and is unable to find work. Unemployment is an economic indicator that refers to the number or proportion of people in an economy who are willing and able to work, but are unable to get a job. At least 90% of the inhabitants of drylands live in developing nations, where they also suffer from poor economic and social condition. The effect of desertification is seen on the precariousness of living conditions and the difficulty of access to resources and opportunities largely due to lack of suitable condition for farming or fishing (main occupations in the rural area). Desertification in rural lands makes the land incapable of supporting population that previously lived there. This results in mass migration out of rural areas and into urban areas, particularly in Africa. These migrations into the cities often cause large numbers of unemployed people, who end up living in slums.

**4.0 EFFORTS BY THE NIGERIAN GOVERNMENT TO COMBAT DESERTIFICATION**

The Nigeria Government has been making efforts aimed to combating environmental problems of drought and desertification. These efforts include national policies, legislative framework, sectoral programmes and partnership with local and international organizations that is saddled with fighting desertification. Nigeria has developed many policies and programmes, received partnership in form of finance, technical assistance, loans and capacity building from partners such as World Bank, IAEA, IFAD, CIDA, UNDP, UNIDO, China Government, Japan international Agency (JICA), Agricultural Development Company Limited, Israel and the UNEP/GEF. The directive of the emirate of the Northern Nigeria by the Anglo-French Commission in 1937 to embark on tree planting to stop desert encroach in the region was probably the foremost desertification combating effort in the country[[17]](#footnote-17). In 1977, in other to examine the problem of desertification and check desert encroachment in the arid zone of Nigeria, Federal Government set up the Arid Zone Aforestation Project.

This project launched tree planting campaigns and forestry projects to check deforestation. Tree seedlings were produced and distributed which led to the establishment of Shelter Belts along the Northern borders of the country. During the administration of Major General Muhammadu Buhari in 1984, Tree Planting Campaigns was used as an instrument to enlighten and motivate people on the negative effects of desertification and the need to combat it (Jibunor, 2014). Federal Environmental Protection Agency (FEPA) was established in 1988 under Decree 58 after the Nigerian government had signed the United Nations Conference on Environment and Development (UNCED), an important step towards addressing desert encroachment in the country. States Environmental Protection Agencies (SEPA) were thereafter established in the 36 states including the Federal Capital with mandate to address environmental problems which include desertification (Medugu, 2009).

 Nigeria signed the Desertification Convention on the 31st October, 1994, and ratified same on the 8th July, 1997 thereby qualifying the country as a party to the convention with effect from October, 1997. The creation of the Department of Drought and Desertification Amelioration in 1999 in the Federal Ministry of Environment was to strengthen the existing institutional arrangement for more effective coordination of activities of Nigeria Government towards the implementation of the CCD. National Action Plan (NAP) of Nigeria which is part of the National Economic and Social Development and Environmental Protection Plan was developed. NAP compiled strategies and submitted it to the Secretariat of the UNCCD Bonn, Germany, which are to help in environmental education and management, public awareness, poverty alleviation and provision of alternative sources of energy among others.

These strategic policies include, National Policy on Environment, National Agricultural Policy, National Energy Policy, National Environmental Action Plan (NEAP) and State Environmental Action Plans (SEAPs), National Tropical Forestry Action Plan, National Conservation Strategy, Natural Resources Conservation Action Plan, National Water Resources Master Plan (1995 to 2020), National Biodiversity Strategy and Action Plan, The Green Agenda of the VISION 2010 Report, National AGENDA 21, National Action Programme to Combat Desertification, National Economic Empowerment and Development Strategy (NEEDS) and National Policy on Women.

 In 2005, former president, Chief Olusegun Obasanjo initiated a Global Tree Planting Project to halt desert encroachment in 46 local government areas in the country’s desertification frontline states[[18]](#footnote-18). The programme was expected to generate economic activities for the citizens of the states involved and urge them to desist from felling but rather plant trees. Several of such projects was also initiated in some of these states such as the 5.2 million project of Gidauniyar Jihar Kastina in Katsina State, Sure-P Programme in Sokoto State for 5 km tree planting in each local government of the state and collaborative programme of Jigawa State and the United State to harness the potential of Gum Arabic to fight desert encroachment and reduce poverty in the state (Haruna and Bukar, 2010). Legislative framework was also enforced to encourage the execution of these projects in Nigeria.

**5.0 RECOMMENDATIONS OF RELEVANT AND VIABLE SOLUTIONS**

In recent years, the Government of Nigeria has established several initiatives in the agriculture sector to combat desertification including afforestation and reforestation programs, dissemination of proven agricultural technologies and sustainable agricultural practices, and promotion of efficient energy sources, Planting and protection of indigenous tree and shrub species, and  increasing the area of conspicuous vegetation into desertifying lands is vital in managing desertification. This could be done through intensive and technologically supportive reclamation, by planting and establishing indigenous trees and vegetation known to the area. Planting of trees coupled with avoided felling should be embraced in arid and semi-arid zones until if possible a forest zone is attained[[19]](#footnote-19). Planting of tress helps in:

 i. Soil stability

ii. Protection of soil from erosion

iii. Retention of soil moisture and nutrients

iv. Carbon sequestration

**a. Sustainable agricultural practices**

Sustainable land management involves adopting sustainable agricultural practices, such as conservation agriculture, agroforestry, and soil conservation, to improve soil health, increase crop yields, and reduce land degradation. Agroforestry is a form of farming system that plays an extremely important role in the land management of semi-arid and arid zones. Agroforestry is a land use management system in which trees or shrubs are grown around or among crops or pastureland. It combines agricultural and forestry techniques to create more diverse, productive, profitable, healthy, and sustainable land-use system. Grazing systems should be improved from denuding the natural rangelands whose consumption will lead to aridity condition hence establishment of new pastures for grazing by livestock should be ensured. All water to be used for irrigation should be examined to be devoid of level of salt that could result in salt accumulation, as well as ensuring a good drainage system[[20]](#footnote-20).

**b. Reforestation and afforestation**

Planting trees and other vegetation helps prevent soil erosion, enhances soil fertility, and restores degraded ecosystems. This can be achieved through afforestation, which involves planting trees in areas where they were previously absent, or reforestation, which involves restoring degraded forest ecosystems. Reforestation involves planting trees in areas that were previously forested, while afforestation refers to establishing forests in areas that were not forested before. Trees help to create microclimates, increase biodiversity, and enhance ecosystem services, which can contribute to reversing desertification and promoting ecosystem health.

**c. Conservation of biodiversity and Sustainable Land Management**

Protecting and conserving biodiversity is essential for maintaining healthy ecosystems, improving soil fertility, and mitigating the impact of increased carbon emissions. Sustainable land management involves adopting sustainable agricultural practices, such as conservation agriculture, agroforestry, and soil conservation, to improve soil health, increase crop yields, and reduce land degradation. Water harvesting and management practices, like building small dams, ponds, and other water-storage systems, help increase water availability and reduce the impact of drought in arid and semi-arid regions. Implementing sustainable land management practices is essential for maintaining healthy soil and preventing desertification. This includes techniques such as contour plowing, crop rotation, agroforestry, and water conservation methods like rainwater harvesting and drip irrigation. These practices help to reduce soil erosion, improve soil fertility, and conserve water resources, making land more resilient to desertification.

**d. Community Involvement and Capacity Building**

Empowering local communities to participate in natural resource management and sustainable development initiatives is essential for combating desertification. Engaging communities in decision-making processes, providing training on sustainable practices, and promoting alternative livelihoods can help build resilience against desertification and enhance local stewardship of natural resources. Building local capacity and promoting sustainable development can create a collective effort towards combating desertification and fostering long-term environmental sustainability.

Moreover, developing sustainable energy sources, such as solar and wind power, can help reduce the use of fossil fuels. This eliminates the excessive need to cut down trees that result in more degraded land with erosion and desertification.

**6.0 CONCLUSION & IMPORTANCE OF ADDRESSING DESERTIFICATION**

Addressing desertification is crucial for several reasons. Firstly, it preserves biodiversity by protecting ecosystems and habitats from degradation. Secondly, it ensures food security by maintaining fertile land for agriculture. Thirdly, it mitigates the impacts of climate change by reducing carbon emissions and enhancing carbon sequestration. Additionally, combating desertification helps safeguard water resources, as healthy soils retain moisture better. Furthermore, it promotes sustainable development by preserving livelihoods and preventing the displacement of communities. Overall, addressing desertification is essential for environmental sustainability, economic prosperity, and social well-being.

When we think of deserts, regions such as the Middle East, Northern Africa or Central Asia may spring to mind. But growing desertification in the wake of climate change is increasingly drawing ever wider circles across the globe, increasing steadily. United Nations’ latest data, as presented by 126 Parties in their 2022 national reports, show that 15.5% of land is now degraded, an increase of 4% in as many years[[21]](#footnote-21).

Desertification affects vital parts of our lives, such as food security and biodiversity. Discover effective solutions for combating desertification and promoting a sustainable future. The importance of combating desertification cannot be overstated. It threatens sustainable development and the livelihoods of millions of people worldwide. Desertification can result in the loss of soil fertility, biodiversity, and water resources, leading to increased poverty, food insecurity, and conflict. Moreover, desertification releases carbon stored in soils and reduces ecosystems’ capacity to absorb carbon dioxide (CO2) due to the absence of plants and trees in large areas.

Governments, non-profit organisations, and other stakeholders can provide policy and institutional support to promote sustainable land-management practices, restore degraded lands, and support the livelihoods of communities living in affected areas.

Combating desertification requires a holistic approach that addresses the underlying causes of land degradation and promotes reforestation, sustainable land-management practices, water harvesting, biodiversity conservation, and sustainable energy development.

1. Olanrewaju Lawal, (2022), "Combining Remote Sensing and Space-Time Analysis for Desertification Monitoring in the Semiarid Dryland of Nigeria". Accessed through https://typeset.io/papers/combining-remote-sensing-and-space-time-analysis-for-4a3zwfq8 [↑](#footnote-ref-1)
2. Onyekwelu, J. C., & Ikeme, J. (2018). Desertification in Nigeria: A systematic review of causes, consequences and solutions. Journal of Environmental Management, 206, 96-105. [↑](#footnote-ref-2)
3. Spotting Specific Agricultural Practices Impacting Desertification in Zamfara State, Nigeria published on August 1,2022 by Journal of Environment and Earth Science accessed through https://typeset.io/papers/spotting-specific-agricultural-practices-impacting-2ecib71m [↑](#footnote-ref-3)
4. Esther Shupel Ibrahim, (2022), "Desertification in the Sahel Region: A Product of Climate Change or Human Activities? A Case of Desert Encroachment Monitoring in North-Eastern Nigeria Using Remote Sensing Techniques". [↑](#footnote-ref-4)
5. Ibid (3). [↑](#footnote-ref-5)
6. Ibid (3). [↑](#footnote-ref-6)
7. Arabian Journal of Business and Management Review (Nigerian Chapter) Vol. 3, No. 6, 2015 [↑](#footnote-ref-7)
8. Ibid (6). [↑](#footnote-ref-8)
9. Ibid (6). [↑](#footnote-ref-9)
10. Olajire, A. A., & Immanuel, O. M. (2015). Implications of climate variability and change on desertification in Nigeria. Climate Risk Management, 8, 1-10. [↑](#footnote-ref-10)
11. Africa Regional Review (2005). Report on Energy for Sustainable Development. Arifalo, E. I. (2005). Understanding Forest Policy. Paraclete Publishers, Yola, Nigeria. [↑](#footnote-ref-11)
12. Adelekan, I. O. (2010). Vulnerability of poor urban coastal communities to flooding in Lagos, Nigeria. Environment and Urbanization, 22(2), 433-450. [↑](#footnote-ref-12)
13. Africa Regional Review (2005). Report on Energy for Sustainable Development. Arifalo, E. I. (2005). Understanding Forest Policy. Paraclete Publishers, Yola, Nigeria. [↑](#footnote-ref-13)
14. Yahaya, S., Ishak, S., & Abubakar, B. A. (2019). Socio-economic impacts of desertification on households in North-Western Nigeria. International Journal of Development and Sustainability, 8(3), 126-141. [↑](#footnote-ref-14)
15. Journal of Ecology and the Natural Environment, a review on “Drought, desertification and the Nigerian environment” by Olagunju Temidayo Ebenezer. Accessed through https://academicjournals.org/journal/JENE/article-full-text-pdf/4505E2154369#:~:text=Desertification%20causes%20loss%20of%20biological,growth%20among%20other%20unfavourable%20impacts. [↑](#footnote-ref-15)
16. Alabi, T. F., Ologunorisa, T. E., & Ologunorisa, E. T. (2014). Land degradation and desertification in Nigeria: A threat to sustainable development. Journal of Environmental Science, Toxicology and Food Technology, 8(5), 12-18. [↑](#footnote-ref-16)
17. http://www.conserveafrica.org.uk/desertification.html. [↑](#footnote-ref-17)
18. Journal of Ecology and the Natural Environment, a review on “Drought, desertification and the Nigerian environment” by Olagunju Temidayo Ebenezer. Accessed through https://academicjournals.org/journal/JENE/article-full-text- [↑](#footnote-ref-18)
19. Oyinloye, M. A. (2016). Desertification: A looming crisis in Nigeria. African Journal of Environmental Science and Technology, 10(1), 39-48. [↑](#footnote-ref-19)
20. Babatunde, F. O. (2013). Assessing the impact of desertification on household welfare in Nigeria: A comparative analysis of Northern and Southern Zones. Journal of Sustainable Development, 6(4), 11-23. [↑](#footnote-ref-20)
21. Daramola, A. (2015). Desertification, land tenure and sustainable development in Northern Nigeria. Land Use Policy, 46, 91-97 [↑](#footnote-ref-21)