

Nigeria: Food Security and Ecosystem Resilience

Introduction

Nigeria's Federal Ministry of Agriculture and Rural Development (FMARD) is responsible for agriculture, natural resources, forestry and livestock management and research. The main aim of the ministry is to transform agriculture to create livelihoods and ensure food security. The objective is to treat agriculture as a business and focus on the different elements of the agricultural lifecycle from farming to production, marketing and sales of agricultural products. There are a number of legal and policy instruments supporting food security. These include the Agriculture Promotion Policy (2016 – 2020), National Plan of Action on Food and Nutrition in Nigeria 2016, National Strategic Plan of Action for Nutrition (2014-2019), the National Policy on Food Safety and its Implementation Strategy 2014 and the National Food Security Programme of 2008.

Table 1: Key indicators (World Bank, 2017) (UNDESA, 2018)

NIGERIA	2018
Total population (million)	195.88
Total area (km ²)	923,768
Population density (persons/km ²)	215.1
Per capita income, 2015 (US \$)	2,789.0

Relevant SDG 2 indicators

- 2.1.2** Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)
- 2.4.1** Proportion of agricultural area under productive and sustainable agriculture

Agriculture in the Nigerian Economy

Nigeria's population in 2018 was 196 million and growing at a rate of 2.7 per cent ([Table 1](#)). About half the population lives in urban areas. In 2017, GDP was 375,745 million and the contribution from agriculture in the same year was 20.7 per cent. The agriculture sector employs 36.4 per cent of the population and 26.4 per cent are women (UNDESA, 2018) (World Bank, 2018).

Nigeria is a big country covering 923,768 km² and 78 per cent of this is agricultural land (see [Figure 1](#)) (World Bank, 2017). From north to south, the climate changes from semi-arid gradually into savanna and finally humid tropical rainforest (FAO, 2016).

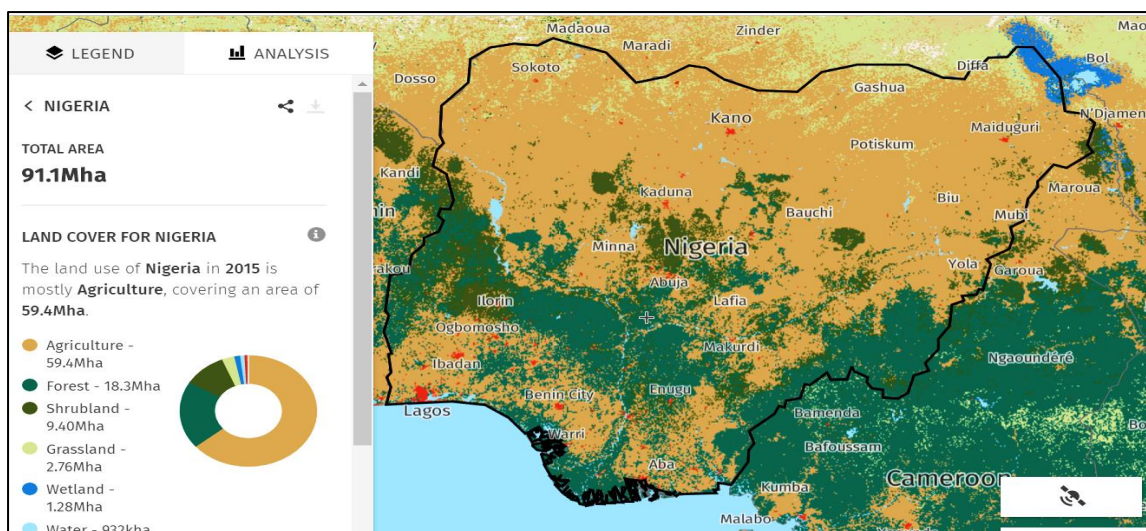


Figure 1: Land cover Nigeria (2015) Data source: Global Forest Watch

Food Security Situation

Nigeria is an oil and gas country. However, over-reliance on oil and declines in world prices, insecurity in the Niger Delta and in the north of the country have combined to have a negative impact on the agriculture sector with subsequent impacts on food security. Nigeria has vast agricultural potential but the country is a net importer of food. Though much of the agriculture is practiced at subsistence level there is much potential for growth especially in terms of diversification of the sector and value addition.

Between 2015 and 2017, 24.8 per cent of the population was classified as severely food insecure as shown in Table 2. Some of the indicators are not encouraging for instance the prevalence of stunting increased from 36 to 43.6 per cent between 2012 and 2017 respectively. The prevalence of undernourishment also increased from 9.3 in 2000 to 11.5 in 2016 (UN Stats, 2019) (FAO, IFAD, UNICEF, WFP and WHO, 2018). Figure 2 shows the livelihood zones in the country.

Table 2: Food insecurity trends in Nigeria (FAO, IFAD, UNICEF, WFP and WHO, 2018).

Location	Prevalence of undernourishment in the total population (%)		Prevalence of severe food insecurity in the total population (2015-2017)	Prevalence of wasting in children under 5 (2017)	Prevalence of stunting in children less than 5 years of age (%)		Prevalence of overweight in children under 5 years of age (%)	
	2004-2006	2015-2017	%	%	2012	2017	2012	2017
Nigeria	6.5	11.5	24.8	10.8	36.0	43.6	3.0	1.5
Western Africa	12.3	13.1	25.1	8.1	31.9	29.9	2.6	2.4
Africa	21.3	19.6	25.9	7.1	32.6	30.3	5.0	5.0

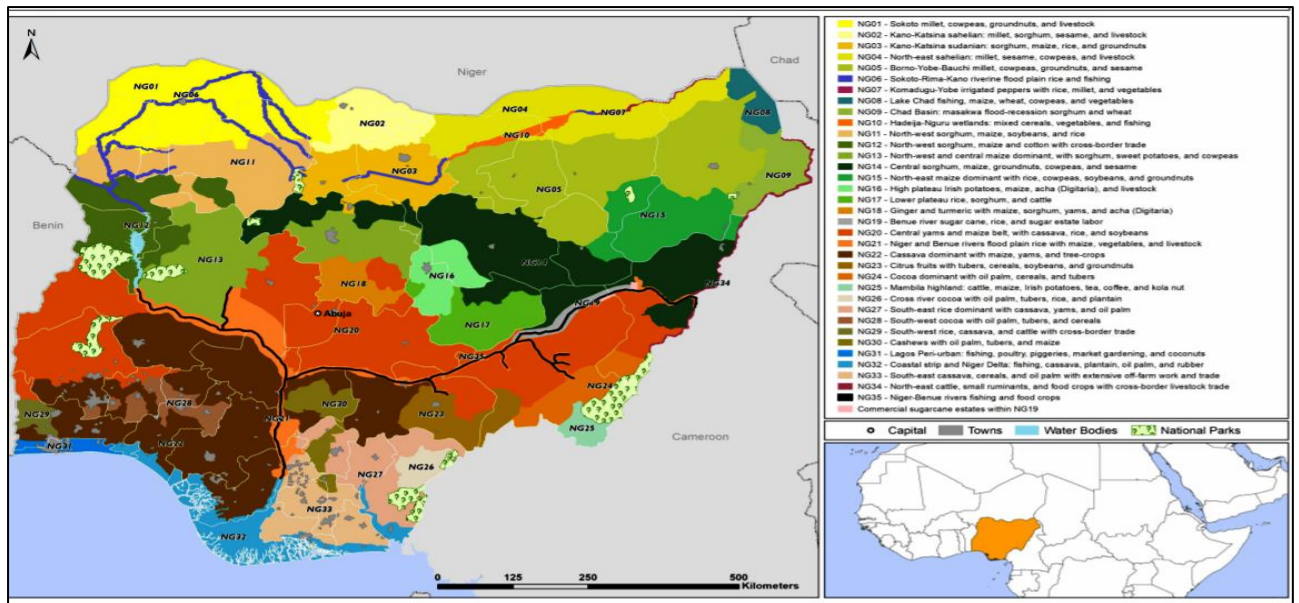


Figure 2: Nigeria livelihood zones [fews.net](http://www.fews.net)

Ending Hunger

Genetic Diversity

Only 17 local breeds were being kept in the country by 2018. No local breeds, animal or plants, have their genetic material stored within country. This is of particular concern since by 2018, 16 breeds were listed as being at an unknown level of extinction (UN Stats, 2019). The Genetic Resources Unit of the Federal Ministry of Science and Technology is responsible for managing and storing the germplasm of the registered crop varieties and livestock breeds. Other regulations include the National Crop Varieties and Livestock Breeds (Registration, etc.) 2013.

Relevant SDG 2 indicators

- 2.5.1 Number of plant and animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities
- 2.5.2 Proportion of local breeds classified as being at risk, not at risk or at unknown level of risk of extinction

Relevant SDG 7 indicators

- 7.2.1 Renewable energy share in the total final energy consumption

Renewable Energy

Nigeria's renewable energy share in 2016 as shown in [Figure 3](#) was estimated at 82.4 per cent of the total final energy consumption down from 86.19 per cent in 2000 (UN Stats, 2019). Electricity is generated from the following renewable solar, wind, biomass and small hydro power and there is much untapped potential. There is a National renewable energy and energy efficiency policy 2015 and regulations on renewable energy generation.

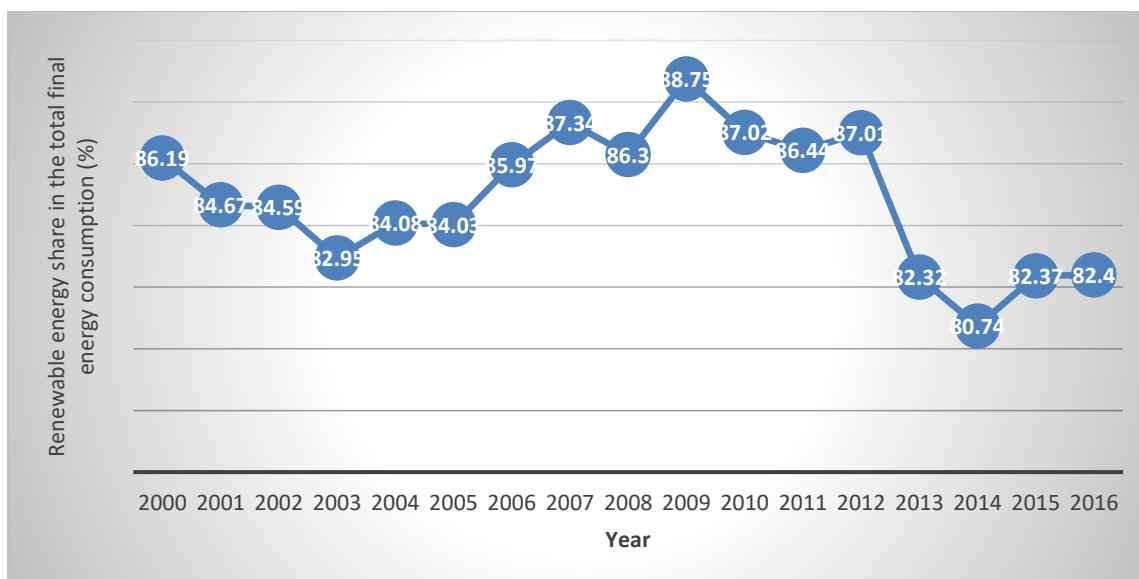


Figure 3: Trends in renewable energy share in the total final energy consumption (%) 2000-2016 (UN Stats, 2019)

Clean water and the marine environment

Water Quality

Only half (52.4 per cent) of all water bodies in Nigeria have good water quality; and only 41 per cent of open waterbodies. The proportion of rivers with good quality of water is slightly higher at 66.27 per cent (UN Stats, 2019). Water quality is important as contaminated water used for irrigation could lead to poor health in plants and animals aggravating the food security situation.

Only 0.2 per cent of anthropogenic wastewater is safely treated (SDGCA and SDSN, 2018). This is of concern as about a quarter of the national population practice open defecation implying that the threat of fecal contamination of food and water is high. This is highlighted in [Figure 4](#) in greater detail.

The legal framework regulating water quality includes the National Environmental (Surface and Ground Water Quality Control) Regulations, 2011 (S.I. 22 of 2011) and the National Environmental (Effluent Limitation) Regulations 2013.

Relevant SDG 6 indicators

- 6.3.1** Proportion of wastewater safely treated
- 6.3.2** Proportion of bodies of water with good ambient water quality
- 6.4.2** Level of water stress: freshwater withdrawal as a proportion of available freshwater resources.
- 6.6.1** Change in the extent of water-related ecosystems over time

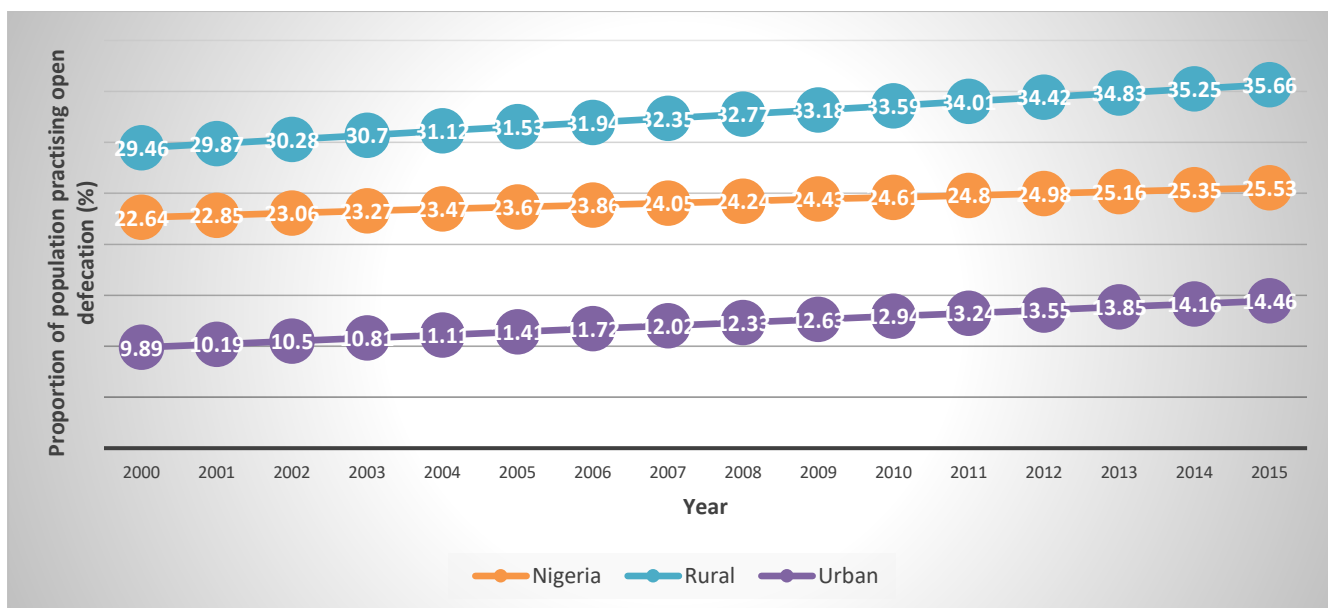


Figure 4: Trends in open defecation in Nigeria 2000-2015 (UN Stats, 2019)

Sustainable Management of Coastal Zones and Fisheries

Artisanal fishing is the biggest source of fish in Nigeria but pollution, overfishing, abusive fishing methods and declining yields are some of the challenges facing the sector. For instance, it is estimated that within the Exclusive Economic Zone (EEZ), fish exploitation is as high as 13.4 per cent with about 28.5 per cent of the fish being caught using trawling methods (SDGCA and SDSN, 2018).

Between 2000 and 2015, the total volume of fisheries caught was 1,027,000 metric tons. Over this same timeframe capture fishery grew at a rate of 3.2 per cent while aquaculture grew at a rate of 18.2 per cent (World Bank, 2017).

Marine protected areas cover 0.2 per cent of the country's territorial waters equivalent to 30.55 km² (UN Stats, 2019).

Relevant SDG 14 indicators

- 14.2.1:** Proportion of national exclusive economic zones managed using ecosystem-based approaches
- 14.4.1:** Proportion of fish stocks within biologically sustainable levels
- 14.5.1:** Coverage of protected areas in relation to marine areas.
- 14.6.1:** Progress by countries in the degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing.
- 14.b.1:** Progress by countries in the degree of application of a legal/regulatory/policy/institutional framework which recognizes and protects access rights for small-scale fisheries

Illegal Fishing

Overfishing, illegal fishing and piracy are responsible for the decimation of Nigeria's fish stock. Both local and foreign fleets are involved in illegal fishing in the Nigerian EEZ. The annual demand for fish in Nigeria in 2015 was estimated at 2.055 million metric tons implying a deficit of over 1 million metric tons (Olalekan & Wahab, 2018). This demand is one of the factors driving illegal fishing; and in order to fill the gap, fish is imported. The data indicates that the country imports 80 per cent of its fish requirement (NIC, 2016). Climate change and pollution from oil spills are likely to add additional stress to Nigeria's fish stocks. For example, it is estimated that under a high CO₂ emissions scenario Nigeria might experience a 53 per cent decline in fish catch by 2050 (Lam, Cheung, Reygondeau, & Sumaila, 2016). There is urgent need to have legal and policy backing to address these issues.

Terrestrial Ecosystems: Land, Biodiversity and Forests

Tree and Forest Cover

Forests covered 7.7 per cent of Nigeria’s total land area in 2018. Deforestation is a major threat. Between 2000-2005 it was estimated to be occurring at a rate of 4.1 per cent (World Bank, 2017). **Table 3**, **Figure 5** and **Figure 6** highlight this trend. The forest net area change was -3.33 per cent in 2005, -4 in 2010 and -5 per cent in 2015 (UN Stats, 2019).

Relevant SDG 15 indicators

- 15.1.1** Forest area as a proportion of total land area
- 15.1.2** Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type
- 15.2.1** Progress towards sustainable forest management
- 15.3.1** Proportion of land that is degraded over total land area
- 15.5.1** Red List Index

Table 3: Forest area as a proportion of total land area 2000-2015 (UN Stats, 2019)

Year	2000	2005	2010	2015
'000 hectares	13,137	11,089	9,041	6,993
% (proportion of land area)	14.42	12.17	9.92	7.67

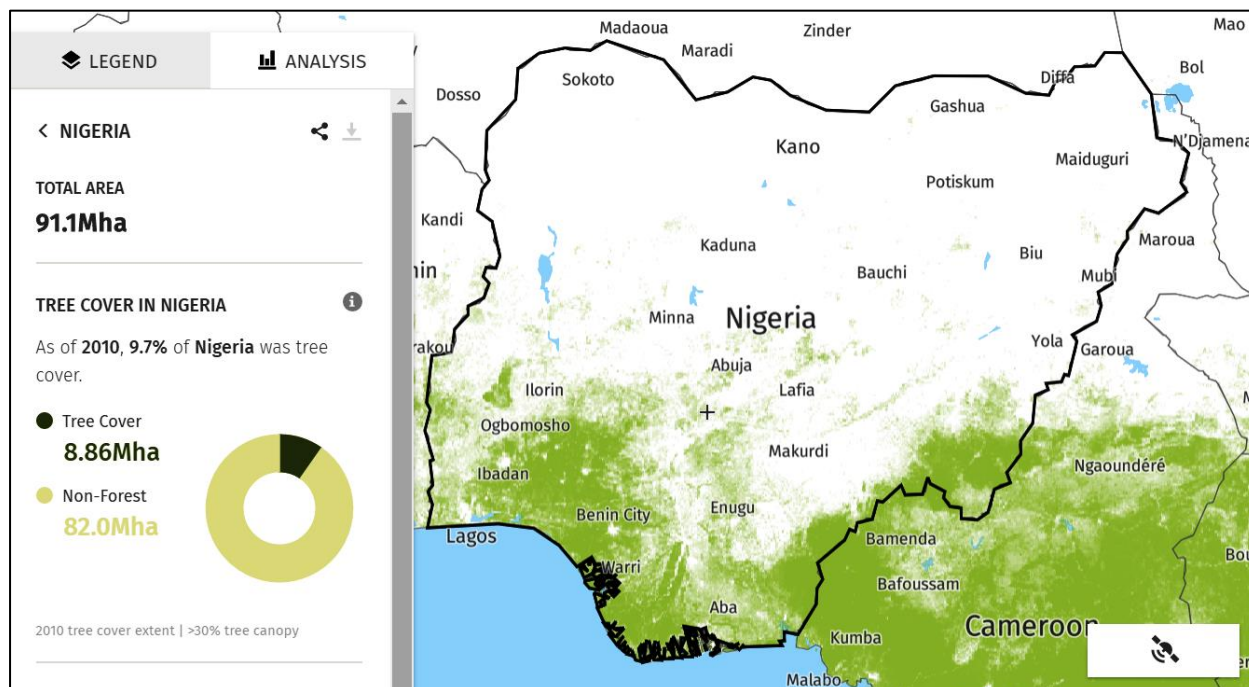


Figure 5: Nigeria with a 30%+ tree canopy (2010). Data source: Global Forest Watch

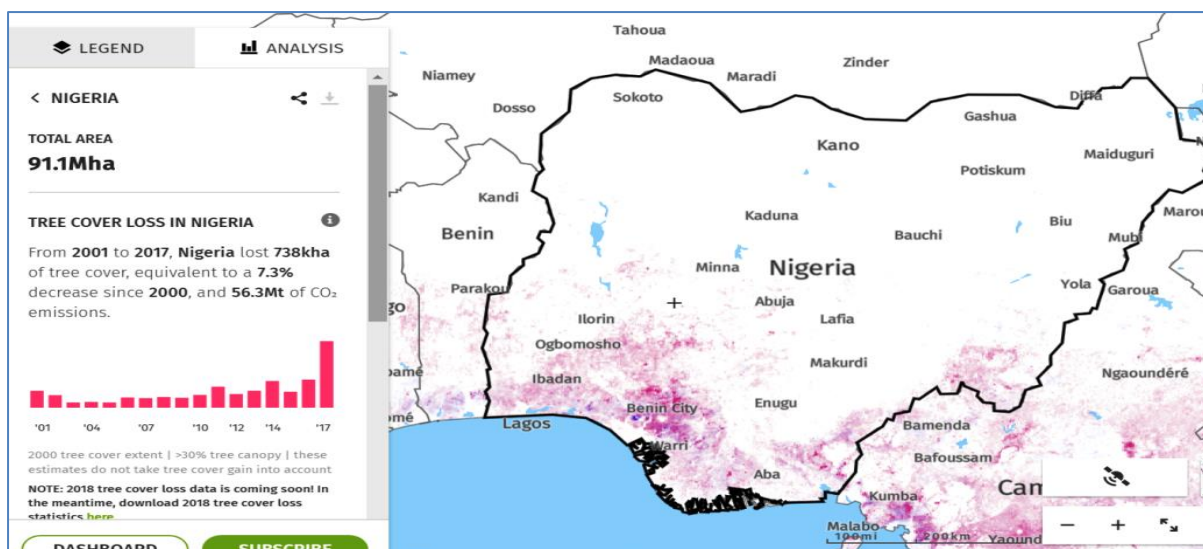


Figure 6: Tree cover loss in Nigeria 2001-2017. Data source: Global Forest Watch

Encouraging Sustainable Forest Management

The environmental value of forests as measured by above-ground biomass has been increasing over the years from 203.9 tonnes/ha in 2005 to 209.07 tonnes/ha in 2015 (UN Stats, 2019). Forest protection is one of the contributory reasons for this. The proportion of forest within legally established protected zones has remained static at 35.87 per cent between 2000 and 2015 (UN Stats, 2019). However, the proportion of forest with a long-term management plan has increased from 28.39 in 2000 to 33.6 in 2005 and 41.25 per cent in 2010.

The Forest law is old dating back to 1956 and updated in 1961. Forest regulations also provide direction on forest governance. The country's Vision 2020 also had a target to increase forest cover from 6 to 10 per cent.

Protected Areas

In 2018, the number of threatened mammals, birds, fish and higher plants in Nigeria stood at 21, 74, 31 and 205 species respectively (World Bank, 2017). The Red List Index has been constant at 0.87 from 2000 to 2019. This value indicates that while there is some level of concern regarding biodiversity, it is not on a downward spiral.

The proportion of freshwater biodiversity covered by protected areas increased almost 5-fold between 2007 and 2018. In 2007, coverage was estimated at 12.05 per cent, increasing to 59.07 per cent in 2018. The proportion of terrestrial biodiversity covered by protected areas was estimated at 79.62 in 2018, up from 66.09 in 2007 (UN Stats, 2019). See [Figure 7](#).

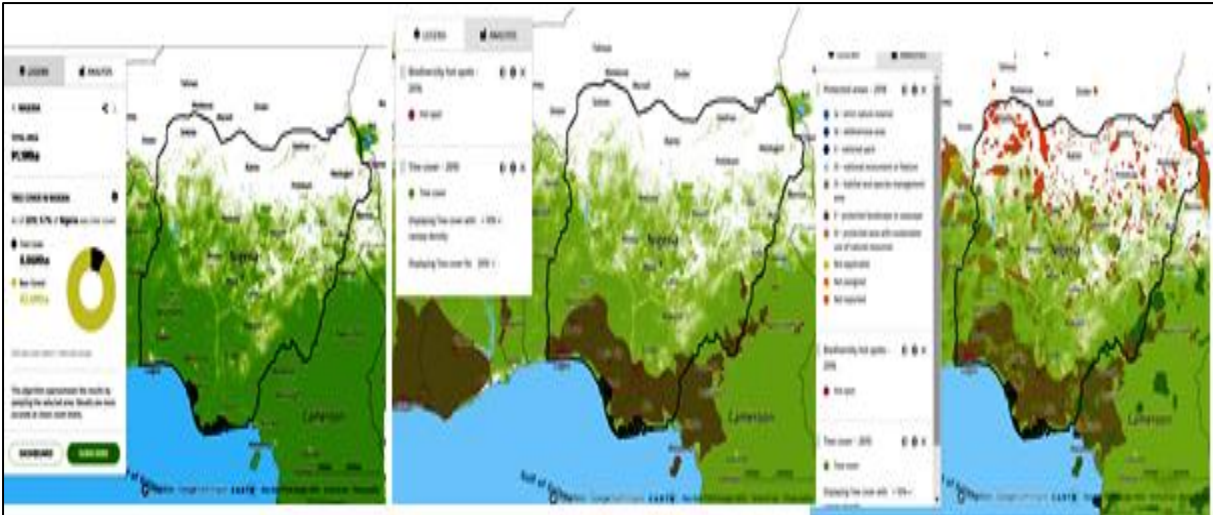


Figure 7: From left to right – Nigeria with a 10%+ tree canopy cover (2010), then with hotspots (2016) and then protected areas (2018) Data source: Global Forest Watch



The Dusky grouper (*Epinephelus marginatus*) is endangered in Nigeria. Photo credit: © Albert Kok

Emerging Environmental Challenges

Waste Production and Management

A survey of key states in the country indicated that waste generation rates per day vary from 0.5 kg per person in Lagos state to 0.6 kg per person in River State. Most of the solid waste generated in the different states in Nigeria is primarily organic in nature. For instance, in Oyo state, food and organic waste made up 76 per cent of waste generated (Salami, et al., 2019).

Relevant SDG 12 indicators

- 12.4.2 Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment
- 12.5.1 National recycling rate, tons of material recycled

Collection rates for municipal solid waste are very low estimated at 30 per cent in 2015 (UN Stats, 2019). At state level, the situation may be even worse. For instance, in Kaduna state solid waste

collection rates are as low as 10 per cent. As such, illegal dumping, blocking of storm water drains, unsightly waste piles and bad odour is very common (Salami, et al., 2019).

The main framework law for managing solid waste in Nigeria is National Environmental Standards Regulatory and Enforcement Agency (NESREA) act of 2007. Other supporting laws include the Federal Solid and Hazardous Waste Management Regulations of 1991, The Harmful Wastes (Special Criminal Provisions, etc.) Act and the National Policy on the Environment, Oil Pipelines Act 1956, the Petroleum Act 1969 and the National Environmental (Sanitation and Wastes Control) Regulations, 2009.

Climate Change

Nigeria ratified the United Nations Framework Convention on Climate Change in 1994 and the Kyoto Protocol in 2004. There is a Department of Climate Change under the Ministry of Environment. Policies and strategies guiding the climate change sector include the Nigeria Climate Change Policy Response and Strategy 2012, National Climate Change Adaptation Strategy and Action Plan for Climate Change 2011, National Emissions Mitigation Strategy. A bill to establish a National Climate Change Commission in 2012 was proposed but never passed.

Relevant SDG 13 indicators

- 13.2.1** Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other
- 13.3.1** Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula
- 13.3.2** Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions

There are calls for the Nigerian Educational Research and Development Council to ensure integration of climate change into some subject curricular such as Agricultural Science. However there remain many opportunities to mainstream climate change in the curriculum at primary, secondary and tertiary levels (Ikehi, Ifeanyieze, & Ugwuoke, 2014). A study has indicated that up to 70 per cent of university students may have lectures on climate change as part of their university education (Ayanlade & Jegede, 2016).

Financing Natural Resources Management

The national budget of Nigeria specifically mentions the agriculture sector highlighting food security as part of the national security agenda. Official development assistance has been fluctuating as shown in [Figure 8](#) ranging from a low of US \$0.34 million in 2007 to a high of US \$175.24 million in 2015 (UN Stats, 2019).

Relevant SDG 15 indicators

- 15.a.1** and **15.b.1** Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems
- 15.c.1** and **15.7.1** Proportion of traded wildlife that was poached or illicitly trafficked

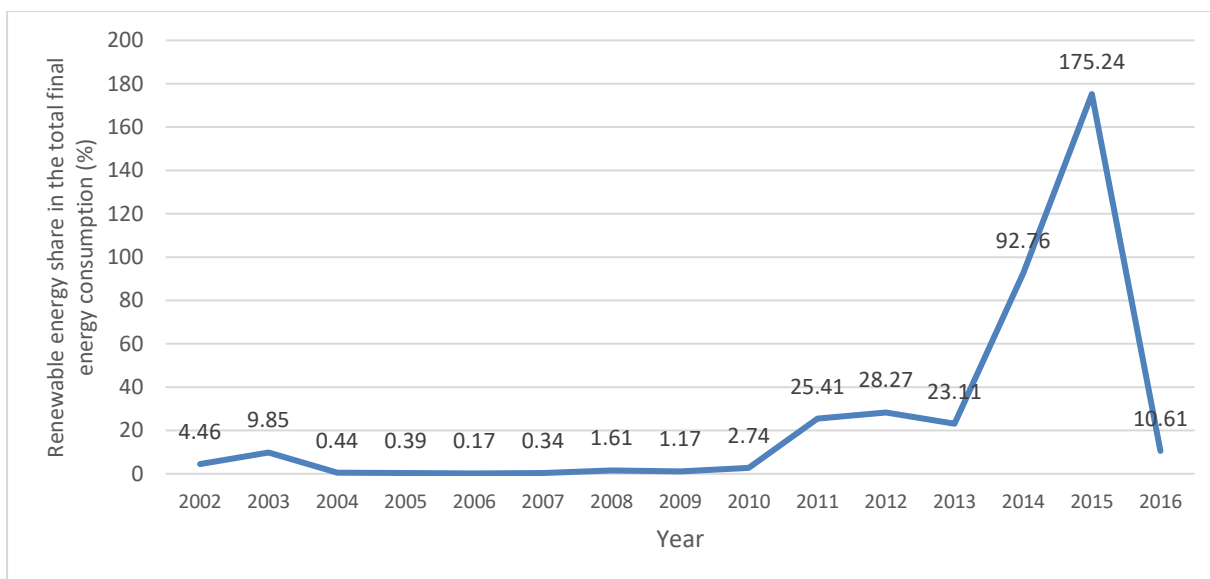


Figure 8: Total official development assistance for biodiversity (millions of constant 2016 US \$) 2002-2016 (UN Stats, 2019)

Supporting Actions to End Hunger

Relevant SDG 15 indicators

15.4.1 Coverage by protected areas of important sites for mountain biodiversity

Sustainable Fisheries Management

The National Policy on the Environment 2016 calls for an Integrated Ecosystem Approach to conserve environmental resources which includes coastal zones. It also recognizes the importance of supporting artisanal fishermen by strengthening the management of the fish resource including community participation. Some of the institutions supporting the policy include the Nigerian Federal Fisheries Service, Nigerian Institute for Oceanography and Marine Research, the National Institute for Freshwater Fisheries among others.

Relevant laws include Sea Fisheries Act 2013, Inland Fisheries Act 2013, Coastal and Inland Shipping (Cabotage) Act (No. 5 of 2003), Sea Fisheries (Fishing) Regulations 2013 among others. Some of the regional fishery bodies Nigeria is a member of include the Committee on Inland Fisheries and Aquaculture of Africa (CIFAA), Fishery Committee of the West Central Gulf of Guinea (FCWC), Fishery Committee for the Eastern Central Atlantic (CECAF), Ministerial Conference on Fisheries Cooperation Among African States Bordering the Atlantic (COMHAFAT-ATLAFCO) and the International Commission for the Conservation of Atlantic Tunas (ICCAT).

Relevant SDG 15 indicators

15.6.1 Number of countries that have adopted legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits

15.8.1 Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species

15.9.1 Progress towards national targets established in accordance with Aichi Biodiversity Target 2 of the Strategic Plan for Biodiversity 2011-2020

Sustainable Management of Mountain Ecosystems

The proportion of mountain key biodiversity areas covered by protected areas has remained constant at 74 per cent between 2000 and 2018 (UN Stats, 2019). The legal framework for mountain

ecosystems includes the National Environmental (Watershed, Mountainous, Hilly and Catchment Areas) Regulations, 2009

Sustainable Management of Biodiversity

The National Biodiversity Strategy and Action Plan 2016-2020 is being implemented. It has integrated the Aichi Biodiversity Targets. Other relevant laws include Forest Law 1961, Forest regulations 1963, and the National Forest Policy 2006.

Nigeria signed the International Treaty on Plant Genetic Resources for Food and Agriculture in 2002 and signed the Nagoya Protocol on Access and Benefit Sharing in 2012. Relevant laws in this sector include National Environmental (Access to Genetic Resources and Benefit Sharing) Regulations, 2009. The National Agricultural Seeds Act of 1992 which establishes a council with responsibility for setting the overall policy guidelines and monitoring of the development of the national seed system.

Conserving Agricultural Biodiversity

The National Policy on Environment revised in 2016 includes guidance on biodiversity and wildlife management, including agricultural biodiversity.

Sustainable Coastal Zone Management

The country is divided into eight hydrological basins for management purposes and these are coordinated by the Nigeria Hydrological Services Agency which was established in 2003. The Water Sector Policy and Strategy 2016 includes elements of integrated water resources management (IWRM). Other policy and guidance tools include the Water Resources Act 1993 and the Nigeria National Water Resources Master Plan 2013.

Relevant SDG 6 indicators

6.5.1 Degree of integrated water resources management implementation (0-100)

6.5.2 Proportion of transboundary basin area with an operational arrangement for water cooperation

The Nigeria Integrated Water Resources Management Commission was established in 2007, but there is much more that can be done to integrate IWRM into water management. On a scale of 0-100, the degree to which Integrated Water Resources Management is undertaken is 35 (UN Stats, 2019).

Transboundary Water Resources Management

Nigeria has a number of shared water resources including Lake Chad, River Niger, the Irhazer-lullemeden basin (aquifer), Akpa river basin and the Oueme River among others. All of Nigeria's transboundary rivers and lakes are under a cooperative institutional mechanism to help in the sustainable management of these water bodies (UN Stats, 2019). Some of these include the Lake Chad Basin Commission, the Niger Basin Commission, and a Memorandum of Understanding for the Establishment of a Consultation Mechanism for the Integrated Management of the Water Resources of the lullemeden, Taoudeni / Tanezrouft Aquifer Systems, 2014. There is also a national law for transboundary management of water resources - the River Basins Development Authorities Act 2013.

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