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Nigeria

What is the economic impact of the climate change in Nigeria ?

Although Nigeria is one of the richest and most populated countries in Africa, it remains highly exposed to climate change, particularly through the vulnerability of its agriculture. Extreme weather events, such as droughts, floods, and soil erosion, have devastating consequences, leading significant costs and contributing to a slowdown in the country's economic growth. Marked inequalities, poor governance, and a lack of coordination and resources act as aggravating factors. In addition to the cost of these physical risks, Nigeria will also be heavily impacted by the costs of transition, as its economic model, which is largely dependent on hydrocarbons, will also have to be reinvented.

Nigeria: an African giant exposed to the physical risks of climate change,...

Nigeria, Africa's most populous country and one of the continent's leading economies, is at the forefront of the climate challenge. According to World Bank projections for a very high emissions scenario, Nigeria is likely to experience a significant rise in temperatures, reaching between 2.9°C and 5.7°C by 2100.

The country ranks 154th out of 181 in the ND-GAIN 2021 index, which assesses vulnerability and resilience to climate change. Its dependence on agriculture makes it particularly sensitive to climate disruptions. According to the World Bank, around 78% of Nigeria's land area is devoted to agriculture, the majority of which is rain-fed (with less than 1% irrigated) and carried out by small-scale farmers using traditional methods. In addition, its varied geography exposes it to many extreme weather phenomena.

In the north, rising temperatures and desertification could exacerbate existing problems related to water supply and food security, which are already major challenges in this region. For example, rising CO₂ levels in the atmosphere are expected to lead to a 17% drop in nutrients in rice, while fluctuations in temperature and rainfall will likely reduce rice yields.

In the south, coastal areas and river basins are exposed to flooding, resulting in loss of life and damage to infrastructure. In 2022, according to the Nigerian Hydrological Services Agency (NIHSA), the worst floods on record destroyed more than 440,000 hectares of farmland, affecting more than 1.4 million people, causing more than 662 deaths and displacing thousands of residents. Direct economic damage is estimated at a median value of USD 6.68 billion. Rising sea levels are also threatening the Nigerian coast, particularly Lagos, with erosion, salinisation of land and flooding. According to an article by the Boston Consulting Group, Lagos could be flooded by extreme weather events under 1.5 metres of water, and up to 2.5 metres by 2050¹.

Climate change is accelerating the degradation of ecosystems in Nigeria, reducing the country's resilience to climatic shocks. Deforestation, driven by agricultural expansion, illegal logging and charcoal production, is leading to a loss of biodiversity, soil erosion and a reduction in the capacity of forests to absorb carbon. According to the Global Forest Watch (GFW) initiative, between 2001 and 2023, Nigeria lost 1.33 Mha of tree cover, equivalent to a 13% decrease in tree cover since 2000 and 724 Mt of CO₂ emissions.

... which will most likely result in economic losses affecting key sectors of the Nigerian economy.

The agricultural sector, which accounts for around 25.18% of GDP and covers 70.8 million hectares of farmland, is severely affected by drought, flooding and soil degradation, leading to lower yields of staple crops such as maize, cassava, millet and rice. By 2070, rising temperatures are expected to reduce rice yields in Africa by an average of 24%, especially in rain-fed rice-growing areas, according to the United States Agency for International Development (USAID).

This situation is already forcing the country to import on a massive scale. According to the World Bank, food imports are projected to account for 11% of Nigeria's total imports in 2023. In the first quarter of 2024, Nigeria spent USD 689.88 million on food imports, representing 17% of total foreign currency expenditure on imports and a 40% increase on the previous quarter. By 2100, with population growth set to more than double, agricultural losses could account for between 2% and 4% of GDP in West Africa, according to USAID.

The electricity sector will also be heavily affected. Flooding threatens onshore oil and gas production, impacting export revenues. It will also affect electricity generation, 73.5% of which will come from natural gas by 2023, according to the International Energy Agency (IEA). The total value of damage to the sector from the 2012 floods, among the worst on record, is estimated at NGN 329m (EUR 187k), with the value of lost revenue estimated at a further NGN 8,013.6m (EUR 4.5m), bringing the total effect on the sector to NGN 8,342.6m (EUR 4.7m). Additionally, the drought is diminishing river flows, which in turn is reducing output from hydroelectric power stations. Despite its smaller share compared to gas, hydroelectric power remains crucial to the country's electricity supply, accounting for around 20.4% of total production in 2023, according to the IEA. Finally, heat waves increase energy demand, particularly for air conditioning, and strain the already fragile electricity grid. According to the World Bank, electricity shortages are currently estimated to cost businesses USD 29 billion a year, or more than 5% of GDP.

This situation is exacerbated by inequalities and the country's lack of available resources to finance its adaptation strategies.

The consequences of climate change are compounded by poverty and the limited resources available for adaptation and resilience. People living in poverty are often the most exposed to climate-related hazards because they have less access to quality infrastructure and essential services. As a reminder, only 4.8% of Nigerians have health insurance and 71% self-medicate, causing thousands of deaths each year.

Reduced agricultural production and reliance on imports are contributing to rising food prices, making access to healthy food more difficult, particularly for the most vulnerable. In the long term, food inflation in Nigeria is expected to be around 20% in 2025 and 17% in 2026. However, this does not guarantee improved food security for a population where more than half live on less than USD 2 a day. This situation is forcing many farmers to migrate to urban areas, adding to the pressure on infrastructures, most of which are already outdated. According to a World Bank report, in a pessimistic scenario, internal climate migration in Nigeria could affect 9.4 million people by 2050.

In addition, poor governance, corruption, weak institutions and lack of coordination are hampering the implementation of adaptation strategies. Between 2012 and 2021, NGN 548 billion, or nearly EUR 312 million, was allocated to environmental funding, raising concerns about corruption. Investigations have been launched into the use of the funds, with cases of money laundering and embezzlement. In 2021, the former governor of Niger State was prosecuted for money laundering after withdrawing NGN 800m (USD 50m) from the ecological fund.

Due to its limited resources, Nigeria receives a great deal of international aid, although its contribution to global greenhouse gas emissions is low (0.33%). According to the Climate Policy Initiative, in 2019/2020, approximately USD 1.9 billion per year of public and private funds were invested in climate-related activities in Nigeria, representing only 11% of the USD 17.7 billion needed each year to meet the Nationally Determined Contribution (NDC) target of reducing emissions by 47% from business as usual by 2030.² In 2022, the European Union has pledged EUR 1.3 billion in funding over five years to help the country develop low-carbon resources and strengthen its climate resilience. Nevertheless, fossil fuel financing continues to

dominate in Nigeria, which is the second largest country in Africa in terms of fossil fuel projects financed between 2016 and 2021, with a liquefied natural gas (LNG) project alone receiving USD 2.77 billion.

As well as considering the physical risks of climate change, Nigeria must also face the costs of transitioning its economy.

The Nigerian economy remains heavily dependent on fossil fuels, a fact that is also reflected in the country's infrastructure, vehicle fleet and industry. In 2023, crude oil accounted for 80.64% of Nigeria's total exports, though its contribution to GDP is limited to 5.40%, according to NBS data. In terms of energy production, hydrocarbons dominate, accounting for 98.6% of the energy mix in 2021, according to the IEA. Of these sources, biofuels and waste account for the largest share (74.5%), followed by oil (14%) and natural gas (10.1%). In addition, CO₂ emissions continue to rise, reaching around 101 MT in 2022 compared with 44 MT in 2000, an increase of 128%.

In 2021, the transport sector, accounting for 13.5% of final energy consumption, represented 56% of total greenhouse gas emissions. These emissions have risen significantly, from 22 million tonnes in 2000 to 57 million tonnes in 2021, an increase of around 160%. This increase is largely due to the dominance of petrol-powered cars, which account for the bulk of the nearly 12 million vehicles registered in the country, at the expense of little-developed public transport, particularly environmentally friendly options.³

The building sector, particularly in large cities, has contributed significantly to Nigeria's carbon footprint, although its share of CO₂ emissions has remained stable at an average of 4% between 2000 and 2021. In 2021, 76% of the final energy consumed came from the residential sector, whose consumption almost doubled, rising from 2,746,630 TJ in 2000 to 4,575,456 TJ in 2021. The tertiary sector (commercial and public services) consumed 146,004 TJ, an increase of 116.37% compared with 2000 (67,479 TJ). A large proportion of the population and almost all businesses buy expensive and polluting electric generators to cope with power cuts, and air conditioning is ubiquitous. This inefficient use of energy highlights the need for a transition to better insulated, more energy-efficient buildings.

The industrial sector accounts for a more modest share of final energy consumption, at 6.6% in 2021 (394,262 TJ), up 177% since 2000 (142,989 TJ). However, it plays a crucial role in greenhouse gas emissions, contributing 14.2% in 2021 (14 Mt), up 250% since 2000 (4 Mt). The cement sector is one of the main emitters, contributing almost 50% of industrial emissions. Modernizing industrial infrastructures and integrating decarbonization into industrial policies are therefore essential to encourage more sustainable practices and reduce overall emissions.

The challenges of transitioning to a sustainable economy in Nigeria are numerous and costly. The reforms needed to modernize infrastructure and convert traditional sectors will entail significant costs. Estimates predict that USD 1.9 trillion will be needed to achieve a complete transition by 2060, a target set in the Energy Transition Plan (ETP) launched in 2021 with the support of COP26.⁴

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END NOTES

¹ [Safeguarding Coastal Cities from Climate Change, 15 mars 2023](#)

² [Landscape of Climate Finance in Nigeria, Octobre 2022](#)

³ This figure needs to be adjusted upwards, as most vehicles are not registered in Nigeria.

⁴ [What you should know about Nigeria's Energy Transition Plan, 19 Mars 2024](#)