NIGERIAN INSTITUTE OF SOCIAL AND ECONOMIC RESEARCH
Research for Nigeria's Socio-economic Transformation

NATURAL HAZARDS AND DISASTER MITIGATION STRATEGIES IN 18 COUNTRIES:
Lessons for Nigeria

https://www.aljazeera.com/news/2024/9/11/nigeria-floods-affect-one-million-people-after-dam-collapse

WHAT IS THE ISSUE?

Natural hazards are largely caused by forces of nature such as wind, rain, etc., while "natural disasters" are driven by the interplay of human activities with the forces of nature. Consideration of "mitigation" against natural disasters is crucial to help reduce disaster losses and human suffering. Several countries experience natural disasters from time to time and have put various forms of mitigation strategies in place against disaster impacts. This policy brief for prioritising mitigation and preparedness plans in Nigeria derives lessons from 18 countries across 6 continents.

EXECUTIVE SUMMARY

Millions of people across the globe, Nigerians inclusive, are affected by natural disasters each year. Effective disaster management strategies are essential to reduce human suffering, loss of lives, property and infrastructure, improve people's resilience, prevent the spread of diseases, reduce poverty, and support those affected. Hazard mitigation, therefore, aims at lessening the impact of disasters, or better still, to keep natural hazards from becoming natural disasters. It is for this reason that the knowledge of mitigation strategies that work is of crucial importance for Nigeria. This is the key motivation for the review of mitigation strategies adopted in 18 countries across 6 continents.

Findings indicate that the risk factors influencing the severity of disaster impacts vary across regions and include frequency of hazard occurrences in Asian and African countries, as well as the Americas. The high population density in Japan and African countries is also a risk factor, while low to medium Human Development Index (HDI) scores, particularly in Africa, represent another risk factor. Further analysis indicates that the higher the frequency of hazard occurrences and the higher the population density, the higher the risks of disaster impacts. On the other hand, the higher the HDI scores, the lower the risks of disaster impacts, and vice versa.

Figures also indicate that countries in the low and medium HDI brackets (Nigeria inclusive) are more prominent among countries with high Disaster Risk Index (DRI), while those with high HDI scores mostly have low DRI figures. Nigeria ranks 13 out of 18 countries on the DRI. It is crucial to note that Nigeria's Disaster Management Framework is robustly designed, but it is reactive rather than proactive.

Key Recommendation:
✓ The Federal Government should form a Disaster Management Council to enable the institutionalisation of functions and the inclusion of State-level MDAs in the preparedness and disaster planning phase.

1.1 Background

Natural disasters occur when a hazard overwhelms a vulnerable community, leading to displacements, loss of lives and properties as well as livelihood disruption, among others. Hundreds of natural disasters occur yearly throughout the world, displacing millions of people, disrupting economies and causing epidemics. Factors determining natural disaster impacts are categorised broadly into three, namely (i) hazard magnitude, (ii) socioeconomic exposure, and (iii) vulnerability/adaptive capacity. For this brief, the broad factors are indicated by (i) number of hazard incidences, (ii) population density and (iii) HDI. Other vulnerability/adaptive indicators considered are community preparedness, government effectiveness, regulatory quality and corruption perception. These other indicators are closely linked with countries' HDI. Disaster impacts are varied, but those considered in this brief include deaths, displacements and total population affected.

Source: https://humanglemedia.com/flooding-in-maiduguri-displaces-residents-as-poor-drainage-systems-fail-to-cope/

Given a specific hazard occurrence, there is often variability in the impact on the affected population. That is, given the same level of hazard magnitudes, some populations will experience severe impacts with more deaths recorded, other populations may experience mostly severe injuries, and still, for other populations, the majority may survive unscathed. The difference in disaster impacts is often explained by the interplay of the hazard with pre-existing conditions of exposure and vulnerability.

As seen in the International Disasters Database (EM-DAT), Nigeria has experienced natural hazard occurrences, which have been mostly in the form of floods. While the background study focused on 18 countries, this brief narrows the focus to Nigeria. The combination of risk and adaptive capacity factors and how these moderate or exacerbate the impacts of disaster in Nigeria is examined to draw lessons for strengthening natural disaster mitigation plans for Africa's most-populous nation.


Source: https://qz.com/africa/1024504/lagos-floods-africas-largest-mega-city-has-a-major-drainage-problem

2.0 FINDINGS

This section discusses the most prevalent hazard types in Nigeria, exposure and vulnerability status, disaster impacts experienced and policy implications.

2.1 Natural Hazards in Nigeria

Nigeria has had more cases of floods than any other hazard. Over a 20-year period, the country recorded over 12,000 deaths, 150,000 plus persons suffered injuries, over seven million were displaced, and over 50 million were affected in several other ways including loss of livelihood means and property damage. These impacts were from floods, storms and epidemics.
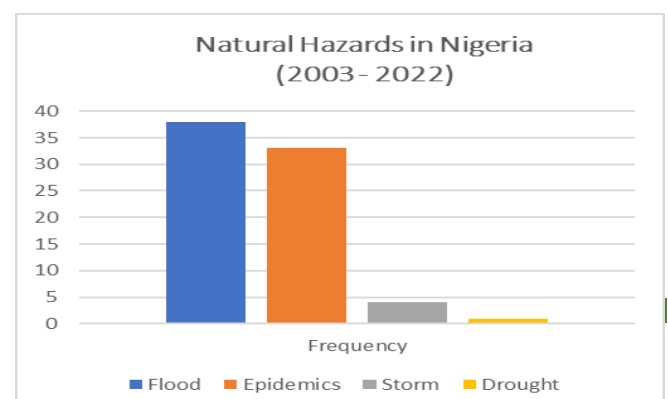
2.3 Natural Disaster Impacts in Nigeria

A little over 10% of Nigeria's population was affected by disaster impacts in 2022, although the 20-year average figure was just 0.84%. The pattern of impact shows that this 20-year average conceals wide differentials in disaster impacts over the years and also suggests that the impact has been increasing in recent years.

Natural Disaster Impacts in Nigeria (2003 - 2022)
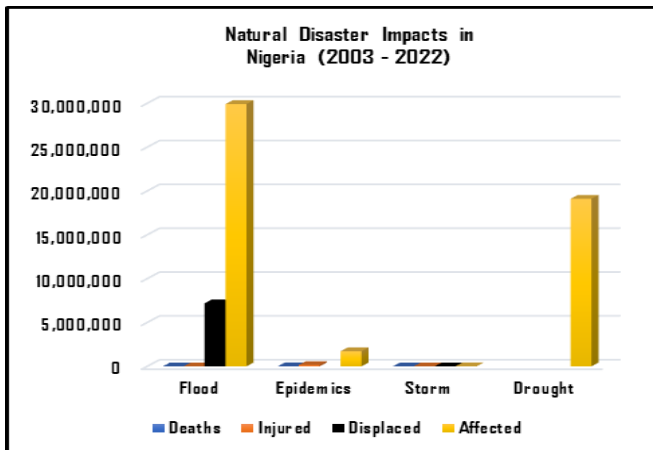
2.4 Socioeconomic Exposure/Vulnerabilities and Disaster Impacts

The HDI score was considered a summary indicator of socioeconomic vulnerability. Other vulnerability indicators considered were including scores on Community Preparedness, Regulatory Quality, Government Effectiveness and Corruption Perception. Nigeria was found to have optimal community preparedness (100%) but poor regulatory quality (15.8), very weak government effectiveness (14.4), a high corruption perception index (24), a low human development index (0.535) and a high population density (234 per sq. km). A correlation analysis, measuring risk factors' association with disaster impact, shows that HDI, (which measures vulnerability and adaptive capacity) has the highest weight (-0.13), followed by population density (0.026) which measures exposure. The hazard factor has the least correlation coefficient (0.022).

The message from the analyses is that modifiable risk factors which relate to socioeconomic conditions of exposure and vulnerability have a higher weight of association with disaster impacts, while the numbers of hazard occurrences themselves are less associated with disaster impacts. Using a disaster rating scale of 0-1 for lowest to highest disaster risk, Nigeria had a DRI of 0.09 and ranked 13 of 18 countries.

2.4 Lessons for Strengthening Nigeria's Disaster Mitigation Strategies

Japan's disaster management plan was used as a benchmark for the Nigerian plan. Similarities were found in terms of robustness, recognition of legal frameworks, establishment of coordination centres (EOCs) and emphasis on public awareness and capacity building. However, differences exist in organisational structure, interagency contracts, and some procedural details.

The lessons, drawn from Japan's disaster management policies and strategies, point to the need for Nigeria to focus more on risk education, decentralise emergency management and employ more preventive rather than reactive measures. It is commendable that Nigeria's disaster response plan assigns specific services to various MDAs in the case of disaster response, and these agencies should also be involved in the planning and pre-emptive stage. More important is the issue of enforcement of plans and the swiftness in response needed when hazards hit, and disasters occur.

Incorporating the lessons from Japan's framework into Nigeria's disaster management strategy can help enhance preparedness, response, and recovery efforts, ultimately reducing the impact of natural disasters on communities and the nation as a whole.

2.5 Conclusion

Nigeria experiences a range of natural hazards, with floods, epidemics, storms, and drought being the most prevalent. These disasters primarily result in deaths, injuries, and displacement, with floods having the greatest impact. Despite optimal community preparedness, Nigeria struggles with socioeconomic exposure and vulnerability risk factors including low HDI and high population density. Other risk factors closely linked with low HDI are poor regulatory quality, weak

government effectiveness and high corruption perception.

3.1 Policy Implications

Nigeria was observed to have a relatively high DRI among the 18 countries considered. Disaster impacts from natural hazards were equally relatively severe. Disaster impacts are observed to be associated more with modifiable socio-economic conditions rather than with the occurrence of natural hazards, reinforcing the need for reducing socioeconomic vulnerabilities for the population.

3.1 Recommendations

- The Nigerian government should prioritise the reduction of socioeconomic vulnerabilities by improving on education and healthcare systems (core HDI elements), regulatory quality, government effectiveness and corruption control. This is a multisectoral responsibility and should be anchored by the ministry in charge of coordinating the economy.

- A multisector approach, coordinated by the National Emergency Management Agency (NEMA) and the National Orientation Agency (NOA), should be applied in implementing risk education to reinforce preparedness.

- The Federal Government of Nigeria (FGN) and NEMA should decentralise the disaster planning and response structures to the extent that authorities and resources are devolved to sub-national units that would form the first responders in the case of disasters.

Further Reading

Daramola A. Y. (2023) Case studies in natural hazards and disaster mitigation: Lessons for Nigeria. Individual Research Project Report, NISER, 2024.

Hoeppe, P. (2016). Trends in weather-related disasters–Consequences for insurers and society. Weather and climate extremes, 11, 70-79.

Warren, C. M. (2010). The facilities manager preparing for cliate change-related disasters. Facilities, 28(11/12), 502-513.

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This Policy Brief draws on a NISER Study on prioritising mitigation and preparedness plans in Nigeria derives lessons from 18 countries across 6 continents.