



Leveraging Technological Innovation to Drive Climate Action in Nigeria

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Background

More than ever, the effect of climate change is being felt. There has been a significant increase in flood, heat wave, drought, wildfire, sea levels, melting glaciers, food insecurity and change in rainfall patterns. One of the biggest present-day challenges is climate change. It has hugely impacted economies and ecosystems globally. In Nigeria, there has been an increase in flooding incidents across the country, while the northern part of the country has seen a spike in drought. The Nigerian Meteorological Agency's (NiMet) at its 2024 Seasonal Climate Prediction (SCP), predicted dry spells across various parts of the country between July and August 2024. The dry spells came as predicted and many farmers incurred loss from withered crops.

As a fossil-fuel producing country, pollution is the order of the day and it has adversely eroded biodiversity. The aggravated impact of climate change requires swift and effective action to mitigate the effects.

Technological innovation provides efficient and effective solutions that adapt to environmental changes, improve energy efficacy and also reduce greenhouse gas emissions in Nigeria. The huge population and diverse climate in Nigeria pose a threat to climate action. Technological strategies present the best approach and must be leveraged to achieve environmental sustainability. Mitigation and adaptation efforts must be strengthened through local and international collaboration. Comprehensive policies backed by effective implementation is the most effective means of guaranteeing a sustainable future.

Current Technological Landscape

1. Renewable Energy

Nigerians are becoming more open to alternative energy sources and are embracing solar rapidly. As a fossil-fuel producing country, Nigeria is facing severe effects of climate change. While climate action crusaders are championing the acceptance of renewable energy, increase in fuel costs has led Nigerians to begin seeking alternative sources of energy. Solar and wind energy are gradually being sought after. Improvement in photovoltaic cells and wind turbine design can eventually



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reduce cost and make renewable energy affordable. Fossil fuel emissions can be reduced drastically as more people embrace renewable energy sources. Increased investment as well as development of necessary infrastructure is still required to adequately meet Nigeria's growing energy needs.

2. Electrification

Electric vehicles (EVs) have been developed and are being deployed daily. Elon Musk is leading the way with Tesla vehicles which are completely electric. In Nigeria, INNOSON has also taken up the challenge and have developed electric vehicles. Electric vehicles can greatly reduce reliance on fossil fuels. According to the company, EVs are not just eco-friendly, they also offer lower running costs, reduced maintenance needs, and a quieter, smoother ride. Continued development in battery technology and charging infrastructure is critical for cost reduction and widespread adoption.

3. Biofuels and Hydrogen

Research into hydrogen fuel cells and biofuels offers potential alternatives to traditional fuels, especially for sectors that are difficult to electrify. On the 6th of June, 2024, INNOSON Motors unveiled varieties of mass-produced Compressed Natural Gas (CNG) vehicles. The goal is to proffer a solution to total dependence on one or two types of vehicles.

4. Climate-Resilient Technologies

Developing advanced modeling tools that improve understanding of climate change and impacts. This would help in implementing effective adaptation strategies. Agricultural technology innovations improve sustainable land management, help in the development of disease and drought-resistant seeds/crops and increase yield. Improved technology provides solutions that improve food security and adapt to changing weather patterns. However, access to these technologies remains limited, especially in rural areas.

Challenges

1. Funding and Investment

Climate technology innovations have not received attention in terms of funding. There is inadequate investment in research and development from both the government and private sector.



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2. Capacity Building

Limited local capacity has restricted the effective implementation and maintenance of advanced technologies.

3. Policy and Regulatory Framework

Existing policies in Nigeria do not fully support the integration of emerging technologies into climate action strategies. Hence, there is a need for a coherent and all-encompassing regulatory framework that captures innovation and adoption.

4. Inadequate Infrastructure

Deficit in infrastructure impedes the deployment and maintenance of climate-related technologies especially in the rural areas. This is due to inadequate facilities available for the integration of advanced technologies.

Recommendations

1. **Increased Funding for Research and Development:** Research and development in technology related to climate must receive increase in funding. Innovations and inventions that have been successful should be upscaled to meet present realities while new technologies should come at affordable prices. This should be done by both the government and the private sector.
2. **Public-Private Partnerships:** Collaboration between government, businesses, organizations and research institutions must be encouraged. Public-private partnerships can increase innovation, accelerate the commercialization of new technologies and share risks. International collaboration is also required to tackle climate change. International agreements and cooperative frameworks must be strengthened to share knowledge and technologies across borders.
3. **Improve Infrastructure:** Infrastructure that supports the deployment of climate technologies, particularly in underserved rural areas should be invested in. Power grids that support renewable energy and data collection facilities are included.
4. **Policy and Regulatory Frameworks:** Policies that promote the adoption of clean technology should be supported. Tax reduction or waivers, subsidies, and regulatory frameworks that encourage the development of renewable and efficient energy solutions should be included. Policies should be updated and streamlined to support technological innovation in climate action.



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5. Education and training: Technical experts should be brought in to carry out capacity building trainings for climate technology organizations and individuals. This will enable them understand advanced climate technologies, how to develop, implement and maintain them.
6. Public Awareness: Public awareness on the benefits of climate technologies need to be promoted. Initiatives that educate communities on how climate resilience and sustainability can be improved by technological innovation, must be supported.

Conclusion

Technological innovation is critical in enhancing Nigeria's climate action efforts. By addressing infrastructure needs, increasing funding, collaboration, improving infrastructure, promoting policy and regulatory frameworks, building capacity, and public awareness, Nigeria can harness technology to effectively tackle climate change. A low-carbon economy is attainable through strategic partnerships and investments. The technology recommendations must be leveraged to address the challenge of climate change, build climate resistance and achieve sustainable development.

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