Renewable Energy Utilization in Nigeria:

A Panacea to Climate Change Problem

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Abstract

Climate change poses a significant threat to global ecosystems and human societies. In Nigeria, the impacts of climate change are evident through increased temperatures, erratic rainfall patterns, and rising sea levels, which affect agriculture, water resources, and livelihoods. This paper aims to investigate the potential of renewable energy in addressing climate change challenges in Nigeria, highlighting the current state of renewable energy utilization and proposing actionable recommendations for improvement. The study reviews existing literature on renewable energy sources, examines current renewable energy projects, and analyzes the potential benefits and challenges of transitioning to renewable energy using triangular method approach where data is generated from both primary and secondary sources. The study employs both qualitative and quantitative research approach, utilizing secondary data from academic journals, government reports, industry publications and databases of Nigeria Meteorological Agency and National Bureau of Statistics. While data on renewable energy utilization was obtained from primary sources, through interviews with key stakeholders in the energy sector, including government officials, industry experts, and renewable energy entrepreneurs. The data were analyzed to assess the current state of renewable energy utilization in Nigeria, identify barriers to adoption, and evaluate the potential impacts on climate change mitigation. The findings reveal that Nigeria possesses significant potential for renewable energy development, with solar energy being the most promising due to the country's high solar irradiance levels. Wind and hydro resources are also substantial, particularly in certain regions. However, current utilization levels are low, primarily due to challenges such as limited access to financing, insufficient grid infrastructure, and lack of technical expertise. The recommendations highlight the importance of policy support, investment in technology, and public awareness to enhance renewable energy adoption, access to finance and provision of infrastructure by government to promote sustainable energy practices in Nigeria.

Key words: sustainability; renewable energy; climate change; Nigeria; adaptability