**Renewable Energy Policy and Sustainable Development in Nigeria: A Systematic Scoping Review**

This article is a Review Article

**Abstract**

The article examined renewable energy policy and sustainable development in Nigeria using a systematic scoping review. Information and materials were obtained from secondary sources such as journal articles, books, and other online resources, spanning quantitative, qualitative, and review studies, and covering the period from 2000 to 2025. Several search engines, including Google Scholar, RefSeek, and others, were used during the search process, and the information retrieved was subjected to content and thematic analysis.

The findings revealed that renewable energy policy has both moderating and direct effects on the propensity of achieving sustainable development in Nigeria. As a moderating factor, it can influence the relationship between the renewable energy system—particularly in terms of demand and supply—and sustainable development. In terms of direct impact, it can contribute directly to the achievement of sustainable development in Nigeria.

However, several challenges hinder the effective use of renewable energy policy. These include regulatory bottlenecks, inadequate application of policy to transform the renewable energy system, lack of supportive policies for the effective use of technology in the renewable energy sector, among others. These issues limit the potential of Nigeria’s renewable energy system to significantly contribute to national sustainable development.

The article recommends that the government and policymakers integrate renewable energy into the overall energy policy, making it a core component of the national energy strategy rather than treating it as a separate entity.

**Keywords: Renewable Energy, Renewable Energy Policy, Sustainable Development, Nigeria**

**1. Introduction**

The UN Summit for Sustainable Development built on the earlier Millennium Development Goals (MDGs) and introduced a set of 17 Sustainable Development Goals (SDGs) aimed at ending poverty, inequality, and injustice, and ensuring improved climate conditions—ultimately achieving sustainable development by 2030. Although all 17 SDGs are essential for driving sustainable development at local, regional, and global levels, a major focus is on ensuring access to affordable, reliable, sustainable, and modern energy for all. This is based on the understanding that energy is a key enabler for sustainable development. As such, access to energy—particularly renewable energy—has become a top global priority for achieving the SDGs (Brent, 2021; Serowaniec, 2021; Bórawski et al., 2022; SEforALL, 2024).

Empirical studies by Sambo (2011); Emodi and Boo (2015); Somorin et al. (2019); Adesola and Brennan (2019), among others, reveal that uninterrupted access to affordable energy for billions of people can significantly stimulate economic growth. Moreover, energy access is vital for promoting human and technological development, both of which are central to achieving the SDGs (Uyigue, 2008; Nalule, 2019). Akinbami and Momodu (2011) also pointed out a strong correlation between energy consumption and economic development. An increase in energy use for economic activities can significantly improve living standards across any nation’s population (Afe Aidelojie, 2019). In other words, electricity consumption levels often mirror the economic development of a country (Akinbami and Momodu, 2011). Byrnes et al. (2013) and Peidong et al. (2018) argue that renewable energy promotes the effective coexistence of humanity and the environment, thereby enhancing sustainable development.

According to the United Nations (2023), achieving SDG 7 involves improving access to affordable energy by accelerating electrification, increasing investment in renewable energy, enhancing energy efficiency, and developing enabling policies and regulatory frameworks to support the goal by 2030. Globally, the United Nations (2023) reports that approximately 733 million people lack access to electricity. In 2021 alone, 675 million people were without electricity, including 586 million in Africa (SEforALL, 2024).

In 2018, Africa’s population rose to around 17% of the global total, growing at more than twice the global rate to reach nearly 1.3 billion people. Of these, roughly 85% (or 1.1 billion) lived in sub-Saharan Africa, where energy supply remains scarce—resulting in a significant energy demand–supply imbalance (UNDESA, 2019). In high-population African countries such as Nigeria, the Democratic Republic of the Congo (DR Congo), and Mozambique, energy demand outpaces supply. Their primary energy demand increased by over 50% between 2010 and 2018 (IEA, 2019). It is estimated that by 2030, approximately 660 million people—mostly in sub-Saharan Africa—will still lack access to electricity (SEforALL, 2024).

Bouzarovski and Simcock (2017) refer to this lack of essential energy services as ‘energy precarity’. This term denotes energy deprivation, vulnerability (Petrova, 2018), and the difficulty in accessing energy required for basic needs (Legendre and Ricci, 2015). It also reflects inadequate access to sustainable and modern energy sources (Bouzarovski et al., 2016). Energy precarity is particularly widespread in sub-Saharan African countries such as Nigeria, where millions lack daily energy access, rely on polluting fuels, or spend excessive amounts to meet basic energy needs (Emodi and Boo, 2015).

This may partly explain why Africa has historically contributed relatively little to global greenhouse gas emissions. According to the IEA (2019), energy-related CO₂ emissions from Africa account for only about 2% of global cumulative emissions, projected to rise to 4.3% between 2019 and 2040 in all rapid economic growth scenarios. As a result, several efforts have emerged to address climate change by transitioning from fossil fuels to renewable energy technologies such as solar, hydro, wind, biomass, and geothermal energy (Wood, 2018). Studies by the OECD (2017); Jacobson et al. (2017); Tacher (2019); IEA (2019), and others suggest that shifting to renewable energy brings significant social and economic benefits, including improved living standards. However, progress remains limited (Wood, 2018).

Nigeria, the most populous Black nation, continues to face severe energy precarity. A 2018 report revealed that only 55% of the population had access to an uninterrupted power supply (UNDESA, 2019). As Africa’s population grows—particularly in Nigeria—this widespread lack of energy access is likely to have severe negative consequences for sustainable development. To counter this, the United Nations (2023) has emphasised the importance of developing enabling policies and regulatory frameworks that support energy access and the achievement of the SDGs. Kolagar et al. (2020); Serowaniec (2021); and Bórawski et al. (2022) have stressed that effective renewable energy policy and regulation are crucial to sustainable development.

Kolagar et al. (2020) highlight that energy-related issues are multidimensional and require strategic planning that considers a range of alternatives. This approach ensures informed decision-making during the policy-making process and minimises potentially irreversible economic damage. Consequently, policy formulation becomes a key factor in ensuring effective renewable energy deployment for sustainable development in Nigeria.

According to Görlach et al. (2007); Uslu, Mozzaffarian, and Stralen (2016); Di Gregorio et al. (2017); the European Union (2017); Nalule (2019); and Adewuyi et al. (2020), strong government policy frameworks and plans are essential. They view policy-making as a cyclical process—starting from problem identification and ending in evaluation. Byrnes et al. (2013) also emphasise the need for effective regulatory frameworks to enhance renewable energy adoption. This includes regulatory impact assessments, benchmarking, cost–benefit analysis, and cost-effectiveness evaluations—all of which are vital for developing policies that meet intended goals, such as advancing renewable energy to support sustainable development in Nigeria.

As outlined by the aforementioned scholars, and considering the complexity of energy-related issues highlighted by Kolagar et al. (2020), renewable energy policy-making can be challenging. If not carefully handled, it may even hinder sustainable development. Therefore, this article focuses on examining renewable energy policy-making and its impact on sustainable development in Nigeria.

**2. Literature Review**

Nigeria has made considerable efforts to establish an effective energy system, resulting in significant growth within the country's energy sector (Akinlo, 2012). Internationally, Nigeria has actively participated in global initiatives aimed at reducing greenhouse gas emissions. These include its involvement in the United Nations Framework Convention on Climate Change (1994), the Kyoto Protocol (2004), the Copenhagen and Cancun Agreements (2010), the Durban Platform for Enhanced Action (2011), and the Paris Agreement (FGN, 2015). At the regional level, Nigeria is a key participant in the West African Power Pool (WAPP), which aims to create a unified regional electricity market that ensures a stable, reliable, and cost-effective electricity supply (WAPP, 2018). Domestically, the country has implemented numerous transitions through a range of programmes, policies, and initiatives within the local energy sector (see Table 1) (Gungah et al., 2019).

# Table 1 RE Policies, Programs and Regulatory Frameworks in Nigeria

|  |  |  |
| --- | --- | --- |
| 1 | National Electric Power Policy (NEPP) | 2001 |
| 2 | National Energy Policy (NEP) | 2003 |
| 3 | National Economic Empowerment and Development Strategy (NEEDS) | 2004 |
| 4 | National Power Sector Reform Act (EPSRA)  | 2005 |
| 5 | Renewable Electricity Policy Guidelines (REPG)  | 2006 |
| 6 | Renewable Electricity Action Program (REAP)  | 2006 |
| 7 | National Biofuel Policy and Incentives  | 2007 |
| 8 | Vision 20:2020  | 2010 |
| 9 | Roadmap for Power Sector Reform | 2010 |
| 10 | National Adaptation Strategy and Plan of Action on Climate Change for Nigeria (NASPA-CCN) | 2012 |
| 11 | National Energy Master Plan (Draft Revised Edition) | 2014 |
| 12 | Energy Implications of Vision 20:2020 and Beyond  | 2014 |
| 13 | Renewable Energy Master Plan  |  |
| 14 | National Renewable Energy and Energy Efficiency Policy (NREEEP) | 2015 |
|  | Multi-Year Tariff Order (MYTO) | N/A |
|  | Draft Rural Electrification Strategy and Plan (RESP) | 2015 |
| 15 | Intended Nationally Determined Contribution (INDC) | 2015 |
|  | National Energy Policy (Draft Revised Edition)  | 2018 |

However, Bamgbopa et al. (2019) critique Nigeria’s energy policy as represented in two key national policy documents: the National Energy Policy (NEP) (Energy Commission of Nigeria, 2003) and the National Renewable Energy and Energy Efficiency Policy (NREEEP) (Ministry of Power, 2015). Their analysis found that while these policies are largely adequate—addressing many of the necessary areas—there remains a need for continued attention and amendment. In particular, they emphasise the importance of expanding electric capacity with a growing share of renewables, enhancing local oil refining capacity, improving gas gathering and management, and eliminating gas flaring.

Despite these efforts, Nigeria's energy sector continues to face substantial challenges, which have affected access to renewable energy across the country. Energy access is widely recognised as a fundamental prerequisite for tackling major global challenges of the 21st century. It has gained renewed focus with the adoption of the Sustainable Development Goals (SDGs), specifically SDG 7, which aims to "ensure access to affordable, reliable, sustainable and modern energy for all" (UNEP, 2017; Mathew et al., 2018; Nalule, 2019). Thus, it is not an overstatement to hypothesise that energy access, or the establishment of an effective energy system, significantly enhances a nation's prospects for achieving sustainable development. Ultimately, access to energy serves as a catalyst for development (Pachauri, 2011) and is essential for improving quality of life (Mupunga, 2011), thereby contributing to long-term sustainable development.

Over the past two decades, the growing demand for energy has compelled many Sub-Saharan African countries, including the Democratic Republic of the Congo, Ghana, and Nigeria, to diversify investments into various energy sources to meet rising needs (Carli et al., 2018). In this context, renewable energy has emerged as the most viable option to meet energy demands at global, regional, and national levels (Emodi and Ebele, 2016; Jurasz et al., 2020).

Debates around the concept of renewable energy date back to the early 20th century. Some scholars used the term in contrast to finite fossil fuel resources (Bell, 1906; Clarke et al., 1909), while others sought to distinguish between "renewable" and "inexhaustible" energy sources—categorising draught animals and fuelwood as renewable, and solar, wind, tidal, and hydro energy as inexhaustible (Clarke et al., 1909, cited in Harjanne and Korhonen, 2019).

The International Energy Agency (IEA) defines renewable energy as “energy derived from natural processes that are replenished at a faster rate than they are consumed” (IEA, 2019). These sources include solar, hydro, wind, biomass, geothermal, and marine energy. Renewable energy is also referred to as green energy (Chakraborty and Mazzanti, 2020; Bucur and Bucur, 2020), clean energy (IEA, 2019; Somorin et al., 2019; Berry, 2020), or non-conventional energy. It is widely regarded as a key solution to global climate challenges (Harjanne and Korhonen, 2019). While it is important to note that renewable energy is not entirely without environmental impact (Abbasi and Abbasi, 2000), it generally causes far less harm than fossil fuels and contributes positively to economic growth. Consequently, many countries are increasingly exploring new development pathways that incorporate renewable energy as a core component of sustainable development strategies.

In response, policy scholars have explored how theories, models, and frameworks can be applied to improve policy processes and outcomes, particularly in the context of renewable energy systems (Ruseva et al., 2019). Developing effective renewable energy policy requires assessing the legal, regulatory, and economic frameworks necessary to support renewable energy capacity (Chapman, McLellan, and Tezuka, 2016). However, this process often faces challenges, especially among policy designers. This is due to the fact that many tools used to achieve renewable energy policy goals are economically driven—encompassing investment costs, pricing mechanisms, tax incentives, depreciation allowances, and monetary penalties for non-compliance (Chapman et al., 2016).

Drawing from the SDGs, it is evident that the energy system is directly linked to sustainable development goals and constitutes a major focus under SDG 7, as illustrated in Figure 1. This underscores the need to understand how renewable energy policy impacts sustainable development. While the relationship between renewable energy and economic growth has yielded mixed results in the literature, findings range from positive effects (Alege et al., 2019) to negative (Ocal and Aslan, 2013; Astariz and Iglesias, 2015), and in some cases, statistically insignificant outcomes (Tugcu and Tiwari, 2016; Schilling and Esmundo, 2009).

In terms of sustainable development, Moe (2005) argues that achieving this goal—particularly through renewable energy policy—must be considered within the framework of its three core pillars: economic, social, and environmental dimensions. According to Brightest (2024), true sustainable development is achieved only when these three pillars are in harmony. This conceptual framework is further illustrated in Figure 1.

Promote environmental Sustainability well-being

Energy availability, accessibility and affordability to maximizing quality of life.

Macroeconomic solidity and competitiveness in renewable energy for accelerating economic growth

Driving Force from Economic Dimension

(Disparity in Income & Energy)

**Economic Dimension**

**Social Dimension**

**Environmental Dimension**

Driving Forces from
Social Dimension

Driving Forces from
Energy Sector of
Economic Dimension

**State of
energy
sector**

**Impact
from energy
sector**

**Impact
from energy
sector**

**Figure 1 Interrelationships among sustainability dimensions of the energy sector.**

*Adapted from IAEA Energy Indicators for Sustainable Development (2007)*

Building on numerous studies that suggest not only renewable energy systems but also renewable energy policy can significantly influence a nation’s sustainable development, it is crucial to examine the specific impact of renewable energy policy on sustainability outcomes. Edomah et al. (2016) investigated the linkages and consequences of policy decision-making in the governance of energy infrastructure in Nigeria. Their findings highlight the critical role of policymakers in driving development outcomes within the country.

Romano (2015) conducted an analysis of the impact of competition policy on economic growth using a panel data model based on a sample of 138 countries from 2009 to 2013. The study demonstrated a direct relationship between the effectiveness of competition policy and changes in real GDP per capita, providing empirical evidence of the positive effects of policy enforcement on macroeconomic performance.

Similarly, Salman (2016) examined the relationship between policy frameworks and economic growth, focusing particularly on policies that foster entrepreneurial activities. The study found that policies which support entrepreneurship significantly contribute to accelerating economic development. This occurs through various policy instruments, including investment in education, support for research and development, favourable tax policies, and stable monetary policy. Hence, this may have a significant impact on the achievement of sustainable development. Accordingly, this article focuses on evaluating renewable energy policy-making and its potential impact on sustainable development in Nigeria.



# Figure 2Energy is linked to all the remaining Sustainable Development Goals

*Sources: SEforALL (2017)*

**3. Methodology**

This article adopted a systematic review methodology, drawing on information and materials obtained from secondary sources, including journal articles, books, and other online resources. The review focused on empirical studies—both quantitative and qualitative—as well as methodological reviews such as systematic reviews and meta-analyses. In addition, materials from news outlets, magazines, and other relevant media sources that address the subject matter were included. The sources span the period from 2000 to 2025, ensuring a comprehensive review aligned with the study’s research questions and objectives.

The Cochrane review style was employed to guide the systematic review process, with the PICOS framework (Richardson, 1995) used to structure the inclusion criteria:

P – *Problem of interest*: Renewable energy policy-making in Nigeria

I *– Intervention*: Policies implemented to enhance the renewable energy system in Nigeria

C – *Comparison/control*: Not applicable in this study

O – *Outcomes*: Achieving sustainable development through renewable energy policy-making in Nigeria

S – *Study type*: Quantitative, qualitative, and review studies; also included are materials from news sources, magazines, organisational websites, and similar sources.

Information was sourced using Google, Google Scholar, Semantic Scholar, and RefSeek. Multiple results were retrieved in response to search queries; however, only eight high-quality articles were selected for inclusion, to maintain focus and relevance to the study’s objectives. The PRISMA Flow Diagram (see Figure 3) was used to outline and guide the search strategy.

Records identified through database searching (n =114)

Additional records identified through other sources (n = 57)

Records after duplicates removed (n = 73)

Records screened (n = 37)

Records screened (n = 46)

Full-text articles excluded

8

Full-text articles assessed for eligibility (n = 31)

Studies included in the quantitative synthesis (n = 23)

**Figure 3: PRISMA Flow Diagram**

*Source:* Page et al.,2021

The articles selected for this study include the works of Nnaji and Muo (2015); Ajayi et al. (2016); Emodi and Ebele (2016); Emodi (2016); Soelaiman (2015); Joseph (2017); Somorin et al. (2017); Adedipe et al. (2018); Adejumo and Adejumo (2018); Rui et al. (2018); Breeze (2019); Sebastiano et al. (2019); World Bank Group (2020); Idris et al. (2020); Garapati et al. (2020); Adesanya et al. (2021); Ayokunle (2021); Onyekwelu (2021); Munyengeterwa and Whittaker (2021); Chanchang et al. (2022); Wang et al. (2023); and Chinedu (2025). The article employed thematic analysis to examine the information retrieved. These data were organised into key themes aligned with the main aims, research objectives, and questions of the study. Thematic analysis was then applied to interpret the findings and achieve the core purpose of the research.

**4 Results**

This article selected twenty-three (23) studies from the total pool of downloaded materials, with the results section structured according to the research questions. For example, Nnaji and Muo (2015) examined the feasibility of solar photovoltaic (PV) systems for rural electrification in Nigeria and found that solar PV systems offer a reliable source of electricity for rural development due to their ease of installation, low maintenance requirements, and minimal infrastructure needs. Their study also suggested that adopting solar energy could improve socio-economic conditions by generating income and creating employment opportunities.

Similarly, Ajayi et al. (2016) conducted an econometric analysis of standalone renewable energy facilities for off-grid generation in rural communities in North-East Nigeria. Their findings indicated that solar PV technology is a viable option for achieving the Sustainable Development Goals (SDGs) in Nigeria. Emodi and Ebele (2016) reviewed policies promoting renewable energy development and found that effective policy strategies can significantly support the growth of renewable technologies and contribute to sustainable development in the short, medium, and long term.

Emodi (2016) also examined energy policy as a strategy for sustainable development in Nigeria. The study highlighted the need to identify low-cost energy production options as key to promoting sustainability. It recommended that policymakers develop robust energy policies aimed at fostering sustainable development. Adejumo and Adejumo (2018) explored the implications of sustainable development for energy policy in Nigeria. They stressed that the critical role of energy in economic development necessitates effective policy responses to promote sustainability. The study proposed that energy policies focusing on low-cost options and state–market approaches could be instrumental in this regard.

Chanchang et al. (2022) noted that, although solar energy has been integrated into Nigeria’s energy mix, its utilisation remains limited relative to its potential. This underutilisation reflects a broader trend in Nigeria’s renewable energy sector. Rui et al. (2018) argued that comprehensive regulatory policies are essential to fully exploit new renewable energy trends such as solar power for sustainable development. A World Bank Group (2020) report highlighted Africa’s significant wind energy potential—estimated at nearly 180,000 terawatt-hours (TWh) annually—which could complement solar energy and supply electricity to millions of households while generating employment. Munyengeterwa and Whittaker (2021) added that Africa’s wind energy potential, including that of Nigeria, could meet the continent’s electricity demand 250 times over.

Idris et al. (2020) reviewed past and current research on wind energy in Nigeria, concluding that while wind speeds are lower in southern regions, northern areas such as Katsina State hold strong potential for large-scale wind turbine deployment. Similarly, Adedipe et al. (2018) conducted a geographical analysis of Nigeria’s onshore wind potential and found the sector remains underdeveloped. Adesanya et al. (2021) carried out an economic feasibility study of Ocean Thermal Energy Conversion (OTEC) in Nigeria and concluded that a floating 100 MW OTEC plant could be developed with investment recovery expected within 15 years.

Ayokunle (2021) observed that despite the numerous energy policies formulated to promote sustainable development in Nigeria, existing regulations and management practices have failed to meet national energy demands. Lawal (2021) assessed the legal and policy framework for renewable energy in Nigeria and found that, despite supportive policies, efforts to diversify energy sources have largely been unsuccessful. The study recommended strengthening legal and policy instruments to encourage renewable energy adoption.

Chinedu (2025) re-examined renewable energy development in Nigeria, focusing on policy, legal frameworks, and emerging trends. He identified the National Renewable Energy and Energy Efficiency Policy (NREEEP) as a key document for achieving sustainable growth. He also noted promising trends such as the rise of off-grid solar systems, public–private partnerships, and international collaborations that can position Nigeria for progress in renewable energy and sustainable development.

Further studies have identified six emerging geothermal technologies with potential for enhancing renewable energy development in Nigeria. These include hot dry rock (HDR) systems (Breeze, 2019; Soelaiman, 2015), hydrothermal systems (Joseph, 2017; Sebastiano et al., 2019), magma-based systems, enhanced geothermal systems (EGS), waste heat recovery systems (Wang et al., 2023; Garapati et al., 2020), and geopressured systems. These technologies could be applied to Nigeria’s renewable energy mix to support sustainable development.

The collective findings from the reviewed studies—including those by Nnaji and Muo (2015), Ajayi et al. (2016), Emodi and Ebele (2016), Emodi (2016), Soelaiman (2015), Joseph (2017), Adejumo and Adejumo (2018), Adedipe et al. (2018), Rui et al. (2018), Breeze (2019), Sebastiano et al. (2019), World Bank Group (2020), Idris et al. (2020), Garapati et al. (2020), Adesanya et al. (2021), Ayokunle (2021), Munyengeterwa and Whittaker (2021), Chanchang et al. (2022), Wang et al. (2023), and Chinedu (2025)—reveal that renewable energy policy-making plays a crucial role in shaping the relationship between renewable energy systems and sustainable development in Nigeria. Policy decisions not only directly impact the development and use of renewable energy systems but also serve as a moderating factor in determining how these systems contribute to sustainable development outcomes.

**5. ChallengesofRenewable Energy policy on Sustainable Development**

Adedipe et al. (2018) conducted a comprehensive study on Nigeria’s onshore wind energy potential, assessing the suitability of various geographic zones for wind power generation. The study concluded that Nigeria’s wind energy sector remains underdeveloped, largely due to inadequate research and technological capacity, insufficient government support for wind energy initiatives, and challenges related to land ownership and acquisition.

Similarly, Somorin et al. (2017) noted that Nigeria’s over-reliance on hydropower—subject to seasonal water level fluctuations—has been a significant barrier to the effective deployment of other renewable energy systems. This issue highlights the urgent need for policymakers to implement robust and inclusive renewable energy policies that address energy demand and supply as part of a broader strategy for achieving sustainable development.

Onyekwelu (2021) also identified the abandonment of projects and the lack of emphasis on wind energy within Nigeria’s renewable energy policy framework as major impediments. Compared to other renewable energy sources, wind energy has received limited policy attention, undermining its potential contribution to energy sustainability and, by extension, national sustainable development goals.

Bello et al. (2019) further observed that the absence of policies supporting the effective application of technology in renewable energy systems hinders the long-term sustainability of energy resources, thereby negatively impacting efforts to achieve sustainable development.

Chinedu (2025), in his re-examination of renewable energy development in Nigeria, highlighted several persistent challenges. These include regulatory bottlenecks, high capital costs, technical capacity gaps, and market distortions caused by fossil fuel subsidies—all of which constrain the use of policy as a tool for transforming Nigeria’s renewable energy system to support the achievement of sustainable development goals.

The findings from Somorin et al. (2017), Adedipe et al. (2018), Onyekwelu (2021), and Chinedu (2025) collectively reveal that a range of challenges continue to undermine the effective implementation of renewable energy policies in Nigeria. These obstacles limit the capacity of the country’s renewable energy system to significantly contribute to sustainable development.

**Discussions**

This article examined renewable energy policy and sustainable development in Nigeria using a systematic scoping review. The findings indicate that renewable energy policy exerts both direct and moderating effects on the likelihood of achieving sustainable development in Nigeria. As a moderating factor, such policy influences the relationship between the renewable energy system—particularly in terms of supply and demand—and sustainable development. As a direct impact, renewable energy policy can play a central role in facilitating progress toward national sustainability goals. These results align with the findings of Uyigue (2008); Akinbami and Momodu (2011); Sambo (2011); Emodi and Boo (2015); Somorin et al. (2019); Adesola and Brennan (2019); Nalule (2019), and others, who found that access to affordable energy can significantly stimulate economic growth.

Building on Afe Aidelojie’s (2019) argument that increased energy consumption in economic activities tends to enhance national living standards, this study further suggests that renewable energy—supported by well-formulated policy—can drive sustainable development in the long term. This could also contribute to addressing the needs of approximately 733 million people globally, and 586 million in Africa, who currently lack access to affordable electricity (United Nations, 2023; SEforALL, 2024). Moreover, it may help alleviate the persistent energy deficits and rising demand identified by the United Nations Department of Economic and Social Affairs (UNDESA, 2019) across sub-Saharan Africa.

Renewable energy policy could also reduce the prevalence of energy precarity in Nigeria, a condition described by Legendre and Ricci (2015), Bouzarovski et al. (2016), Bouzarovski and Simcock (2017), and Petrova (2018), as energy deprivation and vulnerability linked to insufficient access to modern energy sources. These findings also reinforce the work of Emodi and Ebele (2016) and Jurasz et al. (2020), who argue that renewable energy sources represent the most viable solution to meeting global, regional, and national energy demands in the pursuit of sustainable development.

This analysis is further supported by the studies of the OECD (2017), Jacobson et al. (2017), Tacher (2019), and IEA (2019), which highlight a global shift towards renewable technologies as awareness of their positive impact on sustainability increases. The use of renewable energy technologies has been shown to improve both economic and social outcomes, thereby raising living standards and promoting inclusive growth.

The results are consistent with Brent (2021), Serowaniec (2021), Bórawski et al. (2022), and SEforALL (2024), who emphasise that renewable energy policy is a critical instrument for achieving sustainable development. Similarly, Görlach et al. (2007), Uslu et al. (2016), Di Gregorio et al. (2017), the European Union (2017), Nalule (2019), and Adewuyi et al. (2020) highlight the importance of sound government policy frameworks and planning in addressing Nigeria’s energy challenges and driving sustainability.

This also supports the conclusions of Romano (2015), Edomah et al. (2016), and Salman (2016), who assert that effective policy decision-making, particularly by government actors, plays a crucial role in national development processes.

Despite the recognised benefits of renewable energy and associated policies, several challenges persist in Nigeria. These include regulatory bottlenecks, limited policy implementation capacity, inadequate support for renewable energy technology deployment, and broader governance issues. Such challenges hinder the effective use of renewable energy policy and limit the potential of Nigeria’s renewable energy system to contribute meaningfully to sustainable development. This is consistent with Chapman et al. (2016), who argue that weak legal, regulatory, and economic frameworks can undermine renewable energy capacity and restrict its ability to meet population demands, ultimately impeding sustainability.

These barriers may also explain the findings of Schilling and Esmundo (2009), Ocal and Aslan (2013), Astariz and Iglesias (2015), and Tugcu and Tiwari (2016), who suggest that renewable energy policy may have either negative or statistically insignificant effects on economic development—thereby limiting its impact on sustainable development in contexts such as Nigeria.

**Conclusion**

This article examined renewable energy policy and sustainable development in Nigeria using a systematic scoping review. In conclusion, the findings reveal that renewable energy policy exerts both moderating and direct effects on the likelihood of achieving sustainable development in Nigeria. As a moderating factor, it influences the relationship between the renewable energy system—particularly in terms of demand and supply—and sustainable development. In terms of direct impact, renewable energy policy contributes directly to the attainment of sustainability goals in the country. However, several challenges continue to hinder the effective implementation of such policies. These include regulatory bottlenecks, limited capacity to use policy as a transformative tool for the renewable energy sector, and the absence of supportive frameworks for the deployment of relevant technologies. These obstacles undermine the potential of Nigeria’s renewable energy system to generate meaningful progress toward sustainable development.

**Recommendations**

Based on the findings of this study, the following recommendations are proposed:

1. Government and policymakers should incorporate renewable energy as a central component of the national energy strategy, rather than treating it as a separate or peripheral element.
2. Government and policymakers should set specific, measurable, achievable, relevant, and time-bound (SMART) targets for the deployment of renewable energy technologies in support of sustainable development.
3. There is a need to foster international collaboration by partnering with other countries to exchange best practices, technologies, and experiences in renewable energy policy. Such cooperation could produce positive ripple effects in the pursuit of sustainable development.
4. Clear, consistent, and predictable policies and regulations must be established to support the development and deployment of renewable energy technologies, thereby facilitating progress towards sustainable development in Nigeria.
5. The Nigerian government should introduce incentives for renewable energy development—such as tax credits, grants, and feed-in tariffs—to encourage both public and private sector investment in renewable energy technologies.
6. Policymakers should introduce regulations that address environmental concerns, ensuring that the development and deployment of renewable energy technologies do not adversely impact natural resources such as water, land, and biodiversity.

Disclaimer (Artificial intelligence)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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