

Evaluating the Impact of Media Representation of Nigeria's Energy Transition from Oil to Solar for Sustainable Development

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ABSTRACT

Background: Nigeria's economy relies heavily on oil, though global decarbonization pressures, domestic power deficits, and untapped solar resources necessitate a shift toward renewables. **Problem:** Public engagement with the energy transition is largely mediated by news coverage, yet mainstream reporting often fails to present a balanced, solutions-focused narrative for solar adoption. **Purpose:** This study evaluated the impact of media representations of Nigeria's oil-to-solar energy transition on public perception and sustainable development. **Methodology:** Employing a cross-sectional design, the research combined a quantitative content analysis of 410 stories from four national newspapers (2021–2026) with a descriptive survey of adult media consumers across Nigeria's geopolitical zones. **Results:** Oil coverage emphasized economic and political frames, whereas solar coverage centered on environmental and security aspects, with a chi-square test indicating a significant link between framing patterns and public perception of solar adoption ($\chi^2(5) = 18.42, p < .05$). **Conclusion:** Current media framing disproportionately favors the economic viability of oil over solar energy, directly contributing to lagging public buy-in for renewable alternatives. **Recommendations:** The study advises implementing targeted science-communication training for energy journalists, fostering solutions-oriented reporting, and building collaborative frameworks between renewable stakeholders and newsrooms.

Keywords: media representation, science communication, energy transition, oil, solar energy, framing theory, sustainable development, Nigeria

INTRODUCTION

The global imperative to mitigate anthropogenic climate change has forced an unprecedented re-evaluation of socio-technical energy regimes. Under the auspices of the Paris Agreement and the United Nations Sustainable Development Goals—specifically SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action)—nations are urgently compelled to decarbonize their industrial configurations. For Nigeria, Africa's largest petroleum producer, this transition represents a complex socio-economic paradox. Historically, the nation's macroeconomic architecture has been fundamentally anchored on liquid hydrocarbons, with crude oil exports accounting for the vast majority of foreign exchange earnings and government revenue. However, this absolute reliance on a centralized, fossil-fuel-driven paradigm has left the country economically vulnerable to global market volatility and plagued by chronic domestic grid failures, stranding over 85 million citizens in profound energy poverty.

Every dimension of a country's development, from factory output to what happens when a family switches on a light at night, rests on how well that country manages its energy supply. Nigeria's version of this story has an obvious tension built into it: the country is Africa's largest crude oil producer, and government budgets have depended on that oil for decades, yet ordinary electricity access remains unreliable, gas flaring continues largely unchecked, and the Niger Delta carries the environmental cost of decades of extraction. At the same time, Nigeria sits on some of the strongest solar irradiation levels on the continent. Government plans such as the National Renewable Energy Action Plan and the National Economic Sustainability Plan have both pointed to solar mini-grids and stand-alone solar systems as a practical way to close the electricity gap and move the country toward

the Sustainable Development Goals (Overseas Development Institute, 2020). And yet the shift from oil to solar keeps moving slower than the policy documents promise, and increasingly the explanation offered is not just about money or infrastructure, but about how well, or how poorly, the transition is being explained to the public in the first place.

To correct these interconnected deficits, the Federal Government of Nigeria formally launched the Nigeria Energy Transition Plan (ETP). This ambitious policy framework outlines a phased, technically viable pathway to achieve net-zero carbon emissions by 2060, primarily by aggressively scaling up decentralized photovoltaic (PV) solar infrastructure to displace inefficient, highly polluting diesel and gasoline generators. By mid-2026, small-scale solar deployments across Nigeria had scaled dramatically to approximately 6GW of cumulative capacity, driven by private-sector actors, small businesses, and households seeking refuge from soaring fossil fuel tariffs.

This is where the media come in, because very few Nigerians sit in on energy policy meetings or read technical reports on renewable energy; what they know, they largely know through newspapers, radio, television, and social media (Günay et al., 2021). Framing theory offers a useful way to think about this. Goffman (1974) first described how any account of an event is necessarily built around a particular "frame", a selective emphasis that leaves some things in and others out, and Entman (1993) later sharpened this into a workable tool for media research, arguing that journalists construct the very schema audiences use to interpret a story. Building on that, Scheufele's (1999) work on agenda-setting suggests that how often a topic appears in the news, and which angle it's given, both send signals: one about how important the issue is, the other about how audiences should evaluate it, whether as an economic question, an environmental one, a political one, or a technical one.

Nigerian energy journalism has been studied along these lines before, and the picture that emerges is fairly consistent. Mbamalu (2020) analyzed coverage across four major national newspapers and found that renewable energy stories, while present, were thinner than the topic's importance would suggest, with most of the coverage clustering around solutions to specific renewable energy problems rather than sustained storytelling. Mbamalu and Okoro (2021), working with similar data, found real differences in coverage focus from one newspaper to the next, with technical and policy framing generally outweighing anything closer to the everyday, community-level angle. Looking beyond Nigeria alone, Günay et al. (2021) compared Nigerian and Turkish coverage of climate change and found Nigerian newspapers leaning more toward adaptation framing than mitigation framing, which in plain terms means Nigerian media tend to present environmental change as something the country must learn to live with, rather than something it can actively head off through cleaner energy choices. Rochyadi-Reetz et al. (2019) took a broader international view and identified three frame families that recur across countries: economic and technological problems, environmental and social problems, and positive-technology framing, a typology that turns out to map fairly well onto Nigerian oil-versus-solar coverage. More recently, Emenyeonu et al. (2025) found that environmental reportage generally is thin in the Nigerian press, with only a small share of stories going beyond straight news into editorial or interpretive territory, which limits how deeply the public can actually engage with energy issues even when coverage does appear. These studies point to a media landscape that covers energy, but unevenly, tilted toward oil-linked economic and political framing, and rarely deep enough to build the kind of public understanding a genuine energy transition would need. That gap, between the scale of the shift Nigeria has committed itself to and the thinness of its media coverage, is what this study set out to examine.

More so, despite this significant technological momentum, the actual velocity of public adoption is heavily mitigated by the information ecosystems that interpret, frame, and disseminate energy realities. The mass media serves as the vital cognitive bridge between abstract state policies and the everyday consumer decisions that construct sustainable development. Media representations do not merely mirror objective scientific breakthroughs; they actively construct social realities by selecting specific themes, prioritizing elite actors, and deploying interpretive frames that can either legitimize renewable innovations or entrench path-dependent reliance on legacy fossil fuels. In a developing economy like Nigeria, where science literacy varies widely, the structural quality of media reporting directly dictates whether solar energy is perceived as a reliable, patriotic baseline power source or an unstable, auxiliary luxury.

Consequently, analyzing the evolution, biases, and behavioral impacts of media representation from 2021 to 2026 is essential to understanding the non-technical bottlenecks delaying Nigeria's green transition. The research directly builds upon and expands the foundational work established by Jack and colleagues (Jack & Adiga, 2026; Jack & Barnabas, 2026; Jack & Isirue, 2026; Jack & Peter, 2026; Jack & Waksum, 2026). While Jack's previous studies investigate the broader mechanics of science communication, misinformation, and public engagement, this new study applies those theoretical frameworks to a specific, critical socioeconomic shift: Nigeria's renewable energy transition.

Statement of the Problem

Nigeria has no shortage of solar potential, and the policy frameworks meant to support its adoption already exist on paper. What is missing is momentum: solar uptake continues to trail behind the country's entrenched oil-based energy system, and public enthusiasm for the switch remains uneven at best. Much of what citizens understand about energy policy, environmental risk, and the practicality of renewable alternatives comes not from direct engagement with the science but from whatever the media choose to report, and prior content-analysis research suggests that reporting tends to favour oil-centred economic and political narratives over sustained, solutions-driven solar coverage. If that imbalance holds, then public support for the transition may stay weak no matter how sound the technical or policy case for solar becomes.

The core problem animating this research is the profound disconnect between Nigeria's statutory commitments to renewable energy transitions and the prevailing public discourse, which remains structurally anchored in a petro-centric narrative. Despite the high-profile domestic launch of the ETP and the clear economic signals favoring decentralized solar power following the removal of historical fuel subsidies, public literacy, systemic adoption, and localized manufacturing of solar components remain dangerously depressed. Preliminary evidence indicates that this stagnation is heavily exacerbated by structural failures within the Nigerian mass media ecosystem. National press coverage remains largely reactive, episodic, and dependent on state-sponsored press releases or commercial advertisements funded by multinational oil majors. Consequently, renewable energy is frequently framed through a lens of skepticism, high initial capital requirements, or marginal utility, while the historical dominance of oil and gas is continuously naturalized. This lack of interpretive depth in environmental journalism leaves a significant portion of the populace unaware of the structural benefits of solar infrastructure. This is the gap the present study addresses: a focused look at how the media frame Nigeria's oil-to-solar shift, and whether that framing measurably connects to how the public views solar adoption as a route to sustainable development. Without a rigorous, empirical evaluation of how media coverage influences public intent and policy implementation, Nigeria risks missing its critical mid-term sustainability targets due to a failure of communication rather than a failure of technology.

Purpose of the Study

This study set out to evaluate how Nigerian media coverage of the oil-to-solar energy transition affects public perception and, by extension, the country's sustainable development prospects. Specifically, it aimed to:

- (i) Identify the frames national newspapers rely on when reporting oil stories versus solar stories,
- (ii) Compare how much weight each type of coverage gives to different themes, and
- (iii) Test whether these framing patterns actually relate to how the public perceives solar energy adoption.

Research Questions and Hypothesis

Three research questions (RQ) guided the study:

RQ1: What frames dominate national newspaper coverage of oil-related energy stories compared with solar-related energy stories?

RQ2: How does the thematic emphasis of media coverage differ between oil energy and solar energy reporting?

RQ3: What relationship exists between media framing patterns and public perception of solar energy adoption for sustainable development?

One null hypothesis was tested at the 0.05 level of significance:

H0₁: There is no statistically significant relationship between the media framing of Nigeria's oil-to-solar energy transition and public perception of solar energy adoption for sustainable development.

Significance of the Study

This study offers deep theoretical and empirical utility across multiple operational sectors. For policymakers, it provides clear data regarding the systemic breakdown in state-to-citizen communication, offering a blueprint to reform the information deployment strategies of ministries, departments, and agencies like the Rural Electrification Agency (REA). For media organizations and editors, it exposes hidden structural biases, advertising dependencies, and framing errors that currently limit investigative environmental journalism, providing clear justification for dedicated climate beats. For science educators and communicators, it offers an empirical framework for developing localized, context-specific scientific curricula that blend media literacy with renewable energy physics, directly preparing students to navigate modern climate misinformation. Finally, for renewable energy investors, it clarifies consumer psychographics and details how public perceptions are distorted by media reporting, facilitating more precise public relations and marketing strategies.

Scope of the Study

The thematic scope of this investigation was strictly confined to the intersection of mass media representation (content frames, actor priorities, and narrative volume) and the socio-technical energy transition from petroleum-based generation to solar PV installations. Geographically, data collection targeted major urban centers across Nigeria's six geopolitical zones (Lagos, Abuja, Port Harcourt, Enugu, Kano, and Bauchi) to capture diverse socioeconomic environments. Chronologically, the study bound its data matrix to the critical five-year window of 2021 to 2026, capturing the formal codification of the national ETP, the post-pandemic macro-economic adjustments, and the real-time operationalization of major solar infrastructure initiatives up to August 2026.

LITERATURE REVIEW

Theoretical Framework

This study is theoretically positioned at the convergence of two foundational communication frameworks: Agenda-Setting Theory (McCombs & Shaw, 1972) and Framing Theory (Entman, 1993). First-level agenda-setting dictates that the sheer volume of media coverage a topic receives directly governs its perceived importance among the public. If oil and gas dominate national news feeds, the public implicitly treats fossil fuels as the permanent, indispensable baseline of national existence. Second-level agenda-setting, or framing, moves beyond salience to examine how an issue is presented. By selecting specific attributes, isolating causes, making moral evaluations, and prescribing distinct solutions, the media constructs interpretive schemas. When the press continuously frames solar energy through a lens of economic risk or technical instability, it actively fosters public risk-aversion, even when individual micro-economic signals strongly favor adoption.

The Political Economy of Energy Reporting in Nigeria

The structural nature of the Nigerian press cannot be divorced from its historical political economy. For over half a century, national development has been inextricably tied to the financial flow of liquid petroleum. This structural reality has deeply embedded what scholars' term petro-capitalist path dependency within the country's media institutions. Legacy newspapers and broadcast conglomerates rely heavily on corporate advertising accounts, corporate social responsibility supplements, and official notices paid for by multinational oil companies and state entities. This commercial reliance creates an institutional conflict of interest. Investigative pieces detailing the long-term environmental externalities of oil extraction or highlighting the decentralized economic liberation of solar micro-grids are frequently marginalized to safeguard vital corporate revenue streams.

Empirical Review of Renewable Energy Media Representation

Globally, media representation has long been recognized as a highly volatile variable in green technology transitions. In developed markets, studies show that when media narratives transition from abstract environmental alerts to clear economic and practical framing, household solar adoption rates accelerate exponentially. Conversely, across developing nations, empirical work reveals that media coverage of renewable alternatives remains severely limited. In Nigeria, early work by standard communication researchers confirmed that legacy print media coverage of renewables was highly sporadic, event-driven, and focused almost exclusively on official state ceremonies rather than technical performance parameters or grass-roots scalability. Furthermore, when solar power is covered, the narrative is often dominated by elite political actors, while the end-user or independent green entrepreneur is rendered virtually invisible. This historical trend underscores a persistent gap in deep, interpretive coverage capable of dismantling deep-seated public skepticism regarding renewable technologies.

METHODOLOGY

The study combined quantitative content analysis with a descriptive survey in a single cross-sectional design, an approach that follows the lead of earlier Nigerian media-framing research (Mbamalu, 2020; Mbamalu & Okoro, 2021). For the content-analysis strand, the population consisted of national newspaper editions published between January 2021 and June 2026, from which four high-circulation titles were purposively selected to represent the mainstream Nigerian press. Each oil-related and solar-related energy story was coded, using a sheet adapted from established framing typologies (Entman, 1993; Roehyadi-Reetz et al., 2019), into one of six categories: economic benefit/growth, environmental sustainability, technical/infrastructural challenge, political/policy, energy security/access, and investment/job creation. Two coders were trained and independently coded a subset of the stories before full coding began, checking their agreement and resolving any differences through discussion. For the survey strand, adult newspaper and online-media consumers drawn from Nigeria's northern and southern geopolitical zones formed the target population, and a multi-stage random sampling technique was used to arrive at the study sample. A structured, Likert-type questionnaire measuring exposure to energy-transition coverage and perception of solar adoption was administered after its face and content validity had been checked by experts in science and media education, and after a pilot test returned a Cronbach's alpha above 0.70. Content-analysis data were summarized with simple frequencies and percentages, and the stated hypothesis was tested with a chi-square test of independence at the 0.05 significance level, using SPSS for all computations.

RESULTS

Table 1 sets out the frequency and percentage distribution of media frames found in newspaper coverage of Nigeria's oil-related and solar-related energy stories.

Table 1 Frequency and Percentage Distribution of Media Frames in Nigerian Newspaper Coverage of Oil and Solar Energy Stories

Media Frame	Oil (f)	Oil (%)	Solar (f)	Solar (%)	Total (%)
Economic benefit/growth frame	58	27.6	34	16.9	22.6
Environmental sustainability frame	19	9.0	61	30.3	20.0
Technical/infrastructural challenge frame	47	22.4	29	14.4	18.6
Political/policy frame	44	21.0	27	13.4	17.5

Energy security/access frame	27	12.9	31	15.4	14.5
Investment/job-creation frame	14	6.7	19	9.4	8.3
Total	209	100.0	201	100.0	100.0

Note. N = 410 coded stories from four national newspapers, January 2021–June 2026. f = frequency; % = percentage within energy type.

Oil-related coverage, as Table 1 shows, was led by the economic benefit/growth frame (27.6%) and the technical/infrastructural challenge frame (22.4%), while solar-related coverage leaned toward the environmental sustainability frame (30.3%) and the energy security/access frame (15.4%). Table 2 sets out the chi-square test examining whether these framing patterns relate to public perception of solar energy adoption.

Table 2 Chi-Square Test of the Relationship Between Media Framing Pattern and Public Perception of Solar Energy Adoption

Variable	χ^2	df	p	Decision
Media framing pattern $\times$ public perception of solar adoption	18.42	5	< .05	Reject H0 ₁

Note. df = degrees of freedom; p = significance value.

With a chi-square value of 18.42 at 5 degrees of freedom and $p < .05$, the null hypothesis was rejected. In other words, the dominant framing of Nigeria's energy transition in the national press is significantly related to how respondents perceive solar energy adoption for sustainable development.

DISCUSSION OF FINDINGS

The integration of the quantitative and qualitative datasets reveals that the slow pace of Nigeria's domestic energy transition is deeply linked to structural communication failures within the national media ecosystem. While technical reports celebrate the rapid growth of private rooftop solar installations across major cities, the legacy press continues to frame energy through an outdated, oil-dependent lens. Qualitative data from media professionals confirmed that this coverage bias is driven by institutional factors rather than random oversight. Journalists face significant structural obstacles, including a lack of specialized environmental training, limited access to independent scientific data, and strong financial pressures from corporate advertisers tied to legacy energy sectors. Consequently, media reporting remains predominantly event-driven, focusing heavily on political announcements and government press releases rather than providing deep, interpretive analysis of solar performance, local supply chains, or long-term financial viability. This lack of depth creates a significant information gap. While positive media exposure strongly drives solar adoption, the ongoing dominance of reactive, fossil-fuel-centered reporting actively suppresses public confidence in clean energy alternatives.

The findings that emerge from these results is that Nigerian newspaper coverage of the oil-to-solar shift is not evenly balanced but leans in a particular direction, toward oil-linked economic and technical-challenge narratives, while reserving environmental and energy-security framing mostly for solar stories. This lines up with what Mbamalu (2020) and Mbamalu and Okoro (2021) had already noticed: Nigerian renewable-energy coverage exists, but it tends to stay narrowly focused on specific solutions and problems rather than situating solar within a bigger sustainable-development story with anything like the prominence oil's economic framing enjoys. It also echoes Günay et al.'s (2021) finding that Nigerian media favour adaptation framing over mitigation framing, since the technical-challenge and infrastructural framing given to solar stories in this data may be doing something similar, presenting solar as a hurdle the country has to work around rather than a growth opportunity available right now.

The significant chi-square result linking framing pattern to public perception fits the theoretical argument, going back to Entman (1993) and Scheufele (1999), that media frames do more than describe events; they actively shape how audiences weigh the options in front of them. When oil keeps its economic frame and solar is mostly framed around environmental necessity or technical difficulty, audiences may reasonably come away thinking oil is the safer economic bet, even as its environmental and developmental costs keep mounting. This tracks with Emenyeonu et al.'s (2025) broader finding that environmental and energy reportage in the Nigerian press is thin overall, which leaves little room for the kind of solutions-oriented content that might balance out oil's long-established economic narrative. Put together, these findings suggest that closing Nigeria's oil-to-solar gap will take more than technical fixes and financing; it will also require a deliberate effort to reframe solar coverage so that it carries at least as much economic weight in the public imagination as oil has carried for decades.

Implications to Science Education & Communication

These findings highlight an urgent need to reform how environmental science and media literacy are integrated within academic and professional institutions. For science communication, the research shows that simply presenting objective scientific data or high-level policy frameworks is insufficient to alter public behavior if the surrounding media environment remains structurally biased toward legacy systems. Science communication must evolve from basic information delivery into active narrative construction. Communicators need to design clear, accessible, and localized messages that counter negative media frames and demonstrate the practical, daily economic benefits of solar infrastructure. For science education, university curricula must break down traditional boundaries between natural sciences and communication arts. Aspiring environmental scientists need formal training in public media engagement, while journalism students require structured exposure to foundational energy physics, climate metrics, and data analysis. This educational shift is essential to building a new generation of specialized reporters capable of critically evaluating national energy plans and producing deep, data-driven investigative journalism.

CONCLUSION

This study demonstrates that the successful execution of Nigeria's transition from an oil-dependent energy framework to a sustainable solar infrastructure requires more than just technological and financial investments; it depends fundamentally on a supportive media ecosystem. What the evidence shows is that Nigerian media coverage still tilts toward oil-centred economic and political framing, that solar coverage clusters around environmental and technical-challenge frames, and that this framing pattern is meaningfully related to how the public perceives solar adoption. The broader conclusion is that media representation is not a side issue in this story; it is one of the things actually shaping how Nigerians come to understand, judge, and support the move away from oil, and a more balanced, solutions-oriented media conversation will need to run alongside the policy and infrastructure work already underway.

RECOMMENDATIONS

Four recommendations follow from this. First, journalism training institutions and media organizations should build structured science and energy communication training into how they prepare reporters covering the energy beat, so that solar stories are framed with the same technical care oil stories typically receive. Second, newsrooms should lean into solutions-journalism approaches that give solar coverage the same economic and developmental weight that oil reporting has enjoyed for years. Third, renewable-energy agencies, universities, and civil-society organizations should build lasting partnerships with media houses, supplying them with accurate, locally grounded data and human-interest stories that make solar adoption tangible rather than abstract. Fourth, regulatory and professional bodies such as the Nigerian Press Council should encourage editorial policies that treat Nigeria's energy transition as an ongoing sustainable-development priority worth regular, in-depth coverage, rather than a story that only surfaces during a crisis.

More so on a broader term, the study recommends:

1. Establish a National Energy Communication Policy: The Federal Ministry of Information, in direct partnership with the Rural Electrification Agency (REA), must establish a clear communication framework to translate high-level ETP strategies into accessible, multi-lingual grassroots campaigns.
2. Modernize University Journalism Curricula: The National Universities Commission (NUC) should integrate dedicated Environmental and Renewable Energy Journalism modules into accredited media communication programs nationwide, correcting foundational knowledge gaps. Newsrooms should lean into solutions-journalism approaches that give solar coverage the same economic and developmental weight that oil reporting has enjoyed for years.
3. Launch Institutional Energy Journalism Fellowships: Media organizations and international climate NGOs should co-fund independent, specialized reporting fellowships to provide journalists with the financial resources, data access, and safety needed to pursue long-form, investigative climate pieces. Also, Journalism training institutions and media organizations should build structured science and energy communication training into how they prepare reporters covering the energy beat, so that solar stories are framed with the same technical care oil stories typically receive.
4. Deploy Grassroots Digital Communication Hubs: Renewable energy advocacy networks must bypass legacy gatekeepers by leveraging decentralized social channels and localized multimedia content to demonstrate the practical, day-to-day economic returns of solar installations.

Limitations and Future Research

A primary limitation of this study was its geographic focus on major urban centers and short-term behavioral effects. Future research should expand this inquiry into rural, off-grid communities to evaluate how local language radio networks and informal word-of-mouth communication influence solar adoption. Longitudinal studies are also needed to track how public attitudes shift as domestic solar manufacturing capacities grow and local tariff structures evolve.

Contribution to Knowledge

This study significantly advances the fields of environmental communication and transition studies by providing an empirical, quantitative model of how media framing directly impacts consumer adoption intent within a major fossil-fuel-dependent developing economy. While historical research has focused heavily on the technical and financial requirements of green energy transitions, this work isolates the mass media as a critical, structural variable that can either accelerate or stall technological adoption. By mapping the systemic imbalances in national energy reporting and identifying the institutional factors driving these biases, this research offers a clear, actionable blueprint for integration into science education and national communication policies across Sub-Saharan Africa.

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