



## Community Participation and the Security of Energy Infrastructure in Nigeria: Pathways to Collaborative Governance and Sustainable Protection

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### Abstract

Nigeria's energy infrastructure, including pipelines, refineries, power plants, and electricity transmission systems, remains central to the country's socio-economic progress and regional influence, yet it continues to face recurring threats of vandalism, sabotage, and theft. These persistent challenges are rooted in historical marginalisation, environmental degradation, and structural governance weaknesses, which collectively undermine energy security and national development. Traditional security responses, often militarised and reactive, have proven inadequate in addressing these systemic issues.

This paper critically investigates the role of community participation in the protection of Nigeria's energy infrastructure, employing theoretical insights from collaborative governance, decentralisation, energy justice, and participatory risk governance. Evidence from conflict-prone regions such as the Niger Delta and northern Nigeria highlights the pivotal contributions of local communities as both first responders and long-term stakeholders in energy security. Initiatives such as community vigilance groups, joint patrols, and grassroots monitoring systems have demonstrated the ability of communities to provide early warning, intelligence, and rapid response services, often outperforming formal state interventions.

The study further reveals that participatory mechanisms achieve greater effectiveness when embedded within institutional frameworks that guarantee transparency, benefit-sharing, and accountability, thereby fostering trust and social legitimacy. However, challenges remain, including elite capture, governance fragmentation, underfunding, and the exclusion of marginalised groups such as women and youth, which hinder the sustainability of these approaches. The findings call for a paradigm shift from top-down, state-led protection strategies to inclusive, co-produced models that integrate community knowledge, socio-economic incentives, and collaborative governance. Embedding communities as central actors in energy infrastructure protection will not only enhance resilience but also address root causes of insecurity, contributing to national stability and sustainable growth.

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### 1. Introduction

Energy infrastructure constitutes a vital asset for the socio-economic and political advancement of modern states, and in Nigeria its importance is particularly pronounced. As Africa's largest economy, endowed with substantial hydrocarbon resources, Nigeria's pipelines, power plants, transmission networks, and gas export facilities underpin both its domestic development priorities and its international trade commitments. Yet, as Nwagwu (2020) highlights, these assets have remained highly

vulnerable to sabotage, vandalism, and other criminal activities, driven by a complex combination of political disaffection, economic marginalisation, and governance weaknesses. The protection of energy infrastructure, especially in volatile regions such as the oil-producing Niger Delta and the conflict-prone northern states, is therefore urgent and requires sustainable, multi-stakeholder strategies to ensure resilience and long-term security.

The drivers of energy infrastructure insecurity in Nigeria are deeply rooted in both historical and systemic factors. Environmental degradation resulting from oil exploration, combined with the long-standing marginalisation of host communities, has weakened the social contract between the state, corporations, and local populations. As Diemuodeke and Briggs (2018) note, this erosion of trust has fuelled violent agitations, the rise of militant movements, and the establishment of organised sabotage networks, all of which continue to pose serious threats to national energy security. This condition aligns with global debates on resource governance in fragile states, where exclusion and ecological degradation converge to create conditions ripe for instability. Echoing this concern, Ikelegbe (2005) argued that decades of exclusion and environmental injustice in the Niger Delta entrenched a culture of confrontation, giving rise to militant activism and alternative economies that thrive on sabotage and oil bunkering. The persistence of these conditions highlights the urgency of structural reforms in governance and local engagement.

Against this backdrop, scholars and policymakers have increasingly stressed the significance of community participation as a practical pathway toward collaborative governance and the sustainable protection of energy infrastructure. When communities perceive a sense of ownership and empowerment, they are more inclined to act as active stakeholders in safeguarding energy assets within their environments, a notion reinforced by governance frameworks that highlight the necessity of integrating local actors into energy sector management (Abdullahi, 2021). Community participation has emerged not only as a response to crises but as a potential redefinition of governance itself—where legitimacy and resilience are built through inclusive processes that extend beyond token consultation.

Community participation in energy security resonates with the wider global discussions on governance models that emphasise shared responsibility and resilience. Within Nigeria, efforts to involve communities in safeguarding infrastructure have taken different forms, ranging from informal surveillance and local defence networks to structured committees led by traditional leaders. Yet, as Umoh and Lugga (2018) observe, these mechanisms often struggle due to weak institutional support, absence of legal frameworks, and limited transparency, which reduces their effectiveness in addressing underlying risks. Furthermore, rather than being embedded as proactive strategies within national energy planning, participatory initiatives are frequently deployed only in response to crises, thereby limiting their long-term sustainability and transformative potential.

It is evident that when community participation is effectively structured and genuinely meaningful, it offers significant potential not only for strengthening security but also for transforming governance. Participatory approaches can serve as mechanisms to address local grievances, enhance transparency in decision-making processes related to energy,

and foster collaborative problem-solving between communities, state authorities, and private energy actors. However, as Ojo (2020) notes in his broader analysis of governance in fragile contexts, the success of such participation depends largely on whether it is pursued as a token exercise or embraced as a pathway to authentic empowerment and shared responsibility.

The dynamics of decentralised governance are highly significant in Nigeria, where the concentration of control over energy resources has deepened inequality and social exclusion. Decentralised approaches create opportunities for communities to take active roles in monitoring infrastructure, reporting threats, and negotiating for developmental benefits. As Oyedepo *et al.* (2018) argue, decentralised energy systems provide a pathway not only to more reliable electricity supply but also to improved social outcomes, as communities that experience tangible benefits such as electrification, employment, or environmental improvements are far less inclined to support acts of sabotage or insurgency. Decentralised governance also aligns with the findings of Ebekosszien *et al.* (2022), who argue that centralised, technocratic approaches to infrastructure provision in Nigeria have often undermined sustainability and inclusivity, highlighting that community-driven governance models offer greater potential for advancing both security and development outcomes.

Collaborative security models that bring together state actors, traditional institutions, and local groups have proven to be viable alternatives to exclusively militarised strategies. Such approaches not only help to reduce violence but also build resilience and strengthen local legitimacy. As Edomah (2020) explains in his analysis of Nigeria's electricity and energy transition, the shortcomings of top-down security strategies in safeguarding pipelines and power stations often stem from their disconnection from local realities and socio-political dynamics. For this reason, protecting Nigeria's energy infrastructure requires a shift away from exclusive state control towards governance systems that are participatory, transparent, and accountable.

The concept of a social license to operate (SLO) is particularly significant in Nigeria's energy sector, where companies increasingly realise that technical efficiency and legal compliance alone are insufficient without community acceptance. As Omotehinse and De Tomi (2020) argue, building a strong SLO requires the integration of participatory practices across the project lifecycle, including processes such as environmental impact assessments, benefit-sharing frameworks, and conflict resolution mechanisms. In the absence of these measures, corporate activities are far more likely to trigger community resistance, protests, and, in extreme cases, deliberate acts of sabotage. This insight aligns with Frynas (2005), who demonstrated that corporate-community relations in the Niger Delta historically suffered from shallow CSR projects that neither addressed community grievances nor fostered genuine partnerships, thus exacerbating insecurity around energy assets.

The politics of infrastructure in Nigeria adds further complexity to governance processes. Energy infrastructure projects are frequently entangled in disputes over land, identity, and authority, demonstrating that community participation is not simply a technical matter but one inherently shaped by political dynamics. As Edomah, Foulds and Jones (2017) highlight in their study of Nigeria's

electricity sector, policymaking in energy infrastructure is often influenced by competing interests and power struggles. Consequently, strategies for participatory governance must be contextually grounded, sensitive to local realities, and designed to accommodate diverse perspectives rather than relying solely on abstract policy frameworks. Supporting this view, Watts (2004) describes the Niger Delta as a “petro-violence” zone, where oil infrastructure is both a symbol of state failure and a site of political contestation, underscoring that participatory governance is inevitably entangled with broader struggles over power and legitimacy.

Recent research points to the rise of grassroots security networks, including community-based surveillance groups and neighbourhood vigilance initiatives, as innovative approaches to protecting energy infrastructure. These locally organised systems utilise community knowledge and legitimacy to generate real-time intelligence and facilitate rapid responses, often exceeding the capacity of conventional security forces. However, as Okafor (2022) observes, the long-term sustainability of such arrangements is challenged by inadequate funding, limited training opportunities, and weak institutional support, which threaten their effectiveness and continuity. At the same time, Faluyi (2023) demonstrates that citizen-led participation in infrastructure projects in Nigeria’s Fourth Republic highlights both the opportunities for meaningful collaboration and the challenges of institutionalising such practices within weak governance frameworks.

This paper therefore aims to critically explore the role of community participation in securing energy infrastructure in Nigeria, examining both challenges and opportunities. The objective is to synthesise theoretical, empirical, and policy insights to propose pathways toward collaborative governance and sustainable protection of critical energy assets. The scope includes electricity, oil and gas infrastructure, and localised energy systems, with a focus on integrating participatory approaches into national and sub-national governance frameworks. The review is grounded in current literature and aims to inform both academic discourse and practical policy reform.

## 2. Conceptual and Contextual Framework

The security of energy infrastructure in Nigeria is shaped by a complex mix of governance weaknesses, socio-political exclusion, and grassroots mobilisation. Over time, the discourse on community participation in safeguarding such assets has shifted away from a narrow rights-based focus toward a broader governance framework that stresses empowerment, legitimacy, and long-term sustainability. Gbadegesin *et al.* (2021) argue that community-based governance practices, rooted in collective design and local ownership, are essential in creating resilient and responsive systems capable of protecting critical infrastructure in fragile contexts. This recognition of energy infrastructure as a politically sensitive arena has further strengthened calls for participatory mechanisms that acknowledge historical grievances, reflect local realities, and uphold distributive justice.

Nigeria illustrates how repeated sabotage of energy infrastructure in oil-producing regions, combined with the fragility of the national electricity grid, continues to weaken supply security. Within this landscape, community resilience has become a vital element of energy security approaches. In his doctoral research on the Oodua Peoples Congress, Bello

(2021) demonstrates that local organisations often step in to bridge gaps left by the state, providing informal protection and intelligence-sharing systems. Such community-led initiatives frequently operate as complements to, or substitutes for, official security structures, underscoring the central role of grassroots actors in defending critical energy assets in volatile regions where state capacity is constrained. These insights align with Omeje (2006), who observed that localised groups in the Niger Delta often perform quasi-security roles, reflecting both the weakness of state enforcement and the necessity of grassroots participation.

The conceptual framework guiding this study draws on collaborative governance theory, which asserts that governance outcomes are strengthened when authority, responsibility, and expertise are distributed across the state, markets, and civil society. Within this framework, cooperation depends on trust, shared understanding, and sound institutional arrangements. As Gungah, Emodi, and Dioha (2019) note in their examination of Nigeria’s renewable energy policy design, such an approach is particularly valuable in the energy sector, where infrastructure is embedded within communities and closely tied to issues of resource control. Collaborative governance provides a pathway to tackle the underlying drivers of sabotage and infrastructural decline, while also facilitating the co-production of security outcomes that are contextually relevant and socially legitimate. Similarly, Ebegbulem (2011) stresses that governance legitimacy in resource-rich regions hinges on transparency and inclusivity, without which community distrust fuels insecurity.

From a contextual perspective, Nigeria’s federal system creates significant complications in the governance of energy infrastructure, with overlapping mandates across federal agencies, state authorities, and local government institutions. These jurisdictional ambiguities often generate fragmented decision-making, restrict meaningful community participation, and blur accountability pathways. Such fragmentation weakens the ability to respond to localised threats, deepens public distrust, and perpetuates infrastructural vulnerability. In addition, the rise of non-state actors such as militias, vigilante groups, and youth associations underscores both the failure of formal governance systems and the necessity of integrating alternative and informal institutions into infrastructure governance (Adéniran, 2022). Watts (2004) also highlights that fragmented governance structures often exacerbate the violent contestations over oil resources, embedding insecurity within broader struggles for authority and recognition.

In this regard, the concept of energy justice—grounded in fairness, accountability, and the equitable distribution of benefits—provides a critical framework for examining power imbalances within Nigeria’s energy sector. Evidence demonstrates that when host communities are excluded from key processes such as planning, benefit-sharing, and dispute resolution, their reactions often manifest in resistance, sabotage, or deliberate non-cooperation. Embedding strong accountability mechanisms within governance structures is therefore not only a normative requirement but also a strategic necessity, as it can reduce tensions, ensure fairer outcomes, and build durable frameworks for protecting vital energy infrastructure (Orieso, 2021). Likewise, Sovacool and Dworkin (2015) emphasise that energy justice requires recognising the lived experiences of marginalised groups,

ensuring that participation addresses both distributional and procedural dimensions of governance.

Participatory risk governance builds on this conceptual foundation by stressing the role of early-warning mechanisms, community-based risk awareness, and adaptive local capacity in strengthening infrastructure resilience. Umoh and Lugga (2018) emphasise that when grassroots actors are actively engaged, risk communication is enhanced, response times are shortened, and the credibility of protective measures is improved. This approach recognises communities not as passive recipients of security but as crucial knowledge holders and first responders, whose involvement is indispensable in safeguarding critical infrastructure.

Security sector reform in Nigeria has, to a large extent, neglected the critical role of incorporating local actors into infrastructure protection arrangements. As Schroeder and Chappuis (2014) argue, formal security forces often struggle with limited cultural competence, inadequate contextual understanding, and weak legitimacy in host communities, leading to friction and inefficiencies in operations. In contrast, community-driven approaches—such as memoranda of understanding, joint patrols, and co-management frameworks—have demonstrated greater success in minimising sabotage and encouraging shared accountability. These models depend on mutual trust, well-defined responsibilities, and the institutionalisation of participation through binding agreements that give communities a recognised role in security governance.

Sørensen and Torfing (2018) argue that collaborative governance must extend beyond ad hoc consultations and be anchored in institutionalised, rule-based engagement. They highlight the value of developing integrated governance structures that embed mechanisms such as citizen advisory councils, grievance redress systems, and performance monitoring frameworks. These arrangements not only formalise participation but also empower communities with meaningful influence over decisions that shape their resources, security, and socio-economic well-being.

Grassroots participation has proven most effective in safeguarding energy infrastructure when communities experience concrete benefits from their involvement. As Akin (2016) demonstrates in the context of community-driven infrastructure development, provisions such as employment opportunities, electrification, environmental improvements, and transparent oversight mechanisms foster a reinforcing cycle of cooperation and accountability. In contrast, extractive arrangements that exclude developmental returns often generate frustration, opposition, and, in some cases, acts of sabotage. The existence or absence of structured benefit-sharing frameworks therefore plays a decisive role in shaping community attitudes toward the protection of critical infrastructure.

Energy vulnerability in Nigeria's oil-producing regions highlights the pressing need for participatory governance approaches. Communities that endure environmental degradation, displacement, and livelihood disruption often respond by developing adaptive capacities rooted in informal networks, local innovation, and collective solidarity. As Udie, Bhattacharyya and Ozawa-Meida (2018) argue in their framework for assessing vulnerability in the Niger Delta, incorporating these community-based adaptations into formal governance structures could significantly enhance both the resilience and legitimacy of strategies aimed at

protecting critical oil and gas infrastructure.

Participation in governance processes is frequently shaped by political contestation and entrenched power imbalances. Akonwi Nebasifu and Cuogo (2021) warn against the assumption that all community members have equal opportunities to influence or engage in decision-making. Factors such as gender, age, class, and ethnicity significantly condition how effective and representative participatory arrangements can be. For this reason, governance models must be informed by intersectional perspectives, ensuring that community engagement transcends symbolic involvement and instead produces genuinely transformative outcomes. As Okereke and Dooley (2010) note in their study of climate governance, participation without inclusivity risks reproducing inequities, thereby weakening legitimacy and long-term sustainability.

## 2.1. Understanding Energy Infrastructure Security in Nigeria

Nigeria's energy infrastructure serves simultaneously as a foundation of economic growth and a source of strategic vulnerability. Assets such as oil and gas pipelines, electricity transmission lines, refineries, and gas plants form an interconnected system essential for national development, yet they remain persistently exposed to risks including theft, vandalism, insurgency, and sabotage. As Okoro and Tookey (2010) observe in relation to the Niger Delta, ensuring the security of such infrastructure requires more than physical protection—it demands systemic resilience, robust governance frameworks, and the active involvement of local stakeholders in shaping sustainable capacity for long-term stability and development. This perspective is reinforced by Obi (2009), who stresses that infrastructural insecurity in oil-rich regions reflects broader governance failures and long-standing social inequities, making local participation indispensable.

A key feature of energy insecurity in Nigeria is the recurrent sabotage of infrastructure, particularly in oil-producing regions. Incidents targeting pipelines, gas facilities, and electricity substations go beyond ordinary criminality, as they are often rooted in deeper grievances linked to environmental degradation, exclusion from the benefits of resource exploitation, and the enduring legacy of underdevelopment in host communities. Such destructive actions can be understood as forms of resistance against a centralised state apparatus that has historically placed resource extraction above equitable development (Adéníran, 2022). Frynas (2001) similarly argues that sabotage and protests in oil-producing communities are political acts shaped by the perception that both the state and multinational corporations systematically marginalise local populations.

Militant sabotage in the Niger Delta has played a major role in disrupting both oil production and electricity supply. Armed groups have exploited the vulnerabilities of infrastructure to gain political advantage or generate revenue through activities such as illegal bunkering. As Oyewole (2018) notes in his study of crisis management in the Niger Delta, such insecurity carries serious strategic consequences, including a decline in investor confidence, reduced energy availability, and significant financial losses for the Nigerian state. Protecting energy infrastructure, therefore, cannot be limited to a technical or military exercise but must also incorporate socio-political considerations to address the root causes of insecurity. Ikelegbe (2005) adds that the persistence

of armed groups is closely linked to the failure of resource governance systems, suggesting that energy infrastructure security cannot be divorced from broader political reforms. Governance shortcomings are a critical factor contributing to the insecurity of energy infrastructure in Nigeria. Weak regulatory oversight, corruption, and fragmented institutional responsibilities undermine the effectiveness of existing protection mechanisms. As Gregory and Sova cool (2019) argue in their review of electricity governance in sub-Saharan Africa, the absence of coherent coordination among different levels of government frequently leads to overlapping mandates and policy deadlock. These systemic inefficiencies leave infrastructure vulnerable and create conditions that enable persistent sabotage and neglect. Similarly, Ike in (2009) highlights that entrenched corruption in the oil sector has not only diverted resources but also weakened institutional capacity to respond effectively to security threats.

Electricity infrastructure in Nigeria is especially at risk due to the fragility of the national grid, which is characterized by ageing systems, inadequate maintenance, and chronic overloading. As Monyei *et al.* (2018) emphasize in their analysis of Nigeria's energy poverty, insufficient investment in protecting transmission and distribution networks has left them vulnerable to vandalism, as well as widespread theft of cables and transformers in both urban and rural contexts. The failure to secure these critical systems not only undermines energy reliability but also exacerbates energy poverty, with the greatest burden falling on already marginalized communities. Oke (2016) further argues that Nigeria's failure to prioritise infrastructure upgrades and maintenance is not simply a technical oversight but reflects a deeper policy disconnect between energy planning and security frameworks.

A growing response to the challenges of protecting critical infrastructure has been the development of community-based security networks—informal mechanisms that deliver early warning, surveillance, and mediation services. As Akomolafe (2021) explains in the context of Nigeria's critical energy infrastructure, these grassroots structures are particularly relevant in areas where state security is either absent or mistrusted, and they have demonstrated effectiveness in addressing certain localized threats. Nonetheless, their lack of formal recognition, sustainable funding, and legal frameworks often leaves them vulnerable to co-optation and limits their capacity to manage large-scale or complex security challenges. This aligns with Ojo (2010), who shows that informal security systems often thrive in governance vacuums but risk perpetuating localised forms of power capture without clear institutional backing.

Oil pipeline vandalism, a persistent challenge since the 1990s, has grown more sophisticated over time, with perpetrators increasingly deploying advanced tools and insider knowledge to avoid detection and maximize damage. Such acts have devastating consequences, not only causing severe economic losses but also triggering environmental disasters, including oil spills that contaminate farmland, fisheries, and water supplies. As Albert, Amaratunga and Haigh (2019) observe, militarized security measures alone have proven inadequate in addressing these challenges, underscoring the urgent need for community-driven and preventive strategies to protect vital energy infrastructure.

An emerging strategy is the adoption of resilience-based frameworks, which prioritise recovery, adaptability, and

redundancy in infrastructure systems rather than focusing solely on preventing disruptions. As Omotehinse and De Tomi (2020) explain, resilience thinking is highly relevant in contexts such as Nigeria, where infrastructural shocks are frequent and often unavoidable. Proposals such as distributed generation, microgrids, and decentralized gas infrastructure offer ways to diffuse risks and enhance flexibility in energy supply.

However, the effectiveness of resilience frameworks ultimately depends on robust governance structures, the cultivation of trust with host communities, and sustained investment in technologies that enhance monitoring and security. This perspective is consistent with Smart (2022), who emphasises that building resilience in Nigeria's energy sector requires integrating sustainability and governance considerations within broader frameworks for creating resilient urban and regional systems in the Niger Delta.

Public-private partnerships (PPPs) are increasingly recognized as practical mechanisms for addressing Nigeria's energy security challenges. Private actors contribute capital, innovation, and managerial skills, while public institutions offer regulation, oversight, and policy direction. As Ikeanyibe (2021) notes in his review of post-privatization dynamics in Nigeria's electricity sector, when communities are integrated into such arrangements, they evolve into tripartite frameworks that are more sustainable and inclusive. For example, initiatives in which distribution companies have collaborated with local leaders and security agencies through joint patrols have proven effective in reducing infrastructure breaches in high-risk areas.

Despite progress in certain areas, awareness and perception of risk among policymakers and the public remain limited. Responses to threats against energy infrastructure in Nigeria are often reactive rather than proactive, with little emphasis placed on preventive strategies. As Asiago (2017) notes in the broader context of oil and gas governance, insufficient regulatory foresight and weak institutional frameworks constrain the ability to address vulnerabilities effectively. This has resulted in minimal investment in monitoring technologies, threat intelligence systems, and capacity-building programmes, while regular risk assessments are seldom conducted. Consequently, Nigeria's energy infrastructure remains exposed not only to persistent domestic risks but also to emerging transnational threats such as cyber-attacks targeting control systems.

## 2.2. Theoretical Perspectives on Community Participation and Governance

Community participation in the governance of energy infrastructure draws upon political, sociological, and institutional theories that emphasise the redistribution of power, the legitimacy of governance processes, and the co-production of public goods. Within Nigeria, these perspectives are particularly valuable for interrogating the governance challenges that undermine effective energy management while also identifying pathways toward more sustainable and resilient systems. Given the persistent security threats facing energy infrastructure, particularly in marginalised areas, theorising participation provides an essential framework for designing collaborative governance models that advance both security and development outcomes (Abdullahi, 2021).

A central theoretical lens in this field is collaborative governance theory, which posits that complex public

challenges such as energy security are best addressed through joint action involving state institutions, private stakeholders, and civil society. This framework stresses inclusivity, the building of trust, and institutional adaptability. As Akonwi Nebasifu, and Cuogo (2021) explain, the relevance of this approach in fragile contexts lies in its ability to replace hierarchical and top-down governance models with participatory mechanisms that recognise multiple voices. Nonetheless, the institutionalisation of collaboration is often complicated by political contestation, elite capture, and the exclusion of vulnerable groups. Such dynamics raise questions about when, how, and to what extent participation is genuinely transformative rather than symbolic. Emerson, Nabatchi, and Balogh (2012) expand on this by showing that collaborative governance requires iterative trust-building, adaptive institutional design, and long-term commitment to dialogue in order to function effectively, particularly in contested political spaces such as Nigeria's energy sector. Another theoretical foundation is decentralised governance theory, which advocates for the devolution of decision-making authority to lower tiers of government and community actors. Applied to energy infrastructure, decentralisation enhances responsiveness and efficiency, especially in addressing localised risks and conflicts. Nigeria's centralised energy governance structure has long been criticised for its inefficiencies and disconnection from grassroots realities. As Oyedepo *et al.* (2018) note, decentralised renewable energy systems provide not only context-specific solutions but also strengthen accountability by empowering local actors to co-manage and safeguard assets. Similarly, Ribot (2004) argues that meaningful decentralisation must involve both authority and resources being transferred to local levels, ensuring that communities are not merely consulted but have substantive influence over governance outcomes.

The theory of energy justice adds further depth by offering a multidimensional framework for understanding participation in infrastructure governance. Centred on fairness in distribution, recognition, and procedural participation, the energy justice perspective is especially relevant in Nigeria's oil-rich regions, where communities bear disproportionate environmental and social costs of extraction while often being excluded from decision-making and benefit-sharing arrangements. As Orieso (2021) argues, embedding energy justice principles into governance structures can help address these inequities, reduce conflict, and transform hostile community-state relations into collaborative partnerships. Sovacool *et al.* (2017) further demonstrate that energy justice is not only a normative principle but also a practical tool for designing more equitable and durable governance systems by explicitly recognising the rights and voices of marginalised populations.

Within governance design, multi-actor planning theory provides a valuable lens for understanding how participation is managed in complex infrastructure settings. The theory acknowledges that energy infrastructure governance involves a wide array of actors—government agencies, oil companies, traditional leaders, civil society groups, and host communities—each with distinct interests, capacities, and levels of influence. Mutai (2020) underscores the importance of transparent communication, structured decision-making processes, and consensus-building mechanisms in managing these diverse interactions. In Nigeria, however, the implementation of multi-actor approaches has often been

uneven and fragmented, undermining their potential effectiveness. Healey (2006) strengthens this argument by highlighting how collaborative planning can facilitate learning, build trust, and generate innovative solutions when diverse perspectives are engaged constructively.

The participatory risk governance approach extends these theories by positioning communities as co-producers of security rather than passive beneficiaries. This model emphasises early-warning systems, community-based risk perception, and adaptive local capacity to improve infrastructure resilience. As Umoh and Lugga (2018) observe, grassroots actors provide indispensable contextual knowledge, social networks, and legitimacy in protective efforts, making them vital first responders. This resonates with Renn (2008), who shows that participatory risk governance enhances both the credibility and effectiveness of risk management by ensuring that local knowledge complements technical expertise.

Empirical evidence reinforces the argument that grassroots participation reduces sabotage and strengthens institutional trust. In Nigeria, community-led monitoring networks and participatory security arrangements have proven effective in reducing theft, vandalism, and unauthorised access to infrastructure. Akin (2016) illustrates this through his study of community-driven infrastructure development, showing that legitimacy and shared responsibility improve both institutional performance and project sustainability. Similarly, Agrawal and Gibson (1999) highlight that successful community-based governance depends on the alignment of incentives, recognition of diverse voices, and establishment of institutions that empower local actors to act collectively.

The notion of a social license to operate (SLO) further enriches this discussion. Unlike statutory approvals, SLO refers to the informal legitimacy or acceptance that companies must secure from host communities to ensure the smooth implementation of projects. As Omotehinse and De Tomi (2020) emphasise, SLO is gained through meaningful engagement, transparency, and the delivery of tangible benefits. Rooted in concepts of social contract theory and deliberative democracy, the SLO framework underscores the importance of trust, fairness, and reciprocity in infrastructure governance. In Nigeria, where decades of exclusion and exploitation have fuelled hostility towards both the state and private firms, the absence of SLO has frequently led to project delays, resistance, and in extreme cases violent conflict. Moffat and Zhang (2014) note that building and maintaining SLO requires ongoing community dialogue, clear grievance mechanisms, and demonstrable commitment to social and environmental accountability.

Finally, the concept of energy citizenship frames individuals and communities as active agents in shaping energy futures rather than passive consumers. By highlighting the rights, responsibilities, and capabilities of citizens in energy governance, this perspective challenges technocratic and top-down models that dominate Nigeria's energy sector. In contexts characterised by mistrust and exclusion, energy citizenship can provide a platform for civic engagement, social learning, and shared governance arrangements that improve both legitimacy and effectiveness in infrastructure protection (Adéníran, 2022). Devine-Wright (2007) argues that recognising communities as "energy citizens" enables governance systems to reflect local aspirations and social values, thereby creating more durable and inclusive pathways

for energy transitions.

### 2.3. Historical and Policy Context of Community Engagement in Nigeria

The historical and policy trajectory of community engagement in Nigeria is closely tied to the broader patterns of governance and resource management that have characterised the post-colonial state. In key sectors such as energy, water, and rural development, early initiatives were largely shaped by paternalistic state-community relations. During the 1960s and 1970s, government-led projects were typically delivered through top-down approaches that sidelined community agency, positioning local populations as passive recipients rather than active partners in infrastructure development. As Akonwi Nebasifu and Cuogo (2021) argue in relation to co-management, such technocratic practices laid the groundwork for enduring mistrust between citizens and state institutions, a legacy particularly visible in resource-rich regions like the Niger Delta.

The first notable signs of policy responsiveness to community participation in Nigeria emerged during the 1990s and early 2000s, largely in reaction to growing resistance against oil exploitation and the rising international focus on participatory development. At this time, the concept of the “social license to operate” (SLO) began to gain prominence, particularly among multinational oil companies working in conflict-prone areas. As Omotehinse and De Tomi (2020) observe, the SLO framework required firms to go beyond securing formal regulatory approval and instead pursue community acceptance through measures such as consultation, compensation, and targeted social investment initiatives. However, critics noted that many of these practices were often superficial and transactional, doing little to address entrenched structural inequalities or to establish enduring governance relationships.

The policy environment after 2000 introduced more deliberate, though uneven, efforts to incorporate community participation into Nigeria’s national development agenda. Policies such as the National Energy Policy (2003) and the Electric Power Sector Reform Act (2005) explicitly highlighted the importance of engaging communities, particularly in expanding rural electrification. However, as Umoh and Lugga (2018) note, implementation frequently fell short, constrained by weak institutional capacity and the inability to convert policy objectives into genuine participatory governance frameworks. Although decentralisation and public-private partnerships were promoted, many local communities remained excluded from meaningful involvement in planning and decision-making, largely due to bureaucratic inefficiency, entrenched corruption, and the dominance of elite interests.

The growing emphasis on decentralised energy governance represents a more progressive and sustainable direction for Nigeria’s power sector. Increasingly, policy frameworks acknowledge the shortcomings of centralised energy planning and highlight the importance of community participation in managing and securing infrastructure. This is particularly critical in addressing challenges such as electricity theft, pipeline vandalism, and the sabotage of transmission networks. As Oyedepo *et al.* (2018) argue, decentralised renewable energy systems provide a platform for local ownership and participatory monitoring of energy assets, signalling a shift from compliance-driven approaches to more collaborative models of community engagement.

Institutional and historical inertia continues to pose significant obstacles to reform. Much of Nigeria’s energy governance still operates within authoritarian frameworks that undervalue local knowledge and reduce community consultation to a procedural exercise. As Gungah, Emodi, and Dioha (2019) observe in their study of renewable energy policy, governance structures often rely on expert-led, capital-intensive models that marginalise participatory innovation and fail to account for local adaptation. Furthermore, energy infrastructure projects are frequently politicised, with implementation shaped more by electoral considerations than by the genuine needs of communities.

Community engagement in Nigeria’s oil sector has long been influenced by the extractive character of the rentier state, where participation frameworks were often designed as tools for conflict management rather than instruments of genuine governance reform. In the Niger Delta, initiatives such as the Global Memorandum of Understanding (GMOU) introduced by multinational oil corporations sought to institutionalise development boards as intermediaries between firms and host communities. However, these mechanisms were frequently undermined by elite capture, internal divisions, and power struggles, which diluted their effectiveness. Consequently, the trajectory of policy development in this area has been largely reactive, emerging in response to crises and community resistance, rather than grounded in proactive institutional reforms aimed at equitable governance (Orieso, 2021).

Despite persistent challenges, there is a growing recognition that community engagement must be systematically embedded within governance frameworks. As Gash (2022) observes, collaborative governance models that deliberately integrate community representatives, civil society organisations, and traditional authorities into oversight and implementation processes can enhance accountability, strengthen project sustainability, and provide more robust protection for infrastructure. Such models are premised on a political conception of participation that emphasises local agency, shared problem-solving, and adaptive approaches to governance.

Current debates on Nigeria’s energy future increasingly highlight community participation as essential to advancing both energy justice and security. Grassroots engagement is now recognised not only as a normative goal but also as a strategic necessity. As Akin (2016) demonstrates in his study of community participation in infrastructure development, locally driven initiatives such as surveillance networks and co-management arrangements with utilities have proven effective in reducing vandalism and curbing electricity theft. These experiences strengthen the case for policy frameworks that move beyond rhetorical commitments and instead establish enforceable, transparent, and contextually appropriate mechanisms for embedding community involvement in energy governance.

### 2.4. Role of Communities in Energy Infrastructure Protection

The involvement of communities in safeguarding Nigeria’s energy infrastructure has become an increasingly central theme in both policy and academic debates, largely due to the recurring vulnerability of critical assets such as pipelines, transmission towers, and electricity distribution networks. In a national context characterised by limited state capacity, fragmented security systems, and persistent socio-economic

marginalisation, communities are now recognised not only as stakeholders but also as first responders and frontline protectors of vital energy systems. As Akin (2016) demonstrates in his study of community participation in infrastructure development, this shift reflects a growing appreciation that local actors possess contextual knowledge, informal authority, and strong social networks which, when effectively harnessed, can contribute significantly to proactive and sustainable protection strategies.

In many parts of Nigeria, especially volatile areas such as the Niger Delta and insurgency-prone northern states, formal state security institutions have been unable to provide consistent or effective protection for energy infrastructure. Community participation has therefore assumed practical importance, often filling the gaps left by formal mechanisms. Umoh and Lugga (2018) emphasise that local vigilante groups, traditional authorities, and youth associations have emerged as crucial actors in infrastructure protection through surveillance, intelligence-sharing, and conflict mediation. These community-led mechanisms, when incorporated into broader governance frameworks, demonstrate significant potential for strengthening resilience within Nigeria's energy networks. This corresponds with Akinyemi (2021), who highlights that community-based policing and informal security structures play a critical role in contexts where state institutions are weak or struggle to maintain legitimacy, thereby underscoring the importance of grassroots actors in promoting stability and safeguarding vital assets.

The concept of participatory risk governance highlights the necessity of embedding communities at the centre of infrastructure protection. Risk, as a socially contextual phenomenon, is best understood and mitigated by those living in proximity to energy assets. Omotehinse and De Tomi (2020) argue that participatory models which integrate inclusive decision-making, foster knowledge exchange, and build grassroots capacity can transform vulnerable communities into proactive partners in national energy security. When properly resourced and supported, such approaches improve threat detection, accelerate response, and increase legitimacy. This position is reinforced by Renn (2008), who stresses that inclusive risk governance enhances both trust and efficiency by integrating local insights with institutional expertise.

The effectiveness of community participation depends heavily on the institutionalisation of collaborative governance frameworks. In Nigeria, where mistrust between state actors and local populations has deep historical roots, collaborative structures create opportunities for transparency, accountability, and joint responsibility. Ojo (2022) highlights that empowering communities to co-design security strategies, participate in surveillance systems, and engage with regulatory authorities fosters a sense of ownership that reduces vandalism and sabotage. However, weak institutional design—such as undefined roles, lack of formal agreements, and insufficient funding—often undermines sustainability. Sørensen and Torfing (2018) add that durable collaborative governance requires legally binding structures, grievance mechanisms, and performance monitoring systems, ensuring that participation extends beyond rhetoric.

Community involvement in infrastructure protection is also tied to broader demands for justice and accountability in Nigeria's oil and gas sector. Host communities have consistently argued that safeguarding pipelines and installations must be accompanied by tangible socio-

economic benefits such as electricity access, employment, and environmental remediation. Orioso (2021) underscores that protection cannot be approached solely as a security issue but must engage with distributive justice and community rights. This resonates with Watts (2008), who links sabotage and resource conflict in the Niger Delta to systemic exclusion from benefits and the environmental costs of extraction. Without meaningful benefit-sharing, community cooperation remains precarious.

At the same time, community-driven protection mechanisms face inherent challenges and risks. Vigilante groups, for instance, have occasionally been implicated in extortion, partisan behaviour, or entanglement in local disputes, undermining their legitimacy. Moreover, communities are rarely homogenous; issues of elite capture, factional rivalry, and inter-group competition complicate collective action. Oyewole (2018) points out that these internal fractures require oversight and structured governance arrangements to ensure accountability. Similarly, Ikuteyijo (2009) argues that although local vigilante and community policing initiatives in Nigeria play an important role in addressing security gaps, they also risk intensifying insecurity if they are not properly regulated or integrated within transparent institutional frameworks.

From a policy standpoint, embedding communities into energy protection frameworks requires legal recognition, institutional support, and resource allocation. Pilot projects such as joint monitoring teams, co-managed patrols, and community reporting systems have shown potential but are often underfunded and inconsistently applied. Akonwi Nebasifu and Cuogo (2021) stress that policy commitments must translate into enforceable provisions that guarantee genuine participation rather than tokenistic consultation. This aligns with Ostrom (2009), who demonstrates that co-management systems are most effective when communities are granted authority and accountability through legally recognised structures of collective governance.

Furthermore, community participation in energy infrastructure protection intersects with the global discourse on energy citizenship, which views communities as active agents rather than passive beneficiaries. Adéniran (2022) argues that such approaches enhance civic responsibility, deepen trust, and empower communities to play constructive roles in governance. Evidence from other regions, such as South Africa's community energy cooperatives, shows that when communities are given ownership and participatory rights, infrastructure becomes more secure and sustainable (Baker, Newell & Phillips, 2014). Applying such lessons to Nigeria suggests that energy citizenship could serve as a normative framework for embedding grassroots participation in energy security.

In conclusion, communities in Nigeria have emerged as both indispensable protectors and contested actors in the governance of energy infrastructure. While local knowledge, informal authority, and strong social networks present opportunities for effective participatory security, risks such as elite capture and weak institutionalisation persist. Effective integration requires comprehensive governance reforms that combine legal recognition, adequate resourcing, and accountability structures with tangible socio-economic benefits for host populations. By situating communities not merely as informal guardians but as co-governors with defined rights and responsibilities, Nigeria can build more resilient, inclusive, and legitimate energy infrastructure.

protection systems.

## 2.5. Case Studies of Community Involvement in Infrastructure Security

Empirical insights from various regions of Nigeria demonstrate that community participation has played a crucial role in enhancing the protection and resilience of energy infrastructure. As the country grapples with increasing threats to its pipelines, electrical transmission lines, and gas installations, evidence-based case studies have underscored the value of grassroots involvement in mitigating sabotage, theft, and systemic breakdowns. These case studies not only provide practical illustrations of community impact but also validate the theoretical claims on collaborative governance, social accountability, and participatory risk management in critical infrastructure protection.

One of the most illustrative examples can be found in the Southwest region, where communities became directly involved in monitoring and protecting electricity distribution infrastructure. Akin (2016), in his study on community participation in infrastructure development, highlights how locally organised surveillance systems helped to reduce vandalism and electricity theft in peri-urban areas. These initiatives, often coordinated through traditional leadership and youth associations, served as the first line of intelligence gathering and rapid intervention. Operating outside formal state security frameworks, they derived legitimacy from cultural norms and communal authority. The findings suggest that such community-driven arrangements not only strengthened infrastructure resilience but also enhanced public confidence in utility providers.

In the oil-rich Niger Delta, research has shown that frameworks centred on community consent and development agreements play a significant role in shaping infrastructure security. Orieso (2021) analysed the Global Memorandum of Understanding (GMOU) model adopted by multinational oil corporations, which established community development boards to mediate between companies and host populations. Where firms engaged in meaningful consultation, respected traditional authorities, and aligned development initiatives with community priorities, incidences of sabotage and disruption were reduced. By contrast, where such mechanisms were absent, superficial, or poorly implemented, there was a notable escalation in pipeline attacks and other forms of resistance. This highlights the critical importance of embedding robust accountability structures into infrastructure governance, particularly in politically volatile contexts.

A comparable case is discussed by Omotehinse and De Tomi (2020), who examined how the presence or absence of a “social license to operate” (SLO) shapes community responses to resource-based projects. Their study shows that in contexts where companies failed to secure local acceptance, infrastructure was frequently subjected to protests and sabotage. Conversely, in areas where firms engaged in participatory dialogue, offered compensation, and undertook environmental remediation, communities were more inclined to cooperate and even take part in protecting assets. This demonstrates that although informal, SLO frameworks are vital determinants of infrastructure security in regions characterised by governance weaknesses and long-standing grievances.

From a governance perspective, evidence from co-

management initiatives illustrates how collaboration between authorities, host communities, and private actors can strengthen energy infrastructure protection. As Akonwi Nebasifu and Cuogo (2021) argue, formalized agreements that incorporate community representatives into decision-making structures promote transparency and help reduce the risk of infrastructure breaches. However, the effectiveness of such arrangements relies heavily on consistent funding, strong institutional support, and clearly defined roles for all stakeholders. They also warn that superficial or tokenistic participation can generate frustration and erode trust, ultimately undermining the security gains that co-management frameworks are designed to achieve.

The Niger Delta remains central to analysing the relationship between community participation and infrastructure vulnerability. As Oyewole (2018) explains in his study of security and crisis management in the region, militant sabotage is closely tied to feelings of exclusion from resource governance and development benefits. Yet, where efforts have been made to reintegrate militants and provide alternative livelihoods through peace-building initiatives, attacks on energy infrastructure have declined markedly. This demonstrates the importance of designing inclusive security approaches that incorporate even non-conventional actors, enabling them to contribute to the joint production of stability and the protection of vital assets.

In Northern Nigeria, where insecurity and rural underdevelopment present major obstacles to safeguarding infrastructure, community participation has proven especially vital. As Umoh and Lugga (2018) note, local residents have been engaged through training in areas such as basic infrastructure maintenance, security patrols, and technical oversight. This participatory approach not only reduced incidents of theft and damage to facilities but also fostered a stronger sense of ownership and civic responsibility among community members. The findings demonstrate that community-based governance systems, when embedded at the grassroots level, are often more effective than conventional top-down security interventions, particularly in remote and underserved areas.

## 2.6. Challenges Undermining Effective Community Participation

Despite growing consensus on the importance of grassroots involvement in securing energy infrastructure, effective community participation in Nigeria remains constrained by structural, institutional, and socio-political challenges. While participatory frameworks exist in theory, their operationalisation has often been flawed, inconsistent, or tokenistic. This section examines the most critical barriers undermining meaningful community engagement in energy infrastructure protection, drawing from recent literature and field-based observations in Nigerian contexts.

A key barrier to effective participation is the persistent lack of institutional trust between host communities and either state authorities or private energy companies. Decades of exclusion, unmet promises, and extractive approaches to development have produced a credibility deficit that undermines cooperation. As Omotehinse and De Tomi (2020) observe, many projects in Nigeria are advanced on the basis of formal regulatory approvals without securing the informal but essential social license to operate. In such situations, communities tend to view participatory processes as superficial or symbolic, leading to disengagement and, in

some cases, active resistance. Without deliberate mechanisms to cultivate and sustain trust, participatory initiatives risk degenerating into empty or performative exercises.

Closely related to the problem of trust deficits is the challenge of elite capture and distorted representation in community governance structures. In many cases, leadership positions are monopolised by individuals whose interests are aligned with external actors, leaving out more representative or marginalised voices. This dynamic undermines collective decision-making, erodes accountability, and compromises the legitimacy of community engagement mechanisms. Orieso (2021) observes that in several oil-producing regions, platforms created for development and dialogue have been appropriated by local elites who redirect resources for personal gain. Such practices not only weaken participatory frameworks but also exacerbate inequality and fuel divisions within communities, thereby reducing their effectiveness in safeguarding vital energy infrastructure.

Another significant challenge relates to the limited capacity and insufficient technical expertise within many communities concerning the management and protection of energy assets. Although local actors are often the first to respond to threats against infrastructure, their ability to provide consistent surveillance, undertake minor maintenance, or engage in decision-making around technical issues is hindered by low education levels, absence of structured training, and lack of reliable communication tools. As Umoh and Lugga (2018) argue, meaningful community participation in infrastructure protection requires not only willingness but also the capacity to act effectively. However, most community-based initiatives in Nigeria are constrained by chronic underfunding, inadequate institutional backing, and weak integration into formal governance structures. This disconnection undermines both the effectiveness and sustainability of grassroots engagement in infrastructure protection.

Governance fragmentation and overlapping mandates create significant barriers to effective community participation in Nigeria's energy sector. The country's complex governance system—spanning federal, state, and local tiers of government, together with traditional authorities and non-state actors—often generates uncertainty over roles and responsibilities. As Akonwi Nebasifu and Cuogo (2021) explain, such fragmentation results in bureaucratic inertia, conflicting agendas, and weakened accountability. In many instances, communities find themselves caught between contradictory directives from different institutions or excluded entirely due to procedural complexities. Without harmonized and coordinated frameworks, community engagement risks becoming inconsistent, ad hoc, and vulnerable to political interference.

The politicisation of energy infrastructure projects continues to be a major obstacle to effective governance. In many contexts, project development is influenced less by objective needs and more by electoral agendas, ethnic loyalties, or patronage networks. As a result, participatory mechanisms are frequently manipulated, serving as instruments to secure political advantage rather than to foster genuine collaboration. Arowolo and Aluko (2012) observe that in the absence of transparent and merit-based systems, such practices erode trust, transforming community engagement from a cooperative process into one marked by contestation. This not only diminishes confidence in governance structures

but also fuels rivalries that compromise the long-term stability of participatory platforms.

Finally, the lack of legal safeguards and enforceable community rights undermines the institutionalisation of participation. While some policies mention stakeholder engagement, they rarely specify obligations, consequences for non-compliance, or dispute resolution mechanisms. This legal vagueness allows energy companies and government agencies to opt for minimal or symbolic inclusion. As a result, community voices are often excluded from critical phases of infrastructure planning and protection, including environmental assessments, siting decisions, and benefit-sharing arrangements. This legal opacity enables extractive relationships to persist, leaving infrastructure vulnerable to sabotage and neglect.

## 2.7. Technology and Digital Tools for Community-Based Security

The evolving security landscape of energy infrastructure in Nigeria has catalysed a shift towards leveraging technology and digital tools to bolster community-based protection frameworks. These tools, ranging from mobile surveillance applications to data-enabled reporting systems, are increasingly seen as enablers of participatory security, especially in settings where formal policing and institutional oversight are limited. Digital integration offers communities new ways to detect, report, and respond to threats while simultaneously enhancing transparency, trust, and coordination in infrastructure governance.

Digital technologies are increasingly recognised as vital for strengthening infrastructure resilience, particularly in regions vulnerable to disruption. As Omotehinse and De Tomi (2020) observe, tools such as real-time monitoring, remote sensing, and community-based early warning systems play a critical role in identifying risks and enabling timely responses. These technologies empower local actors to detect irregularities, notify relevant authorities, and take preventive measures—capabilities that are especially important in areas affected by pipeline vandalism, transformer theft, and sabotage of electricity grids. Beyond enhancing the physical security of infrastructure, such innovations also facilitate the integration of community knowledge into broader frameworks of national security and governance.

One of the most significant applications of technology has been within participatory risk governance, where communities actively collaborate to secure infrastructure through practices such as information sharing, local mapping, and intelligence gathering. As Umoh and Lugga (2018) highlight, the use of community-based reporting mechanisms and locally managed communication networks has strengthened coordination between community monitors, traditional leaders, and authorities. These systems improve situational awareness and enable faster responses to emergencies or potential breaches. Crucially, such approaches also enhance both vertical communication between communities and government agencies and horizontal collaboration among neighbouring communities—an essential factor in regions affected by conflict and resource-based tensions.

While digital tools provide significant opportunities for strengthening infrastructure security, their effectiveness is closely tied to context-specific implementation. As Matthew (2022) explains, for such technologies to be effectively deployed in rural or marginalised Nigerian communities,

barriers such as limited digital literacy, inadequate access to devices, and linguistic diversity must be overcome. Furthermore, the adoption of community-oriented security technologies requires trust in the systems managing data. Where digital surveillance is perceived as a mechanism of state coercion or corporate exploitation, local populations are likely to resist unless these tools are co-created with communities and embedded in democratic governance practices. This highlights that digital inclusion is not solely a technical matter but one that is deeply political.

Digital innovations have also transformed the way community participation is incorporated into collaborative governance frameworks. Akin (2016), in his examination of community participation in infrastructure development, notes how locally adapted tools can empower residents to play more active roles in monitoring and managing infrastructure. For example, initiatives involving digital mapping and community reporting platforms have enabled volunteers to document faults, notify engineers, and follow up on the resolution of service disruptions. Such systems not only improve infrastructure reliability and reduce unreported incidents but also strengthen user confidence in service providers. Additionally, the data generated supports more strategic planning, allowing for better allocation of resources and reinforcement of infrastructure in areas prone to recurrent challenges.

Despite their potential, a number of challenges remain. Akonwi Nebasifu and Cuogo (2021) stress that without clear institutional frameworks to regulate data use, safeguard privacy, and ensure accountability, the growth of digital tools could deepen existing inequalities. Communities with better digital access may benefit from quicker responses and greater investment, while those without adequate access risk being left behind. Furthermore, when digital surveillance is deployed without participatory oversight, it may reinforce centralized control systems that weaken local agency. For this reason, digital technologies must be embedded within inclusive governance models that uphold rights, promote equity, and secure genuine co-management between communities and institutions.

Despite these concerns, the trajectory is clear: technology and digital tools are becoming central to the future of community-based security in Nigeria's energy sector. They offer unprecedented opportunities to democratize security, improve infrastructure resilience, and bridge longstanding gaps between communities and institutions. When thoughtfully deployed, these tools can support a new model of co-governance that combines local knowledge with technical sophistication, enhancing the safety and sustainability of critical energy systems.

## **2.8. Roles of Women and Youth in Community Security Initiatives**

In the evolving landscape of energy infrastructure protection in Nigeria, the roles of women and youth have gained increased visibility due to their relevance in grassroots-level surveillance, reporting, and conflict mitigation. Although historically overlooked in formal security planning, these demographic groups have played significant roles in informal security structures, community mobilisation, and local intelligence networks that are often more effective than state-led interventions in remote and high-risk areas.

Women have historically taken on roles as local communicators, health custodians, and household decision-

makers—positions that make them vital contributors to community responses against threats. As Omotehinse and De Tomi (2020) explain, in many Nigerian communities, women-led groups have been actively involved in safeguarding energy resources, particularly through environmental monitoring and by-passing information on suspicious activities to authorities via informal networks. Their participation is often less a result of formal institutional arrangements and more a reflection of their vested interest in ensuring reliable energy access and protecting the welfare and safety of their families.

The youth population in Nigeria represents a highly influential yet often unpredictable force in community dynamics. Constrained by limited economic prospects and enduring political marginalisation, young people have historically assumed dual roles—acting as both defenders of community interests and, at times, as saboteurs of vital infrastructure. Orieso (2021) highlights cases from the Niger Delta where youth groups engaged in community defence initiatives but also organised attacks on oil pipelines when they perceived neglect or exploitation by energy corporations. These patterns underscore the imperative of recognising youth as legitimate stakeholders in governance and security, capable of fostering stability when meaningfully engaged, rather than viewing them solely as risks to be contained.

The contributions of women and youth to community-based security efforts are particularly evident in settings where structured collaboration frameworks are in place. Akonwi Nebasifu and Cuogo (2021) note that co-management arrangements provide opportunities for local groups, including youth vigilante networks and women's associations, to play vital roles in reducing unauthorised connections and enhancing infrastructure surveillance. Through initiatives that offer training in safety procedures and monitoring protocols, these community actors are better equipped to engage effectively in safeguarding assets such as transformer stations and distribution networks, thereby strengthening overall protection outcomes.

Technological innovations have also enhanced the involvement of women and youth in community surveillance and reporting activities. Tools such as mobile phones, radio broadcasts, and basic incident-logging platforms have been integrated into local security systems, with younger residents often leading data collection and rapid communication efforts. Alokun (2022) highlights examples from Kwara State where youth volunteers utilised digital reporting applications to provide real-time updates on theft, vandalism, and fire hazards affecting critical infrastructure. These interventions frequently facilitated quicker responses from utility providers and security agencies compared to conventional reporting methods, thereby strengthening the overall effectiveness of community-based protection systems.

Despite their potential contributions, the involvement of women and youth in community security continues to be restricted by several operational challenges. Umoh and Lugga (2018) note that the absence of formal training programmes, inadequate safety measures, and limited resource support significantly undermine the effectiveness of these groups in safeguarding infrastructure. For instance, youth volunteers are frequently left without basic protective gear, transportation, or formal legal recognition, which places them at considerable risk when addressing threats such as vandalism or illegal activity. Similarly, women often face

cultural and practical barriers that limit their mobility and participation, particularly in more conservative areas or during periods of heightened insecurity.

Despite these challenges, evidence indicates that where women and youth are engaged with appropriate support, their contributions to energy infrastructure protection are substantive and measurable. They represent untapped capacity in intelligence gathering, public education, and local coordination—functions that are essential for maintaining the integrity of energy systems in fragile or underserved regions. Their presence in community security initiatives also contributes to broader awareness and participation, fostering an environment where vigilance becomes a collective responsibility.

### 2.9. Economic and Social Incentives for Sustained Participation

The sustainability of community engagement in energy infrastructure protection is closely tied to the presence of tangible economic and social incentives. In regions of Nigeria where energy projects intersect with historical marginalisation, insecurity, and underdevelopment, the motivation for communities to protect infrastructure is often influenced by the immediate and perceived benefits of doing so. Without structured incentive mechanisms, participation is likely to be short-lived, poorly coordinated, or entirely absent. This section explores the role of both material and relational incentives in sustaining community involvement in infrastructure governance and protection.

Economic incentives are consistently among the strongest motivators for community participation. As Omotehinse and De Tomi (2020) argue, the concept of the social license to operate (SLO) illustrates how communities are more inclined to cooperate in safeguarding infrastructure when companies or government institutions provide opportunities such as employment, training, or business partnerships. These forms of engagement create a sense of shared interest in the durability of infrastructure assets and encourage collaboration rather than conflict. Although informal, the SLO acts as a powerful driver by directly connecting community support to tangible socio-economic benefits, thereby reinforcing stability and long-term protection.

Beyond employment and livelihood initiatives, mechanisms such as direct financial compensation and revenue-sharing have proven critical in strengthening community commitment to infrastructure security. In Nigeria's oil-producing regions, Orieso (2021) observes that where communities were provided with structured financial benefits tied to development projects, they became more proactive in monitoring energy assets and reporting threats to pipelines. Conversely, in areas where no such incentive systems existed, acts of sabotage and theft were often adopted as alternative means of extracting value from the infrastructure. This evidence highlights the importance of establishing transparent and regulated benefit-sharing frameworks that formalise community responsibilities while linking them to clear and measurable returns.

Social incentives, though less tangible than financial rewards, play a critical role in sustaining community engagement in infrastructure protection. According to Umoh and Lugga (2018), recognition, respect, and involvement in decision-making processes foster a shared sense of responsibility among local actors. When community members feel acknowledged and empowered, they are more likely to

participate actively in surveillance and reporting activities. These social drivers also encompass access to information, public visibility, and opportunities to contribute meaningfully to project direction. In contexts where communities clearly see the impact of their input, participation is embraced as a meaningful responsibility rather than perceived as an additional burden.

Co-management frameworks that integrate community representatives into formal governance systems provide a balance of economic and social incentives. As Akonwi Nebasifu and Cuogo (2021) explain, such arrangements allow local security committees to take on responsibilities such as enforcing community bylaws, mediating disputes, and overseeing access to energy assets. While participants may receive modest stipends or training, the greater benefit lies in the legitimacy and status these roles confer within the community. This hybrid model demonstrates that even limited material rewards, when combined with inclusive decision-making and shared authority, can foster high levels of trust, cooperation, and commitment to infrastructure protection.

Despite demonstrated successes, many community incentive mechanisms in Nigeria continue to be characterised by informality, inconsistency, and chronic underfunding. Abimbola *et al.* (2016) observe that while government policies frequently reference community participation, they often fail to provide the necessary budgetary allocations to support effective implementation. In parallel, corporate social responsibility (CSR) initiatives introduced by private firms are sometimes misaligned with community priorities or lack long-term sustainability planning. These shortcomings contribute to frustration and disengagement among local actors, weakening the foundations of participatory governance and heightening the risks posed to critical infrastructure.

For incentives to be truly effective, they must be predictable, transparent, and tied to performance indicators that communities understand and can influence. Employment schemes must be accompanied by contracts or memoranda of understanding that protect community rights and clarify expectations. Revenue-sharing mechanisms must include grievance redress systems and independent audits. Training and capacity-building should be consistent and locally adapted. Only under such conditions can economic and social incentives move beyond short-term appeasement and function as tools of a durable partnership.

### 3. Pathways to Collaborative Governance and Sustainable Protection

As Nigeria's energy infrastructure continues to face persistent threats from vandalism, theft, sabotage, and neglect, the need for collaborative governance approaches to achieve sustainable protection has become increasingly urgent. The limitations of state-centric security responses, often characterized by militarized protection, fragmented oversight, and reactive policy, have prompted stakeholders to explore new governance pathways that place local actors at the centre of infrastructure resilience strategies. These pathways emphasize cooperation between public institutions, private energy firms, and community stakeholders to co-manage, co-monitor, and co-secure critical assets.

A central principle of governance pathways is that shared responsibility enhances the legitimacy, efficiency, and responsiveness of infrastructure protection. Omotehinse and

De Tomi (2020) emphasise that risk management should be distributed across a range of actors, particularly those living closest to energy facilities, as they hold valuable contextual knowledge, social connections, and adaptive capacities that enable them to anticipate and respond effectively to local threats. Their work illustrates that informal community-based surveillance and alert systems often contribute more significantly to reducing risks than conventional enforcement approaches, underscoring the importance of embedding community participation into energy governance.

Building effective collaborative governance frameworks depends on the clear institutionalisation of roles, responsibilities, and procedures for all stakeholders. Ogunleye, Coenen, and Hoppe (2022) emphasise that in Nigeria's energy sector, communities should not be treated merely as consultees but as active participants in the design, execution, and monitoring of energy projects. Such inclusive approaches enhance transparency, minimise conflict, and cultivate a stronger sense of ownership among local actors. Importantly, they also help to bridge the longstanding gap between centralised governance practices and the decentralised realities of community authority and informal institutions across Nigeria.

The argument for positioning community co-management as a cornerstone of collaborative governance is increasingly recognised in both academic and policy debates. Akonwi Nebasifu and Cuogo (2021) highlight examples where agreements between local groups and external actors created frameworks that not only reduced vandalism but also improved grievance resolution and strengthened the upkeep of infrastructure. These co-management models often incorporate the formal recognition of community security groups, the organisation of joint patrols, structured conflict-resolution mechanisms, and targeted capacity-building efforts. Crucially, their analysis shows that when communities are entrusted with clear responsibilities and granted institutional legitimacy, they are more inclined to serve as protectors of infrastructure rather than adversaries.

An important aspect of these governance approaches is the incorporation of participatory risk governance mechanisms, which enable communities to take an active role in identifying, reporting, and managing potential threats. Umoh and Lugga (2018) describe how local initiatives have utilised early-warning systems, community-driven reporting channels, and peer-monitoring arrangements to protect energy infrastructure. Such mechanisms not only help to prevent security incidents but also minimise misinformation and speculation that could otherwise fuel tension and conflict. Moreover, by engaging communities in risk assessment exercises, these approaches provide more accurate mapping of vulnerabilities and allow government agencies to allocate resources more effectively.

Alongside governance arrangements, the long-term sustainability of infrastructure protection relies heavily on embedding robust social accountability frameworks that oblige both energy companies and state agencies to act with transparency and responsiveness. Orieso (2021) notes that when mechanisms such as community surveillance systems and grievance procedures are formalised within project agreements, they foster stronger relationships between stakeholders while reducing destructive practices. Evidence from Nigeria's oil-producing areas shows that where communities are empowered to demand accountability through established channels, incidents of sabotage and

protest decline significantly. Such frameworks ensure that collaboration extends beyond symbolism and is reinforced by binding and enforceable commitments.

Although promising, the shift toward collaborative governance faces institutional and political hurdles. Central among them is the fragmentation of authority across Nigeria's federal, state, and local governments, which complicates the development of unified policies. There is also resistance from entrenched interests that benefit from opaque governance and exclusive control over infrastructure projects. Nonetheless, successful pilots and case studies continue to demonstrate the viability and replicability of co-governance models in contexts marked by insecurity, underdevelopment, and public distrust.

#### 4. Conclusion

The security of Nigeria's energy infrastructure remains a pressing challenge that lies at the intersection of governance, socio-political dynamics, and community resilience. Pipelines, power stations, and transmission networks are more than technical assets; they are embedded within contested spaces marked by historical grievances, environmental degradation, and uneven development. The recurring sabotage, vandalism, and theft of these critical facilities highlight not only material vulnerabilities but also deeper fractures in the social contract between the state, corporations, and host communities. Addressing such threats requires moving beyond militarised or purely technical strategies to embrace participatory, inclusive, and context-sensitive governance approaches.

This study has shown that collaborative governance, decentralisation, energy justice, and participatory risk frameworks provide valuable theoretical lenses for rethinking the protection of energy assets. Community involvement, when institutionalised through binding agreements, transparent benefit-sharing, and accountability mechanisms, enhances both legitimacy and effectiveness. Empirical evidence from initiatives such as grassroots surveillance networks, joint patrols, and co-management committees demonstrates that local actors possess critical knowledge, social capital, and adaptive capacity that can complement formal security systems. Importantly, these models are most successful when communities derive tangible socio-economic benefits, thereby linking infrastructure protection to broader questions of justice and development.

Nevertheless, challenges remain. Fragmented governance, elite capture, inadequate funding, and inconsistent policy implementation undermine the sustainability of participatory arrangements. Moreover, issues of inclusion—particularly the roles of women, youth, and marginalised groups—require greater attention if community engagement is to be genuinely transformative rather than symbolic. Emerging risks, such as cyber threats and the politicisation of digital surveillance, further complicate the landscape and demand adaptive strategies that combine technology with social accountability.

In moving forward, Nigeria's policy and institutional frameworks must embrace a paradigm shift from reactive, top-down interventions to proactive, co-produced security arrangements. Embedding participatory governance into national energy policy, strengthening trust between stakeholders, and aligning infrastructure protection with developmental gains will be critical. Only through such integrated and inclusive strategies can Nigeria safeguard its

energy infrastructure, secure its economic future, and foster sustainable stability in regions long marked by volatility.

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