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Navigating electricity infrastructure access in Africa: An analysis of the politics of rural electrification programmes in Tolon District, Ghana

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ABSTRACT

Access to electricity infrastructure has been highlighted as a catalyst for socioeconomic development in Africa. Despite growing political demand for community connection, academic scholarship has given it limited attention. Using a concurrent mixed-methods approach, this paper explored the political drivers of rural electricity demand in the Tolon District of Northern Ghana. Political visits and campaign periods were found to be the most reliable platforms for rural communities' demands. Partisan and other political factors are key drivers of this demand. To address this, the capacities of decentralised institutions like the DA should be built alongside the Ministry of Energy, focusing on RE policymaking while decentralising planning and connection to the DA. This can reduce centralisation and politicisation by enhancing grassroots participation, promoting the reliability of decentralised institutions. Additionally, RE infrastructure programmes should focus on socio-economic and institutional aspects to be responsive to rural communities' diverse expectations.

1. Introduction

Electricity infrastructure plays a vital role in the development of rural communities. International development protocols and initiatives advocate accelerating rural electrification (RE) access programmes to achieve universal access (OECD, 2007; Obeng et al., 2009). The Millennium Development Goals (MDGs) were considered unattainable without addressing energy poverty (UNDP, 2005; Feron et al., 2016). Sustainable Development Goal 7 (SDG7) emphasises the necessity for affordable, reliable, sustainable, and modern energy by 2030, with emphasis on investment in energy infrastructure, particularly in rural areas (UN, 2015; Feron et al., 2016). Despite these ongoing efforts, rural communities continue to face significant access gaps. In 2020, only 44% of the rural population in the least developed countries had access. Sub-Saharan Africa (SSA) exhibits the most concentrated rural access deficit, representing 77% of the global shortfall in 2020. It also contains the 20 countries with the most considerable access deficits worldwide, accounting for 76% of the population without electricity and nearly half of the world's underserved rural population (IEA, IRENA, UNSD, World Bank, WHO, 2021).

In Ghana, regional discrepancies exist in rural access to the national grid. Data indicates that 46.1% of rural households in the Savannah Ecological Zone lacked electricity. Furthermore, 59.5% of rural households in the Northern Region are unlikely to connect to the grid due to inaccessibility. The Tolon District had a national grid electricity access rate of 62.7% in 2019, compared to the regional average of 70.2%. This suggests that, despite a high rural population of 78.2%, the district faces significant challenges in power access (Abdallah et al., 2015).

Many African countries, including Ghana, have initiated electricity access policies, such as the National Electrification Scheme (NES) and the related Self-Help Electrification Project (SHEP). These policies, led by the Ministry of Energy in collaboration with District Assemblies, aim to bridge the access gap by 2020 (Ministry of Energy, 2010). These initiatives have increased demand among rural communities, leading to contestation and political complexities (Romeo & Smoke, 2014; Cotton et al., 2019) since many rural areas lack electricity (Naah, 2015; IEA et al., 2021; IEA et al., 2022). Discussions on energy politics and rural electrification (RE) have gained empirical attention in Africa and beyond; however, emphasis has been on rural households' connection. Ferrall et al. (2021) highlighted political economy aspects affecting off-grid RE delivery. Scott and Seth (2013) examined how the political economy of electricity distribution impacts service delivery in developing nations. Trotter (2016) focused on political drivers of RE infrastructure, with the finding that democracy correlates with increased rural electricity access. Yet, contestations surrounding rural communities' demand for grid RE connections remain underexplored in academic scholarship,

especially in developing countries like Ghana (Romeo and Smoke, 2014; Cotton et al., 2019).

It should be noted that extending electricity to rural areas and connecting communities in developing countries like Ghana precede household connections. Establishing rural electrification (RE) infrastructure at the sub-national level, such as in the Tolon District, poses considerable challenges (MoE, 2010). The district's electricity access rate is 78.6 per cent, which does not match the NES's 2020 universal access target (MoE, 2010). Recently, Tolon District has been identified as the most deprived area for services, with 58.6 per cent of its population experiencing multidimensional poverty, ranking it last in the Northern Region (Ghana Statistical Service, 2021). Notably, 54.7 per cent of rural households depend on kerosene for lighting (Ghana Statistical Service, 2014). These factors appear to be contributing towards growing intense contestations and political complexities affecting the implementation of RE programmes (Setyowati & Quist, 2022; Taylor, 2024). The situation calls for empirical analysis of political drivers influencing grid-based RE infrastructure demand, considering the diverse stakeholders and slow connection pace (Romeo & Smoke, 2014; Baker & Phillips, 2018). This paper applies political settlement theory to highlight the contextual perspectives of rural regions in the Tolon District, focusing on community demands and the political influences affecting the demand for grid RE infrastructure connection.

The rest of the paper is structured as follows: Section 2 deals with a review of relevant literature drawing on the political settlement theory, the dynamics of a rural community, Grid RE infrastructure demand, political drivers and major RE policies and programmes, as well as the institutional set-up for RE in Ghana. Section 3 presents a brief study area and methods. Section 4 focuses on the presented results and discussion, and Section 5 on the conclusion and policy implications.

2. Review of relevant literature

2.1 Political Settlement Theory

Political settlement theory outlines the power arrangements or "social order" within a state, emphasising how power dynamics manifest among actors, their interests, and institutions. It suggests that informal and formal processes can consolidate politics without violence to address differing interests and resource distribution (Kelsall, 2016). Conflicting interests pertain to power and resource accessibility, particularly concerning renewable energy facilities. Political Settlement Theorists acknowledge diverse interests and advocate for management arrangements *(ibid)*. The theory has faced criticism for bias, primarily describing events such as conflict resolution or peacebuilding (Barnes, C., 2009; Jones, Elgin-Cossart, & Esberg, 2011). Some argue it should be viewed as a fluid political process relevant to contexts such as electricity infrastructure (Menocal, 2015; John & Putzel, 2009). Thus, engagement promotes equity in resource distribution and institutional arrangements for rural electricity programmes. An emphasis on power and resource distribution supports broader opportunities and equity demands. This perspective aids in understanding the motivations of rural communities for electricity infrastructure connections. Additionally, focusing on diversity influences the various realities and research methods, as demonstrated in the pragmatist paradigm, which informed the mixed methods approach outlined below.

2.2 Rural community and demand for grid RE infrastructure

Low population density, poor incomes, and limited access to infrastructure such as electricity define rural communities. These factors influence the Ministry of Energy's criteria for selecting communities for grid RE connection, particularly under Ghana's Self-Help Electrification Programme (Ministry of Energy, 2010). Demand for infrastructure is influenced by characteristics such as being "public," social, hard, and soft (Romeo & Smoke, 2014; Bhattacharyay, 2009), which allow descriptions based on ownership, service type, or tangibility. These traits are pertinent to *grid electrification* (RE) infrastructure. Demand for rural electricity infrastructure frequently involves selecting the least costly access options, such as stand-alone systems, mini-grids, and grid connections, depending on the region. Demand refers to communities or governments choosing a rural electricity connection from various alternatives. Most rural communities prefer grid electricity, the most convenient, reliable, and economical option. In Ghana, rural communities' demand for electricity has fluctuated with different rural infrastructure programmes. Under the Self-Help Electrification Programme (SHEP), the demand for grid infrastructure necessitates financing of at least 30 per cent of connection costs, and at least 30 per cent of households must be prepared to receive power (Amous et al., 2002; Francis & Emmanuel, 2017).

2.3 Political drivers of demand for grid RE infrastructure connection

Growing demand for RE infrastructure is integral to the political settlement issue concerning voters (Ahlborg & Hammar, 2014; Harris et al., 2012; Batley & McLoughlin, 2015). Rural communities' voting patterns align with their electricity access needs (Trotter, 2016; Brass, Harris, & MacLean, 2019). High demand makes infrastructure provision politically significant (Scott & Seth, 2013), especially during elections when political parties promise grid access *(ibid)*. Brown and Mobarak (2004) highlighted that resource allocation in many democratic developing countries favours residential demand over other uses. This aims for short-term political gains, as communities often vote for parties that provide the desired services (Robinson & Verdier, 2013; Golumbeanu and Barnes, 2013). Even in contexts where rural electricity infrastructure is not critical in elections, politicians aim to broaden their base by providing such services.

Banerjee & Somanathan (2004) and Robinson and Verdier (2013) warned against overestimating rural voters' capabilities. They argued that these communities cannot effectively evaluate the performance of politicians. Wild et al. (2012) supported this, noting that voters do not always choose based on infrastructure programs in fragmented rural societies. They often vote based on party affiliation, especially in communities with strong traditional political authority. For instance, a chief's endorsements can

significantly boost votes, more than a party's infrastructure provision ability (Brierley & Ofosu, 2021). Various factors motivate rural communities to demand connections, including political promises, village party affiliations, participation, lobbying, and effective energy policies (Besant-Jones, 2006; World Bank, 2008). This study considered these political drivers for analysis.

2.4 Political dynamics of Grid RE Programmes in Ghana

Ghana's political dynamics regarding rural electrification date back to British rule. Before independence, there were few policies for rural electricity access, as British energy infrastructure primarily aimed to exploit resources and support military activities (MacLean et al., 2016; Bukari et al., 2020). Consequently, economically unviable communities were deprived, indicating significant underprivilege. After colonial rule, ensuring electricity access became a developmental priority for the Government, as it was recognized as vital for rural development (Miescher & Tsikata, 2009). The CPP government prioritized electricity infrastructure, especially with the Volta River Project in the 1950s, planning future national grid expansions to rural areas even before the Dam's commissioning. While essential for transformation, this initiative was not just viewed as politically advantageous (MacLean et al., 2016), but was short-lived after the CPP's departure (MacLean et al., 2016).

The political dynamics persisted across successive regimes. Trotter (2016) characterises the democratisation process from the 1990s to the 2000s as significant for Ghana's rural electrification. Former President Rawlings, following an extended period of military rule, strategically adopted rural infrastructure programmes considering the 1992 multiparty elections. He focused these interventions on rural areas beginning in 1988 (Sandbrook, 2000). The Energy Centre (2011) supported this, stating that the aim of expanding rural electricity in Ghana is to gain votes, typically peaking in election years. Briggs (2012) noted that constituencies benefiting from the National Electrification Scheme (NES) in the 1990s were more likely to vote for the National Democratic Congress (NDC). Rawlings and the NDC intensified the NES in 1996 by launching Phase Two of SHEP in 1995. The initiated programmes enhanced votes, leading to the moniker "electrification government" (Sackeyfio, 2018:107). This strategy influenced election outcomes, with rural constituencies demonstrating notable increases compared to urban areas. Griggs (2012) concluded that beneficiaries of the National Electrification Programme (NEP) infrastructure influenced voting patterns. Following their 2000 election victory, the New Patriotic Party (NPP) re-launched SHEP in 2001, concentrating on installing low-tension distribution poles within 20 km of grid lines, electrifying 4,800 communities by 2009. Un-electrified rural communities often demanded grid connections from incumbents. Sackeyfio (2018:107) noted that rural voters protested for connections with the slogan "no electricity, no power, no vote". The NDC's failure to secure the 2000 election may partly stem from shortcomings in addressing electricity infrastructure demands (MacLean et al., 2016). Rural electrification has become a "political tool no government could afford to take for granted" (Sackeyfio, 2018:107).

2.5 Major RE policies in Ghana

Ghana's electricity sector has evolved through various policies and programmes. The first attempt to develop a modern legal framework for the energy sector began in the 1920s with the Electricity Supply Ordinance (ESO), when electricity coverage was restricted to a few mining towns. The ESO aimed to regulate private diesel electricity generation through the Electricity Department (MacLean et al., 2016; Bukari et al., 2020). In the 1970s, a rural development policy with a broad Rural Electrification Programme (1970-1989) was initiated to provide electricity to the entire rural population, bridge the urban-rural inequality gap, and enhance socio-economic development (Obeng et al., 2009). This policy required communities to contribute about 1% of the initial cost, which resulted in only around 70 communities connected to the electricity infrastructure. Since then, numerous policy reforms and initiatives have emerged, including the National Electrification Scheme (1990-2020) with its complementary Self-Help Electrification Projects, which targeted universal access by 2020 (MoE, 2010; Schott and Seth, 2013).

2.6 Institutional structure of the Ghana energy sector

Figure 1 illustrates the institutional arrangement for implementing rural electrification (RE) infrastructure programmes, detailing structures involved in policy formulation, power generation, transmission, and distribution. It highlights interrelationships among framework participants, with the Presidency leading and the Ministry of Energy (MoE) working with the Ministry of Finance (MoF) on policy development and RE programme execution. The Presidency shows keen interest due to the positive link between electricity access and electoral support. Additionally, Members of Parliament are interested not only in approvals but also in lobbying for community benefits and assisting with funding for local connections (Ministry of Energy, 2010). The Metropolitan, Municipal, and District Assemblies (MMDAs), alongside traditional authorities, play a crucial role in initiating programmes to develop essential infrastructure, including electricity (Botchie, 2000; Der Bebelleh & Nobabumah, 2013; Government of Ghana, 2016). MMDAs and beneficiary communities are integral to executing RE programmes by facilitating project identification, surveys, and obtaining rights of way (ROW), among other tasks. International energy policies and donor support influence all levels, as shown in the framework. However, the setup lacks specific, dedicated, and decentralised institutions for rural electrification programmes, especially at the district level. The implementation of RE programmes is vital to the broader energy sector policy overseen by the MoE *(ibid)*, which risks undermining the MoE's focus and progress towards electrifying unconnected rural communities.

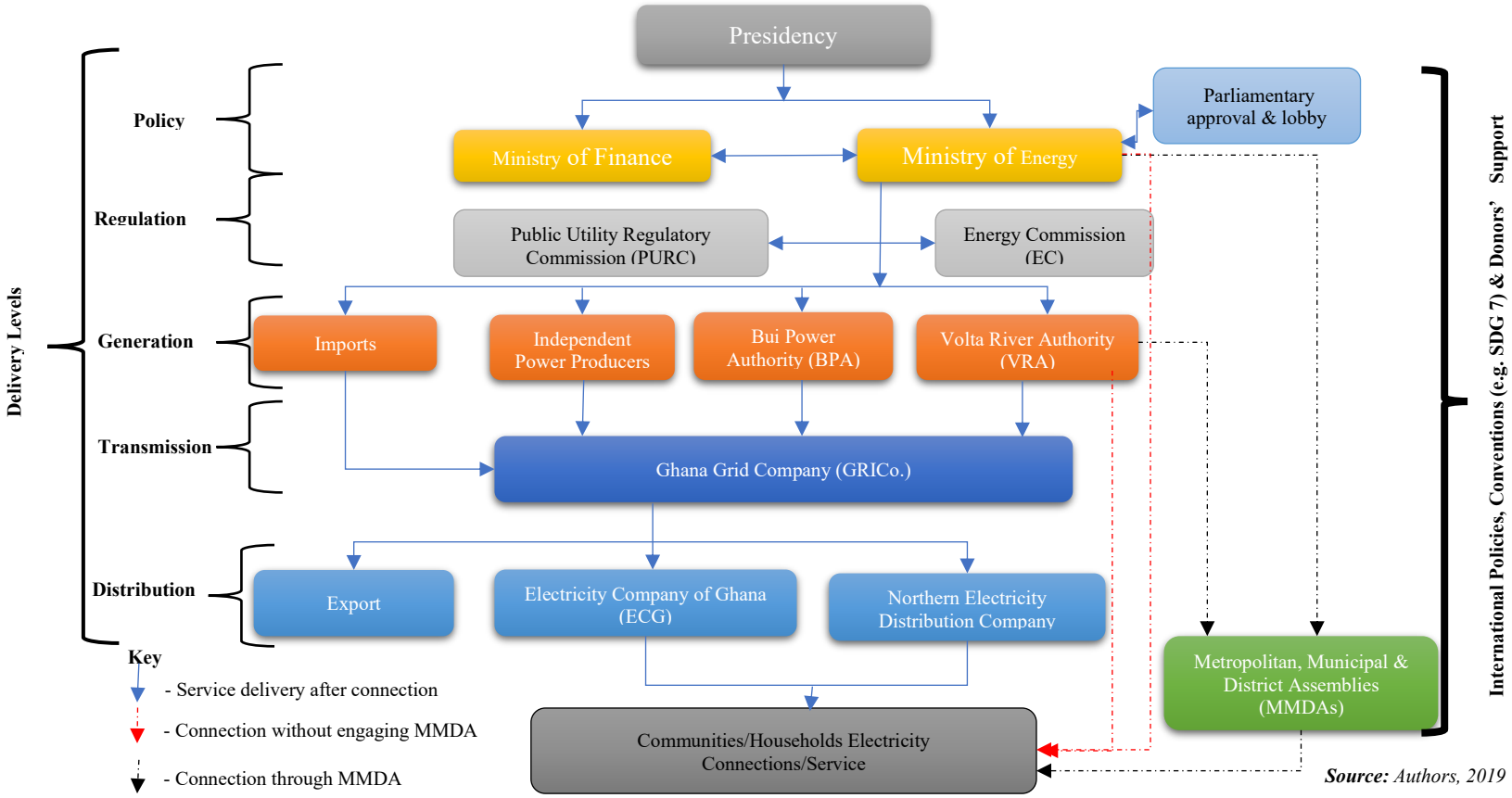


Figure 1: Institutional set-up for the electrification sector in Ghana

3. Study area and methods

The Tolon District, established in 2012, is situated in the Northern Region of Ghana. It is bordered by North Gonja, Kumbungu, Sagnarigu Municipal, Tamale Metropolis, and Central Gonja Municipality. The District Assembly, comprised of elected representatives and government appointees, oversees development and facilitates community access to electricity infrastructure. The traditional authority system, which shall consist of nine Paramount Chiefs under the Yaa-Naa, supports the Assembly and fosters a peaceful environment for development.

The district's predominantly female and rural population has grown significantly, underscoring the need for improved infrastructure, particularly electricity, to bolster education, healthcare, and economic development. The economy relies heavily on agriculture, with limited industrial and service activity. Figure 2 illustrates a map of the Tolon District.

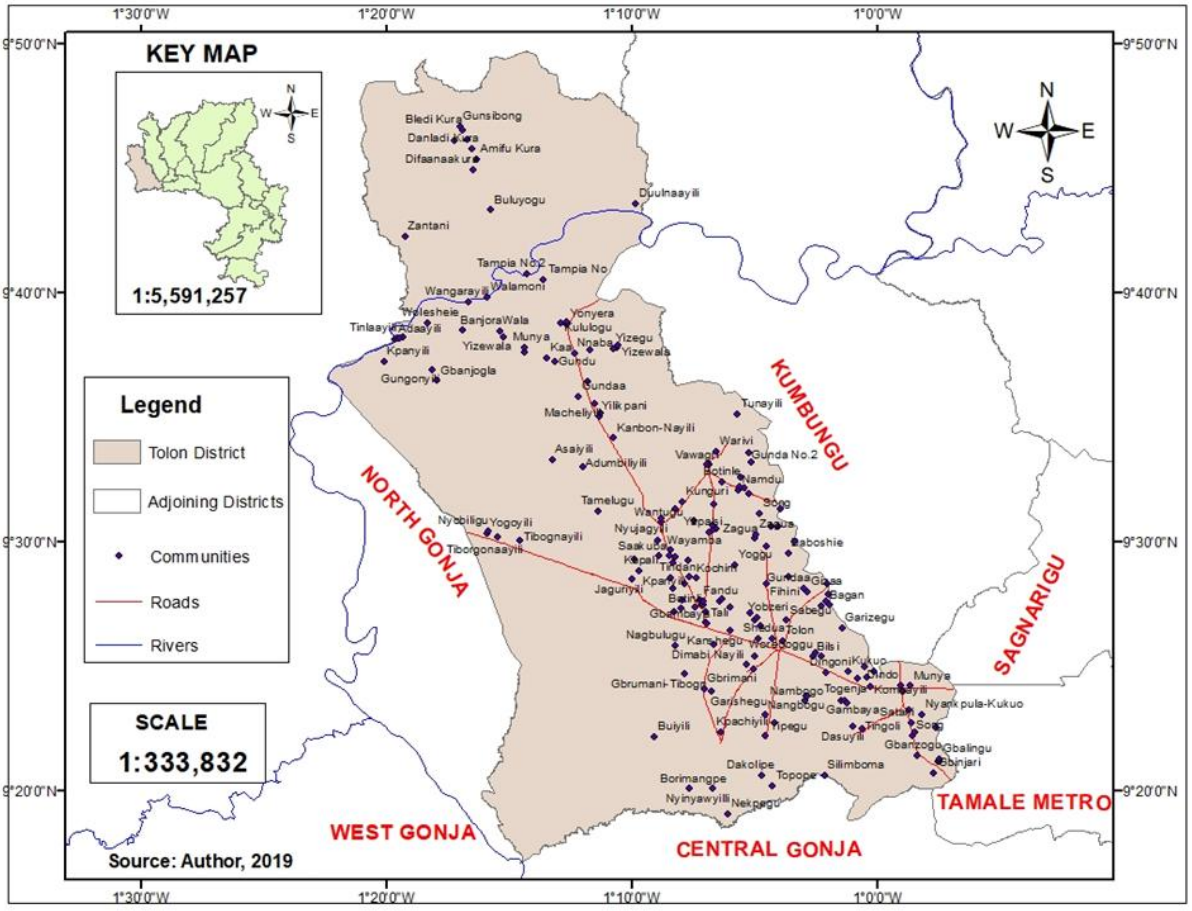


Figure 2: Map of Tolon District

3.1 Materials and methods

A mixed research approach, combining quantitative and qualitative data collection methods, explored and explained a phenomenon. The quantitative component involved a descriptive survey of 385 rural household heads. These were distributed among the sampled communities from District Six (6) Area Councils (ACs): Nyankpala AC, Tolon AC, Tali AC, Yoggu AC, Kasuliyili AC, and Lungbunga AC. In each AC, the list of targeted communities was stratified into 'communities with RE infrastructure' (CREI), 'communities without RE infrastructure' (CWREI), and 'communities with ongoing RE infrastructure' (COREI). A simple random technique selected one (1) community from the CREI and CWREI strata within each AC, resulting in twelve (12) communities. However, a preliminary study shows that COREI exists in only a few ACs, so we cannot assume all AC-based classifications. Still, data from these communities is crucial for cross-analysis and bias reduction. Thus, simple random sampling was used to sample six (6) communities from the district's ten (10) COREI, raising the total sampled communities to

eighteen (18). The household (HH) respondents totalled 385, selected proportionately. The qualitative component purposively drew 71 key informants (KIs) from relevant institutions (including the Ministry of Education (MoE), Volta River Authority (VRA)/Northern Electricity Distribution Company (NEDCo), Energy Commission (EC), and Public Utility Regulatory Commission (PURC)). The total number of respondents reached 457.

Data from primary and secondary sources were used to validate findings and enhance reliability. An integrated analytical framework was used to concurrently analyse quantitative and qualitative data, with results presented in tables, bar charts, and curves.

3.2 Limitations

Although over polarization of rural communities appeared to have the potential of influencing response rate, the training and ensuring the application of good ethical practice helped in reducing such setbacks. Also, the claim that qualitative and quantitative approaches are incompatible (Chen, 2006), drawing a better understanding of a social phenomenon such as this requires a cross-method since neither method could better provide the answers to the research questions as indicated in the analytical framework.

4. Results and discussions

The results are reported under three broad headings, reflecting the study's objectives. These encompass engagement platforms for connection, the existing political influence, and the major political drivers of rural communities' demand for grid electricity connection in the study area.

4.1 The most reliable platform for grid RE connections

To identify the most reliable platform for communities needing grid RE infrastructure connection, respondents ranked five perceived platforms: District Assembly meetings, 'election campaign period', 'politicians' visits', 'community action plans (CAP) preparation period', and 'Area Council meetings' from 1 to 5. Table 3 shows results from 385 participants. Kendall's coefficient of concordance (W) was 0.713, indicating that 71.3% of participants agreed with the ranking of the district's most reliable platforms for demanding grid RE connection. The results show that 'politicians' visits' and 'election campaign period' are the 1st and 2nd most reliable platforms for community connection to grid RE, with mean scores of 4.51 and 3.79, respectively. Follow-up in-depth interviews with key informants confirmed these outcomes, as illustrated in the following extracts.

> *"We went to VRA, and they redirected us to the District Assembly. We went to the Assembly till we became fed up. When the DCE visited us, it allowed us to demand a connection. We demanded that our community be connected before the end of 2012, or else we wouldn't vote for the party (NPP). Quickly, materials were brought and installation started" (Extract from interview response of CL4- December, 2019).*

> *"It is mostly when you visit them (rural communities), especially when you are getting towards elections. They put it on their card. They want to tell you that they wouldn't vote for you if you cannot provide this. So that also encourages us to work and satisfy their demand" (Extract from interview response of a former MP - December 2019).*

Thus, political visits and campaign platforms are the most reliable avenues for demanding grid connections. This reinforces the argument that access to electricity has become an integral part of broader political settlements and a significant issue that concerns voters, leading them to seek the most appropriate platform for engagement, particularly regarding electricity connections (Harris et al., 2012; Asante & Kunnath, 2022). Therefore, political visits and campaign periods have provided a better opportunity for interaction between politicians (Opong, Oduro, & Awal, 2013) And voters, especially in advancing their communities' connection to grid electricity.

The data further showed Community Action Planning Periods and Area Council Meetings were found within the two (2) least platforms with mean scores of 2.18 and 1.53, respectively, and hence ranked 4th and 5^{th,} respectively. Thus, Community Action Planning Periods and Area Council Meetings platforms are moderately reliable and less reliable when demanding community connection to grid electricity in the district. This may cast doubts on the efficacy of the decentralized planning process, which is the expected route for communities to get their desires on the district development agenda.

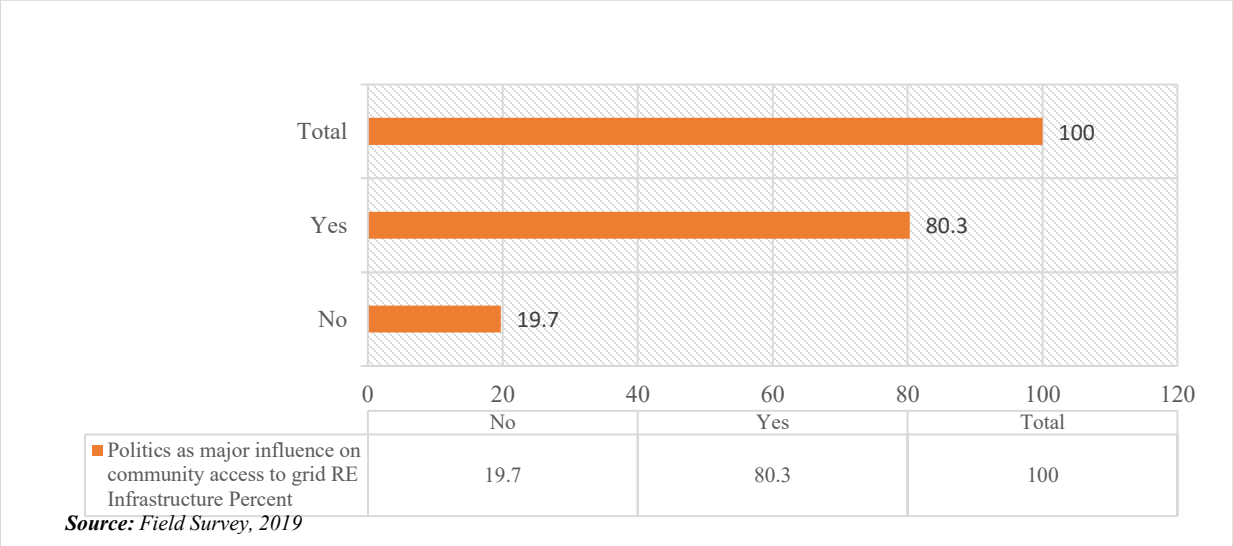
Table 3: Ranks on the most reliable platform/channel for demanding grid RE infrastructure connection

			Mean Rank	
DA Meetings			2.99	3rd
Election Campaign Period			3.79	2nd
Politicians' Visits			4.51	1st
Community Action Planning Periods			2.18	4th
Area Council Meetings			1.53	5th
Test Statistics				
N				385
Kendall's W[a]				.713
Chi-Square				1098.060
df				4
Asymp. Sig.				**.000**
Monte Carlo Sig.	Sig.			.000[b]
	95% Confidence Interval	Lower Bound		.000
		Upper Bound		.008

a. Kendall's Coefficient of Concordance
b. Based on 385 sampled tables with starting seed 2000000.
Source: *Field Survey, 2019*

4.2 Existing political influence (drivers) of community connection

The respondents' opinions on whether politics influences (drives) rural communities' connection were sought. Figure 3 revealed that the majority (80.3%) answered in the affirmative.



Source: *Field Survey, 2019*

Figure 3: Politics as a major driver of community connection to grid RE infrastructure

Chi-Square Tests on the Association between Political Drivers and Community Connection

To further establish the statistical basis for the 80.3 per cent of respondents' affirmation, a Pearson Chi-Square (X^2) Test was employed due to the categorical nature of the variables. (Landau & Everitt, 2004). Thus, with a valid case of 385 and a 1 per cent degree of freedom, Table 4 indicated an X^2 value of 45.576 at a 1 per cent significance level. This implies a strong association between political influence and the drive for community connection to grid RE infrastructure in the district, all things being equal. The outcome was buttressed by most key informants as portrayed in the ensuing extract of an interview response when a community leader's opinion was sought.

> *"We always demanded light from the politicians whenever they came around for a campaign. So, during President Mills' regime, the poles were brought. But after his demise, we gave up. We got fed up and decided to contribute money to extend it ourselves. The*

NDC Party Executives and the MP told us to be patient. So, during Mahatma's term, the MP helped erect the poles and wiring. (Extract of interview response from CL4- December, 2019).

The result corresponds to Brass et al. (2019), claiming a strong correlation between political participation and access to electricity in democratic regimes, especially in African countries.

Table 4: Chi-Square Tests: Association between political drivers and community connection

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	45.576[a]	1	.000		
Continuity Corrections	43.797	1	.000		
Likelihood Ratio	44.185	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	45.458	1	.000		
N of Valid Cases	385				

a. 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 27.64.
b. Computed only for a 2x2 table
Source: *Field Survey, 2019*

4.3 Major political drivers of grid RE connection

Table 5 shows agreement levels about perceived political drivers of demand using a Likert scale. Evaluated items include 'community driven by affiliation to a political party in power', 'perceived vote/voted political party in power', 'nature of the current RE policy', 'political campaign promises drive community', 'ability to lobby politicians/political institutions', and the reliability of the DA's implementation of the current RE infrastructure programme. The findings are summarized in the table. For 'community driven by affiliation to a political party in power', 48.3% strongly agreed and 41.3% agreed. Neutral respondents were 8.1%, while 2.4% disagreed. High agreement levels may reflect the politically inclined selection process in the study area.

In the context of 'perceived vote/voted political party in power', 46.8% agreed and 42.6% concurred. Indecisive respondents and those who disagreed were 7.0% and 3.6%, respectively, with less than 1% strongly disagreeing. This positive response may indicate the over-politicisation of grid RE infrastructure programmes and growing community awareness of its utilization for connecting rural areas.

Regarding the 'nature of the current RE policy,' 48.1% agreed, followed by 22.6% who strongly agreed. 17.9% were neutral respondents, and 11.2% disagreed. The agreement suggests that rural communities value the universal access policy and its impact on their connectivity. For 'community driven by political campaign promises', 46.2% agreed. Neutral respondents comprised 25.2%, followed by 23.1% who strongly agreed, while less than 6% disagreed or strongly disagreed with the statement.

Our ability to lobby politicians/political institutions drives demand, and 53.8 per cent of participants agreed. This was followed by those who neither agreed nor disagreed with 22.6 per cent, those who strongly agreed with 18.7 per cent, whereas the least (5.0%) were participants who disagreed. This depicts growing communities' engagement with the DA and related leaders, such as the MPs and DCEs, in connection with electricity. A cross-analysis with the thematic analysis results further validated this opinion in the under-listed lines.

"The rural communities worry (lobby) us a lot (for RE connection)" (extract from interview response of a Constituency Chairman - December, 2019)

"Oh, the former MP was the one who helped us. We only spoke to him, and he took it from there" (extract from interview response of CL1-December, 2019).

This argument falls within the context that lobbying is among the effective strategies for engaging political actors in development policies and/or interventions, such as rural community connection to electricity in Ghana (Opong, Oduro, & Awal, 2013).

Regarding the idea that 'community demand is driven by the perceived reliability of the DA's implementation of the current RE infrastructure Programme', 44.7 per cent of the respondents were in the agreed category. Those who were unsure formed

the next highest (27.0%), whilst 1.6 per cent strongly disagreed with the proposition. This outcome is not surprising given that, per the Local Governance Act 2016 (Act 936), the DA is the Planning Authority with oversight responsibility of developing the district and particularly has a facilitating role of providing RE infrastructure access. However, the comparatively high value that stood neutral (27%) could be due to the inability of the DA to undertake such capital-intensive infrastructure projects.

Table 5: Community connection to grid infrastructure depends on the following political influence

Statement	1	2	3	4	5	Mode	Mean	Std Deviation	N
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree				
Community demand is driven by affiliation with a political party in power	0.3	2.1	8.1	41.3	48.3	5	4.35	.739	385
'Community demand is driven by the voting/voted political party in power;	0.5	3.1	7.0	46.8	42.6	4	4.28	.769	385
'Nature of the current RE policy'	1.8	9.4	17.9	48.1	22.9	4	3.81	.954	385
Community demand is driven by political campaign promises.	1.6	3.9	25.2	46.2	23.1	4	3.85	.872	385
'Ability to lobby politicians/political institutions	0.8	4.2	22.6	53.8	18.7	4	3.85	.794	385
Community demand is driven by the reliability of the DA's implementation of the current RE infrastructure Programme	1.6	5.2	26.5	44.7	22.1	4	3.81	.893	385
Cronbach's Alpha								*.700*	

Source: *Field Survey, 2019*

Exploratory factor analysis on political drivers

The exploratory factor analysis (EFA) was employed to reduce the data and to provide factor loads. (DiStefano, Zhu, & Mîndrilă, 2009). Table 6 indicates a determinant value of 0.368. This is weighed above the minimum value of .00001 required to confirm linear correlation items (Fied , 2009). The Kaiser-Meyer Olkin (KMO) figure of 0.738 was recorded, beyond the minimum value (0.50) suitable to warrant factorability (Chan & Idris, 2017). Also, Bartlett's test of inter-correlation strength showed a chi-square (X^2) value of 380.564 at a 1 per cent significance level of Sphericity. A further observation specified a Measure of Sampling Adequacy (MSA) value for each item that met the minimum threshold of 0.5 (Kim et al., 2018), ranging from 0.708 to 0.847. Also, acceptable communalities values for the various items range between 0.651 and 0.874, further providing the basis for factor extraction.

Table 6: KMO and Bartlett's Test on political drivers

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**.738**
Bartlett's Test of Sphericity	Approx. Chi-Square	380.564
	df	15
	Sig.	.000

Source: *Field Survey, 2019*

Factor extraction on the political drivers of community connection

The EFA utilised the principal component tool with Kaiser's criterion, which yielded two (2) components or factors. As portrayed in Table 7, the first component brought about an eigenvalue of 2.436, whereas the second component indicated 1.009 eigenvalues. These cumulatively explain 57.405 per cent of the variance in the dataset. Cross-validation was further done with the observation of the scree spot test. This created room for factor rotation, as shown in Table 8.

Table 7: Total variance explained on political drivers on community connection

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.436	40.596	40.596	2.436	40.596	40.596	1.813	30.216	30.216
2	1.009	16.808	57.405	1.009	16.808	57.405	1.631	27.188	57.405
3	.802	13.368	70.773						
4	.756	12.597	83.370						
5	.537	8.958	92.327						
6	.460	7.673	100.000						

Extraction Method: Principal Component Analysis.
Source: *Field Survey, 2019*

Rotated component matrix on the political drivers

As shown in Table 8, the factor rotation resulted in all six items loading onto the two extracted components (major political drivers). The components were relabeled as 'Partisan drivers' and 'Other political drivers' based on the classified items loaded. The 'Partisan drivers' accounted for three variables, which include 'community driven by affiliation to a political party in power', 'community driven by the voting of the political party in power', and 'community demand driven by political campaign promises', with loadings of 0.830, 0.774, and 0.628, respectively. Thus, 'community driven by affiliation to a political party in power' loaded most heavily and contributed the most to the underlying construct (partisan drivers). This indicates that a 'community driven by affiliation to a political party in power' is the most influential regarding the partisan driver of grid RE infrastructure in the district. This outcome was further corroborated by separate interviews with relevant key informants. For instance, 15 out of the 18 community leaders (CLs), the Assembly Members, the Constituency Chairmen of major political parties, and a Coordinating Director articulated similar views when contacted. This is evidenced in the following extracts from their responses.

"…The condition is that if the ruling party has a majority in your community and you demand it (grid RE infrastructure connection), it will not be difficult. It would be brought up even if your community's name is among those at the bottom of the compiled list. But if your community has a minority and you demand it, you would be frustrated" (Extract from an interview of CL2 – December, 2019).

"…We have communities that align themselves with certain major political parties. You would (pause). You can easily identify this as an NPP and NDC community in the district. It is common. So obviously, when the NDC is in government, you would find the DCE tilting and prioritising communities that are said to be in support of his or her party. Today, NPP is in power, and it is evident that communities that are perceived to be or are strongholds of the NPP are mostly reprioritised to benefit from the RE programmes" (Extract from an interview of a CD –January, 2020).

"Mostly it is the MP and DCE whom they (communities) approach for connection to

grid RE, but they come to the party chairman to lead them to these people" (Extract from interview response of a CPC1 – January, 2020)

The result seems to go hand in hand with the Political Settlement Theorists' view that there could be informal processes, agreements, and practices that help consolidate politics, as a means of overcoming differences in interests, especially when it comes to resource control and distribution (Kelsall, 2016). Thus, informally, politicians and communities appear to have a social contract of voting for a political party and having a grid electricity connection in return after winning an election.

The 'other political drivers' loaded the remaining three (3) items, namely, 'community demand is driven by the reliability of the DA's implementation of current RE infrastructure Programme' ', nature of the current RE policy' and 'ability to lobby politicians/political institutions' with 0.845, 0.771, and 0.481 loadings respectively. This means that the major driver among the 'other political drivers' is the appreciation of DA's role in ongoing grid RE infrastructure programmes. This is not surprising given the DA's complementary role in providing grid RE infrastructure facilities (MoE, 2010).

Table 8: Rotated component matrix on political drivers

Items/Variables	Component	
	1	2
	Partisan Drivers	**Other Political Drivers**
Community affiliation with a political party in power	.830	
Community driven by voting/voted a political party in power	.774	
Community is driven by political campaign promises.	.628	
Community demand is driven by the reliability of the DA's Implementation of the current RE infrastructure Programme.		.845
'Nature of the current RE policy'		.771
Ability to lobby politicians/political institutions		.481

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.
Source: *Field Survey, 2019*

Conclusion and recommendations

The paper delineates the political drivers inherent in rural communities' demand for grid rural electricity connections in the Tolon District of Ghana. It revealed that although policies and institutional frameworks are available to facilitate demand and universal access to electricity, rural communities' demand is highly driven by politics. The data revealed a strong association between political (partisan) influence in the form of perceived communities 'affiliation to political parties, especially to gain favour when it comes to power, and some hope in the trend in DA's implementation of RE programmes. This means that the socio-economic justification of electricity access appears predominantly displaced by political or partisan reasons. So, most rural communities have become affiliated with political parties to get their share of infrastructure development in general and electricity connection, especially when the affiliated party gained power. This appears to be in tandem with some political settlement theorists' view as they call for social contract or informal agreements between voters (rural communities) and politicians, for instance, in terms of voting for a political party and having a grid electricity connection in return after winning the election to ensure stability (Asante & Kunnath, 2022). Rural communities (voters) have not just been voting for their sake. They have grown a social contract or informal agreement with politicians by utilising the political process or platforms to advance electricity demand *(ibid)*.

The situation depicts a worrying scenario where communities appear not to have access to or are losing confidence in institutions meant for the implementation of RE programmes in general and providing rural communities' connection in particular. It also implies that rural communities without affiliation to a political party in power may either be reluctant or refuse to demand a connection even when they qualify. There is also a potential for politicians ignoring RE beneficiary communities that are not affiliated with their party, which may result in delays

and waste of public resources (Setyowati & Quist, 2022; Taylor, 2024).

Also, the predominant politicisation of programmes and related demand may not only be due to over centralisation, but also an indication of perceived loss of confidence in the roles of institutions such as the Ministry of Energy and the District Assemblies vis-à-vis the criteria meant to connect qualified rural communities in the study area and Ghana in general. It is therefore recommended that the implementation of RE infrastructure programmes should be decentralised by the Ministry of Energy, concentrating on RE policymaking, alongside the capacity of decentralised agencies like the District Assembly (DA) should be built and given the responsibility for implementing RE infrastructure programmes. This would go a long way to reducing the overcentralization and politicisation. Also, MMDAS must be compelled to go by the MoE's criteria for community selection vis-à-vis the use of decentralised platforms like community action planning (CAPs) fora to promote grassroots participation and enhance stakeholder engagements. This would help promote and encourage community ownership and sustainability.

Besides, the implementation of RE infrastructure programmes should not be seen as a political end, but comes with an associated socio-economic and institutional focus, sufficient to be responsive to the diverse expectations of rural communities. This combined effect is necessary to attract long-term investment and economic transformation of the rural folks. Thus, political interference with universal access comes with associated opportunity costs in terms of limiting socio-economic and institutional services and, in the long run, would slow down productive use of electricity (PUE) and Local Economy Development (LED), especially in rural Ghana and Africa at large.

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References

Abdallah, S. M., Bressers, H., & Clancy, J. S. (2015). Energy Reforms in the Developing World: Sustainable Development Compromised? *International Journal of Sustainable Energy Planning and Management Vol. 05*, 41–56.

Ahlborg, H., & Hammar, L. (2014). Drivers and Barriers to Rural Electrification in Tanzania and Mozambique e Grid-Extension, Off-Grid, and Renewable Energy Technologies. *Renewable Energy 61*, 117-124.

Amous, S., Aseiegbu, J., & Mahama, A. (2002). *Renewable Energy-Based Electricity for Rural Social and Economic Development (RESPRO).* UNDP-GEF.

Asante, K., & Kunnath, G. (2022). *The Cost of Politics in Ghana.* Westminster Foundation for Democracy.

Baker, L., & Phillips, J. (2018). Tensions in the Transition: The Politics of Electricity Distribution in South Africa. *Environment and Planning C: Politics 2019, Vol. 37(1)* , 177–196.

Banerjee, A., & Somanathan, R. (2004). *The Political Economy of Public Goods: Some Evidence from India. Discussion Paper 04-17.* New Delhi: Indian Statistical Institute.

Bartlett, J. E., Kotrlik, J. W., & Higgins, C. C. (2001). Organizational Research: Determining Appropriate Sample Size in Survey Research. *Learning and Performance Journal, 19*, 43-50.

Batley, R., & Mcloughlin, C. (2015). The Politics of Public Services: A Service Characteristics Approach. *World Development, Vol. 74*, 275–285.

Bhattacharyay, B. N. (2009). *Infrastructure Development for ASEAN Economic Integration, ADBI Working Paper 138.* Tokyo: Asian Development Bank Institute.

Bob-Milliar, G. M., & Bob-Milliar, G. K. (2010). The Economy and Intra-party Competition: Presidential Primaries in the New Patriotic Party of Ghana. *African Review of Economics and Finance, Vol. 1, No. 2*, 51-71.

Botchie, G. (2000). *Rural District Planning in Ghana: A Case Study.* Accra: International Institute for Environment and Development, Issue No. 21.

Brass, J. N., Harris, K., & MacLean, M. L. (2019). Is there an Anti-Politics of Electricity? Access to the Grid and Reduced Political Participation in Africa. *Afrobarometer Working Papers No. 182*.

Brierley, S., & Ofosu, G. (2021). *Do Chiefs' Endorsements Affect Voter Behaviour? S-20224-GHA-1.* London: IGC International Growth Centre.

Briggs, R. C. (2012). Electrifying the Base? Aid and Incumbent Advantage in Ghana. *J. of Modern African Studies, 50, 4*, 603-624.

Brown, D. S., & Mobarak, A. M. (2004). The Transforming Power of Democracy: Regime Type and the Distribution of Electricity. *Brown D. S. and Mobarak A. M. (2004). The Transforming Power*

of Democracy: Research Program on Political and Economic Change, Working Paper.

Bukari, D., Tuokuu, F. X., Suleman, S., Ackah, I., & Apenu, G. (2020). Ghana's Energy Access Journey So Far: A Review of Key Strategies. *International Journal of Energy Sector Management*.

Chan, L. L., & Idris, N. (2017). Validity and Reliability of the Instrument Using Exploratory Factor Analysis and Cronbach's alpha. *International Journal of Academic Research in Business and Social Sciences, Vol. 7, No. 10*, 400-410.

Chen , H. T. (2006). A Theory-Driven Evaluation Perspective on Mixed Methods Research. *Mid-South Aducational Research Association, Vol. 13, No.1*, 75-83.

Cotton, M., Kirshner, J., & Salite, D. (2019). The Political Economy of Electricity Access: Lessons from Mozambique. *Energy and Economic Growth, Applied Research Programme* .

Der Bebelleh, P., & Nobabumah, A. S. (2013). Political Decentralization and Local Participation in Ghana: Perspectives from the Upper West Region. *Public Policy and Administration Research, Vol 3, No.11*, 2224-5731.

DiStefano, C., Zhu, M., & Mîndrilă, D. (2009). Understanding and Using Factor Scores: Considerations for the Applied Researcher. *Practical Assessment, Research & Evaluation, Vol. 14, No.20*, 1-11.

Energy Commission. (2019). *Energy Profile of Districts in Ghana.* Accra: Energy Commission.

Energy Commission. (2020). *National Energy Statistics 2000 - 2019.* Accra: Energy Commission.

Feron, S., Heinrichs, H., & Raúl, R. C. (2016). Are the Rural Electrification Efforts in the Ecuadorian Amazon Sustainable? *Sustainability*, 8-443.

Ferrall, I., Heinemann, G., Hirschhausen, C., & Kammen, D. M. (2021). The Role of Political Economy in Energy Access: Public and Private Off-Grid Electrification in Tanzania. *Energies*, 1-23.

Fied, A. (2009). *Discovering Statistics Using SPSS (Third Edn).* London: SAGE Publications Ltd.

Francis, K., & Emmanuel, A. (2017). *Toward universal electrification in Ghana.* Wiley Interdisciplinary Reviews: Energy and Environment.

Ghana Statistical Service. (2014). *2010 Population & Housing Census: District Analytical Report, Tolon District.* Accra: Ghana Statistical Service.

Ghana Statistical Service. (2014). *2010 Population & Housing Census: District Analytical Report, Tolon District.* Accra: Ghana Statistical Service.

Ghana Statistical Service. (2019). *Ghana Living Standard Survey (GLSS) 7: Main Report.* Accra: Ghana Statistical Service.

Ghana Statistical Service. (2021). *Ghana 2021 Population & Housing Census: General Report Volume 3A: Populations of Regions and Districts.* Accra: Ghana Statistical Service.

Ghana Statistical Service. (2021). *Ghana 2021 Population and Housing Census General Report Volume 3A: Population of Regions and Districts.* Accra: Ghana Statistical Service.

Golumbeanu, R., & Barnes, D. (2013). *Connection Charges and Electricity Access in Sub-Saharan Africa.* World Bank.

Government of Ghana. (2016). *Local Governance Act, 2016.* Accra: Assembly Press.

GPOBA. (2018). *Expanding Electrification to Low-Income Households in Rural Ghana with Microfinance.* Global Partnership on Output-Based Aid (GPOBA).

Harris, D., Kooy, M., & Jalloh, G. (2012). *The Political Economy of the Urban Water-Pricing Regime in Freetown, Sierra Leone, Working Paper 348.* London : Overseas Development Institute.

IEA, IRENA, UNSD, World Bank, WHO. (2021). *Tracking SDG 7: The Energy Progress.* Washington, DC: World Bank.

IEA, IRENA, UNSD, World Bank, WHO. (2022). *Tracking SDG7: The Energy Progress Report 2022.* Washington, DC: World Bank.

Kelsall, T., Hart, T., & Laws, E. (2016). *Political Settlement and Pathway to Universal Health Coverage. ODI Working Paper 432.* London, UK: Overseas Development Institute.

Kim, H., Jang, M., Kim, S., & Wan, A. (2018). Evaluating Sampling Methods for Content Analysis of Twitter Data. *Social Media + Society*, 1-10, DOI: 10.1177/2056305118772836.

Landau, S., & Everitt, B. S. (2004). *A Handbook of Statistical Analyses using SPSS.* Boca Raton, London, New York, Washington, D.C: Chapman & Hall/CRC Press LLC.

MacLean, L. M., Bob-Milliar, G., Baldwin, E., & Dickey, E. (2016). The Construction of Citizenship and the Public Provision of Electricity during the 2014 World Cup in Ghana. *ResearchGate*.

Miescher, S. F., & Tsikata, D. (2009). Hydropower and the promise of modernity and development in Ghana: Comparing the Akosombo and Bui dam projects. *Ghana Studies*, *12*(1), 15-53.

Ministry of Energy. (2010). *National Electrification Scheme (NES): Master Plan Review (2011 - 2020).* Accra: Ministry of Energy (MoE).

Naah, J. S. (2015). Evaluating Impacts of Distributed Solar Home Systems in Rural Communities:

Lessons Learnt from Ghana Energy Development and Access Project in the Upper West Region of Ghana. *Journal of Energy and Natural Resource Management*, 24-29.

Obeng, G. Y., Kemausuor, F., Brew-Hammond, A., & Duker, A. (2009). *GIS-Based Energy Access Project: A Review of Trends, Policies and Plans for Increasing Energy Access in Ghana.* Kumasi, Ghana: The Energy Centre, KNUST.

OECD. (2007). *Infrastructure to 2030 (Volume 1) Mapping Policy for Electricity, Water & Transport.* California: OECD publications.

Opong, F. K., Oduro, F., & Awal, M. (2013). *Civil Society Engagement of Political Parties During Elections: Lessons from Ghana and Sierra Leone.* CDD_Ghana & Oxfam.

Robinson, J. A., & Verdier, T. (2013). The Political Economy of Clientelism. *Scand. J. of Economics 115(2)*, 260–291. DOI: 10.1111/j.1467-9442.2013.12010.x.

Romeo, L., & Smoke, P. (2014). *The Political Economy of Local Infrastructure Planning.* Atlanta, Georgia: International Center for Public Policy, Working Paper 14-17.

Sackeyfio, N. (2018). *Energy Politics and Rural Development in Sub-Saharan Africa: The Case of Ghana.* Cham, Switzerland: Springer International Publishing AG.

Sandbook, R. (2000). *Closing the Circle: Democratization and development in Africa.* Toronto, Canada: Between the Lines.

Scott, A., & Seth, P. (2013). The political economy of electricity distribution in developing countries: A review of the literature. *Politics & Governance*, 1-19.

Setyowati, A. B., & Quist, J. (2022). Contested Transition? Exploring the Politics and Process of Regional Energy Planning in Indonesia. *Energy Policy 165*.

Taylor, M. (2024). The Power of Energy Justice for Rural Communities. In R. J. Heffron & L. Fontenelle, *The Power of Energy Justice & the Social Contract* (pp. 129-134). Cham, Switzerland: Palgrave Macmillan.

Tolon District Assembly. (2021). *2022-2025 District Medium Term Development Plan.* Tolon.

Trotter, P. A. (2016). Rural Electrification, Electrification Inequality and Democratic Institutions in Sub-Saharan Africa. *Energy for Sustainable Development*, 111–129.

UN. (2015). Transforming Our World: The 2030 Agenda for Sustainable Development. *September 2015, UN Summit* (p. 23). New York: United Nations.

UNDP. (2005). *Energizing the Millennium Development Goals: A Guide to Energy's Role in Reducing Poverty.* New York: United Nations Development Programme.

World Bank. (2008). *The Political Economy of Policy Reform: Issues and Implications for Policy Dialogue and Development Operations.* Washington, DC: The International Bank for Reconstruction and Development / The World Bank.

World Bank. (2008). *The Welfare Impact of Rural Electrification: A Reassessment of the Costs and Benefits: An IEG Impact Evaluation.* Washington, DC: The International Bank for Reconstruction and Development / The World Bank.