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GREEN POWER FOR AFRICA: OVERCOMING THE MAIN CONSTRAINTS

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Notes on Contributors	iii
Introduction: Overcoming the Constraints to Green Electricity in Africa Ana Pueyo and Simon Bawakyillenuo	1
Planning for Electrification: On- and Off-Grid Considerations in Sub-Saharan Africa Barry Rawns and Henry Louie	9
Assessing the Potential Impact of Grid-Scale Variable Renewable Energy on the Reliability of Electricity Supply in Kenya Gruffudd Edwards, Chris J. Dent and Neal Wade	29
Exploring the Macroeconomic Impacts of Low-Carbon Energy Transitions: A Simulation Analysis for Kenya and Ghana Dirk Willenbockel, Helen Hoka Osiolo and Simon Bawakyillenuo	49
Design and Assessment of Renewable Electricity Auctions in Sub-Saharan Africa Hugo Lucas, Pablo del Río and Mohamed Youba Sokona	79
Commercial-Scale Renewable Energy in South Africa and its Progress to Date Lucy Baker	101
The Political Economy of Investment in Renewable Electricity in Kenya Helen Hoka Osiolo, Ana Pueyo and James Gachanja	119
<u>The Political Economy of Renewable Energy Investment in Ghana</u> <u>Simon Bawakyillenuo</u>	141
The Political Economy of Aid for Power Sector Reform Neil McCulloch, Esméralda Sindou and John Ward	165
Glossary	185

The Political Economy of Renewable Energy Investment in Ghana

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Abstract The high level of fossil fuel consumption globally is wreaking havoc on the global climate through the emissions of greenhouse gases. Against this backdrop, there have been calls from national and international stakeholders for a transition towards renewable energy (RE). However, the investment and adoption of renewable energy technologies especially, in developing countries have been woefully inadequate. Even though various policy and legislative instruments in support of RE development abound in Ghana, the contribution of RE to the energy generation mix is notably insignificant, due to constraints that limit high investment. Using the Political Economy Analysis (PEA) approach, this article examines the deficiencies in these policy strategies, and unravels the complexity as well as the alignments of interests of stakeholders regarding policies that could provide a more favourable investment in renewables in Ghana. The article recommends that Ghana's leaders champion those policies with the highest support across all stakeholders.

Keywords: political economy, renewable energy, binding constraints, Ghana, low investment, abundant policies.

1 Introduction

Provisions for renewable energy (RE) development have featured in the energy policy regimes of Ghana for some time now. The just-ended national Medium-Term Development Policy – Ghana Shared Growth and Development Agenda Two (GSGDA II) – talks about the need to increase the proportion of RE in the energy supply mix, particularly solar, wind, mini-hydro, and waste-to-energy (NDPC 2014). The current energy policy of the country also sets a policy target of 10 per cent contribution of RE to the country's energy generation mix by 2020 (MoE 2010). In addition, there is the Renewable Energy Act, 2011 (Act 832), which gives legislative backing to the promotion and development of renewable energy technologies (RETs). The feed-in tariff (FIT), mini-grid infrastructure systems development and the RE Fund are provisions in the RE Act (Act 832) that demonstrate Ghana's quest to diversify its energy sources to take account of RE.

Notwithstanding the existence of these various policies and legislative instruments in support of RE development in Ghana, the contribution

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of RE sources to the country's energy generation mix is abysmal. At present, the share of RE in the power generation mix is about 0.1 per cent (Energy Commission of Ghana 2015) and with less than four years left, the 10 per cent share target is unlikely to be met by 2020. Paradoxically, Ghana is signatory to several international agreements, including the post-2015 United Nations Sustainable Development Goals that aim at tackling climate change and variability through environmentally sustainable development pathways such as the enhancement of RETs. In practice, however, the development trajectories being pursued are unsustainable and not in sync with these goals (UNEP 2013, 2015). Presently, about 56.5 per cent of installed electricity generation capacity in Ghana is fossil fuel-based thermal, generating about 49 per cent of total electricity (Energy Commission of Ghana 2016). What is more, the government envisions increasing thermal power generation to about 80 per cent in the next decade.² This raises a question regarding which pathways could lead to the development of the RE niche within the existing energy regime (Power *et al.* 2016).

This article aims to unravel the complexity of stakeholders' alignments and interests with regard to policies to support RE investment in Ghana. Moreover, this article contributes to expanding the literature on the understudied political economy of energy transitions (Power *et al.* 2016 citing Goldthau and Sovacool 2012), especially in a developing country like Ghana.

The article is structured into seven sections. Following this introductory section is Section 2, which reviews literature on the political economy of RE investment. Section 3 discusses the historical policy and institutional regimes of Ghana's energy sector. Section 4 details the Political Economy Analysis (PEA) methodological perspectives underpinning this article and how the binding constraints on RE investment in Ghana were identified, as well as the mapping of promising policies with potential to address these constraints. Discussions and analyses of the obstructing factors of the key policies and initiatives fundamental to RE investment are encapsulated in Section 5. Section 6 covers the intervention policies, while Section 7 provides the conclusion.

2 The political economy of renewable energy investment – a review

Until the twenty-first century, fossil fuel sources dominated global energy supply and consumption. They accounted for about 80 per cent of the world's total primary energy supply and 64 per cent of electricity generation in 1999 (Jacobsson and Lauber 2006). In recent times, however, there are increasing calls for a paradigm shift towards RE generation (*ibid.*). These calls are aimed at ensuring the mitigation of greenhouse gas (GHG) emissions from fossil fuel consumption. Nonetheless, the adoption of RETs is met with stiff opposition, mainly from high-profile fossil fuel energy players, who obstruct the process and subsequently promote their interest (Barnett, Stockbridge and Kingsmill 2016). Additionally, the uncertainty related to who bears the

cost of the transition to clean energy landscapes, especially in developing countries, further obstructs the process (Newell and Mulvaney 2013).

A complete understanding of the reasons behind such opposition is crucial for the successful development of RE since that will help provide sustainable solutions to the root causes reinforcing the low investment in a developing country such as Ghana. A PEA approach provides the necessary scope to unearth such reasons that fuel opposition from stakeholders to investment in RE. Newell *et al.* (2014) observe that a political economy analysis creates the pathway to get beneath the formal structures in a bid to discover the underlying interests, incentives, and institutions that foster or frustrate change. It could also help to consolidate the interests of all energy players in order to facilitate the paradigm shift of accelerating the rate of development of RETs. According to Arndt (1983), the political economy (PE) concept has a broad range of applications and offers in-depth analysis of what an ordinary study may not be able to tease out. For instance, a PE application to an organisation could enhance a better understanding of the interaction between sets of major economic and sociopolitical forces that affect collective behaviour and performances within such an organisation (Achrol, Reve and Stern 1983). In the energy sector, its application aids in the understanding of the complexity surrounding clean energy transitional issues – justice, injustice, losers, and winners (Newell and Mulvaney 2013; Baker, Newell and Phillips 2014; Power *et al.* 2016). According to Isoaho, Goritz and Schulz (2016), the recent application of PEA in energy-related issues such as RE development is due to the fact that socio-technical literature failed to address adequately the complexity and dynamics of clean energy development. A PEA should therefore identify all forms of:

competing ideas, interests, values and preferences; where specific groups and interests struggle over the control, production, use and distribution of resources; where conflict is negotiated; where bargains are struck; and where formal and informal political settlements, alliances and coalitions are made and broken (Hudson and Leftwich 2014: 6, cited in Barnett 2014).

Unequivocally, the use of PEA should help to understand why socially and economically, desirable plans and policies are regarded as being difficult to be implemented by policymakers (Barnett *et al.* 2016).

Khan (2011), using a PEA approach, studied the situation under which a ruling government or a coalition in the power sector will promote clean energy development. He documents that a change towards clean energy transition is most likely to happen if governments or ruling coalitions face pressure from powerful groups in society who either are negatively affected by current non-renewable energy sources or stand to benefit from clean energy promotion. In the study by Tsebelis (2002), which focuses on India, PEA underpins the analysis on the extent to which RE sources can be developed to their fullest capacity in the country. The study concludes

that, in order to bring RE development into the policy arena, stakeholders with vested interests and veto powers – such as the mining companies, and the coal power producers – are critical to breaking strong oppositions to RE development. Other works (Newell and Mulvaney 2013), however, reiterate the need to be mindful of the justice dimension of 'clean energy' or low-carbon transition amid the quest for success.

In related studies, Fattouh and El-Katiri (2015) and Oda and Tsujita (2010) also applied PEA to study factors that prevent governments and energy players from implementing certain economic and environmental policies. Citizenry agitations for fair share of natural resources (oils and fossil resources and grid extension) and the fear of losing elections by political actors emerged strongly as factors accounting for the non-implementation of such policies. The Middle East and North Africa (MENA) region lends clear evidence to this, in which the incessant protests and agitations waged by the citizenry for social equity and fair sharing of national resources have compelled governments to subsidise fossil fuel energy sources (Fattouh and El-Katiri 2015). In Asia, Commander (2012) observes similar occurrences, as political unrest and protests forced governments to keep prices of petrol and diesel substantively lower than international prices between 2008 and 2010. Such agitations from citizens and the fear of losing political power have the effect of influencing governments and policymakers to overlook viable RE development policies. Oda and Tsujita (2010) argue that these protests and political unrest are more common in jurisdictions that lack democratic institutions. Brown and Mobarak (2009) further argue that countries without democratic political systems and institutional structures often use energy allocations and subsidies as tools for political advantage. Supporting this view, Scott and Seth (2013) submit that often, in non-democratic states, electricity distribution favours industries rather than residential areas, which becomes a source of the protest. Such motives and actions greatly affect the development of RE.

Gupta and Köhlin (2006) note that there is an opportunity cost of failing to sell energy at actual market prices, and as such, revenue can be used by government in diverse ways including the reduction of budget deficit and the size of the public debt; and increasing investment expenditure in cheaper, clean, and environmentally friendly energy technologies which can generate several socioeconomic benefits. According to Sdravovich *et al.* (2014), although these policies seek to promote social equity, in reality they actually benefit people within the middle and upper classes. Indicative of the above literature is the increasing economic and environmental costs of fossil fuel faced by many developing economies, yet RE sources in these economies remain significantly underdeveloped through inadequate investments.

3 Policy and institutional regimes of Ghana's energy sector

Electricity generation in Ghana can broadly be classified into three main phases: 'before the Akosombo era' (1914 to 1966), the 'Hydro Years' (1966 to mid-1980s) and the 'Thermal Complementation Years'

(from mid-1980s to present) (ISSER 2005). The pre-Akosombo era had small-scale electricity generation from diesel-powered generators. These were owned by individuals, institutions, and towns that could afford them. The first public power plant was established in 1914 in Sekondi and was used to power the operations and activities of the then Gold Coast Railway Administration (GCRA) (*ibid.*). In 1922, small-scale public electricity was established and operated by the then public works department (PWD) to electrify major towns in Ghana. It covered the Accra township and later in 1926, coverage was extended to Koforidua. Between 1927 and 1932, the PWD undertook a restricted evening supply arrangement system to Kumasi, Swedru, Tamale, and Cape Coast townships (*ibid.*). During this era, determination of power generation was carried out solely by Ghana's colonial leaders, some public institutions (such as PWD and GCRA), and individuals who were financially sound to own and operate generator sets. Issues of climate change and RE development were non-existent in the objectives of energy generation as they were not subjects of utmost concern at the time.

Energy security and to some extent RE development, however, became more relevant in the 'Hydro Years' of power generation in Ghana. The desire to develop Ghana's huge bauxite reserves as part of having integrated the bauxite and aluminium industries marked the beginning of the hydro years (*ibid.*). This era saw a much more organised power sector, as Cabinet passed the Volta River Development Act 1961 (Act 46) for the establishment of the Volta River Authority (VRA). The VRA was mandated to foresee the construction of the Akosombo dam, its power station as well as the generation of electricity (*ibid.*). In 1967, a law (NLCD 125) was passed for the establishment of the Electricity Corporation of Ghana (ECG). This enhanced the setting up of vibrant institutions to oversee adequate production of energy that fed industries and businesses, and subsequently offered job opportunities in diverse forms. Energy security emerged as an important element under this era because other initiatives were introduced to develop more hydro sites in addition to the Akosombo Power Plant (Edjekumhene, Amadu and Brew-Hammond 2001). Unlike the pre-hydro years, this era marked the beginning of modern electricity generation in Ghana and did involve the participation of several stakeholders.

The thermal complementary phase of Ghana's power sector was highly driven by energy security issues and little about the development of other competitive energy resources. Climate change mitigation issues were of little concern as evidence shows that the development of the power sector within this era propelled the increase in the country's carbon footprint. According to Opam and Turkson (2000), this era was necessitated by the adverse effect of the prolonged drought that occurred between 1982 and 1984 in the country. On the basis of the drought, the generation potentials of the existing two hydro power plants (Akosombo and Kpong) were affected as the available water was far below the minimum operating level (*ibid.*). The shortage in electricity supply amid the growing energy demand sector necessitated the major

reformation of the power sector. Thus, in 1985, the Government of Ghana commissioned the 'Ghana Generation Planning Study' (GGPS) to help identify alternative energy sources that will aid in reducing the vulnerability of the hydro power systems (ISSER 2005). The study recommended thermal as part of Ghana's energy mix.

Lack of competitiveness and private sector participation, coupled with the poor financial performance of Ghana's power sector, drove its reformation in the 1990s. According to Opam and Turkson (2000), such factors made Ghana's traditional financiers (e.g. the World Bank) reluctant in providing extra financial resources to support the thermal complementary phase of the power sector. The GGPS of the VRA estimated over US\$1.5bn as the amount that was needed to finance infrastructure development at the electricity sector of Ghana (ISSER 2005). This came at the time when the World Bank was unwilling to finance non-performing energy sectors in Africa unless issues of transparency, regulation, importation of services, commercialisation and corporatisation, commitment lending, and private investment were met by energy sectors (Amoako-Tuffor and Asamoah 2015). However, the motives for undertaking this reform were not only limited to the financial challenges confronting the sector. According to Opam, UN ECOSOC and UN ECA (1995), issues of productivity losses of the overall economy as a result of the ineffective operation of the then power sector, coupled with rapid power interruptions and high cost associated with back-ups, necessitated the reform. Overwhelming debt burdens, supply-side preferences, and under-utilised energy conservation practices were other factors that influenced the decision to reform Ghana's power sector (*ibid.*). Increasing efficiency of asset utilisation, and making necessary policies and institutional changes that will ensure economic equity were other supplementary motives for initiating the reform (Sustainable Energy Regulation and Policymaking for Africa, n.d.).

The Government of Ghana, upon agreeing to the terms and requirements of the World Bank, contracted SYNEX Consulting Engineers of Chile to provide policy directions that could ensure competition and engagement of private investors (Edjekumhene *et al.* 2001; Amoako-Tuffor and Asamoah 2015). In 1994, the firm proposed a new power market with policy directions that aimed at meeting the requirements of the World Bank. Some of the policy recommendations by the firm were free entry of private investors on the power generation side as well as decentralisation of the distribution arm of the sector; establishment of an Economic Load Dispatch Centre that will be responsible for planning the operation of the system so as to minimise operating costs; and the existence of different distributors with each operating in a defined concession area (SYNEX Consulting Engineers 1994, cited in Edjekumhene *et al.* 2001).

Following these policy recommendations, the government issued a statement on 'Power Sector Policy' to serve as a framework that meets the regulatory and transparency requirements of the World Bank.

This statement also proposed the formation of the Power Sector Reform Committee (PSRC) to oversee the design and implementation of the reform (Opam and Turkson 2000; Edjekumhene *et al.* 2001). Obligations such as the assignment of mandates for power generation, transmission and distribution, promoting a competitive power market, a regulatory framework for price and tariff revision, and establishment of an institutional framework, rested on the shoulders of the PSRC (*ibid.*). The PSRC proposed a ‘four-point Action Plan’ to the government of Ghana in 1997 (Edjekumhene *et al.* 2001):

- Introduction of new legislation to establish a new body to replace the then existing National Energy Board (NEB) which will introduce explicit regulations, rules of practice, and standards of performance for governing the power sector;
- Introduction of ‘open access’ in the power sector to ensure healthy competition;
- Engineering all stated-owned private utilities into ‘strategic business units’ that can help improve accountability and financial management through public–private partnerships and joint ventures;
- Introduction of guidelines and procedures for transparency in tariff settings.

Arguably, the past institutional and policy regimes of the energy sector of Ghana from the pre-hydro era to the early 2000s buttressed the dominant existing hydro and thermal energy infrastructural niches in the country. Indeed, it has been argued that the energy infrastructures in most parts of the global South are connected to historical antecedents in the socioeconomic and political realms, and hence, their development is shaped by various path dependencies (Power *et al.* 2016). Moreover, the enthusiasm and contestations exuded by the two dominant political parties (the New Patriotic Party and the National Democratic Congress) in the wake of the discovery of oil in 2007 (Phillips, Hailwood and Brooks 2016), and the subsequent improved gas infrastructure development compared to the weak RE infrastructure development, vindicate the existing infrastructural dominance of thermal-led energy.

4 Methodology

The methodology used for this study is informed by the Political Economy Analysis of Climate Change Policies (PEACH) Methodology by Schmitz (2012) and the PEA framework by Barnett *et al.* (2016). The PEACH methodology focuses on answering the central question: who drives/obstructs certain policies? According to Schmitz (2012), an application of the PEA in climate change issues should be able to bring out relevant sector players who by their actions and policy priorities promote or obstruct such initiatives. Accordingly, a PEA should be capable of setting out the key challenges of which the study intends to investigate, such as ‘Who drives/obstructs climate change policies in the rising powers?’ (*ibid.*: 1). It examines the complexities (actors,

Table 1 PEA framework

1 Problem identification	For example, poor performance in the power sector
2 Diagnosis	What features of the political economy generate and contribute to the persistence of the problem?
3 Prognosis	Given the diagnosis, what is the potential for change, and what are the mostly likely pathways of change?
4 Interventions	How can particular actors help to shift the pattern of incentives in a manner that promotes desirable change?

Source Barnett *et al.* (2016).

institutions, and motivations) and is based on identifying the various stakeholders involved, including their diverse priorities. This, therefore, demands the mapping of identified stakeholders in a power priority matrix according to their direct and indirect influence on policymaking and implementation, and analysing their competing narratives. Using narratives from in-depth interviews of sector players, the PEA analysis through the PEACH lens embodies four parts: mapping stakeholders according to priority; discussions on the proponents and opponents of policies; mapping the level of influence of stakeholders on such policies; and identification of coalitions for change (Schmitz 2012).

On the other hand, the PEA framework developed by Barnett *et al.* (2016) to understand the issues of poor performance of Africa's power sector despite several years of donor support, encompasses a four-stage process: problem identification; diagnosis; prognosis; and interventions (Table 1). The problem identification stage is in synchrony with Schmitz's (2012) position of 'setting out the key challenge' from the onset. The methodology for this current study is, therefore, a hybrid of the PEACH methodology (*ibid.*) and Barnett *et al.*'s (2016) PEA framework – an adoption of elements from both approaches that are deemed pertinent to establishing an understanding of the subject matter. Thus, key elements including problem identification (already captured in Section 1 as low investment in the renewable energy sector in Ghana); diagnosis (identification of binding constraints to renewable energy investments); prognosis (mapping of promising policies); mapping of stakeholders to ascertain the varied narratives; and identification of alternative interventions, constitute the analytical framework for this study.

The identification of the binding constraints to investment in renewable energy investment in Ghana was carried out by a previous study by Pueyo *et al.* (2017). Using a framework drawing from growth diagnostics (Hausmann, Rodrik and Velasco 2004), that research accumulated evidence through the analysis of indicators and interviews to rank constraints in Ghana according to their importance, or 'binding' character. The evidence accumulated in Ghana pointed at constraints preventing sufficient returns to investment at an acceptable risk and

Table 2 Binding constraints on RE investment in Ghana and potential policies

Binding constraint	Policy
Off-taker risk	Privatisation of the revenue arm of the power sector
	Improved management of ECG including revenue collection (especially revenue from debtors – government and others)
	Promotion of efficient technical practices within the distribution arm of the power sector through privatisation
Inadequate power sector regulation	Establishment of a competitive off-taker market in the power sector
	Establishment of a full-time high-level independent power producer (IPP) facilitator in the power sector
	Establishment of a reliable and transparent full-cost tariff pricing system
Lack of access to appropriate finance	Full implementation of the RE Act (Act 832) and its enshrined subsidiary instruments (net-metering, mini-grid systems, and the RE Fund and levies)
	Establishment of RE financial instruments within domestic banks by government with lower interest rates

Source Author's compilation from literature sources and in-depth interviews.

also at constraints limiting the availability of adequate finance for RE investment. The four factors damaging the risk-return profile of investment relate to an unreliable off-taker, poor regulation, macroeconomic imbalances, and corruption. On the other hand, scarce domestic finance and high returns expectations for short-term loans are behind the insufficient supply of finance (Pueyo *et al.* 2017).

This article goes beyond the identification of key constraints to analyse the political economy of their solutions. High-profile representatives of 31 organisations,³ belonging to private and public sectors; civil society organisations; academia; the utilities; and research thinktanks that have key interest, as well as playing significant roles in the energy landscapes and regimes development in the country, were sampled randomly after all relevant stakeholders were mapped, for both the administration of in-depth interviews and questionnaires from June to October 2016. Drawing on the data from the in-depth interviews, three binding constraints to RE investment in Ghana were unearthed through prioritisation by interviewees: off-taker risk; inadequate power sector regulation; and lack of access to appropriate finance. Similarly, relevant potential policies that could have been used to help unlock these binding constraints, but did not, were mapped through a review of various literature sources and the in-depth interviews (Table 2).

The next section explores the alignment of Ghanaian stakeholders with respect to the potential policies that could solve the constraints to investment in RE.

5 Analysis and discussion

Having identified policies that could have been used to address the binding constraints to RE investment in Ghana, the analysis and discussion focus on why such policies have been ineffectual in the past. The proponents and opponents of these policies are teased out from the in-depth interview scripts. Our interviews were not able to gauge the extent of the power of each of the stakeholders to achieve their goals when these conflict with those of other stakeholders.

5.1 Off-taker risk constraint

The non-existence of a credible off-taker in Ghana's power sector remains a key disincentive to investment in energy and especially in renewables as this typically has higher upfront costs. The inability of the present off-taker (ECG) to maintain a credible and resounding financial balance sheet as a result of low electricity prices and bottlenecks with revenue collection underscores investment risks. Narratives from stakeholders underpinning why the credit-unworthiness of the present off-taker dissuades investors from investing in Ghana's power sector resonate with findings by *African Energy* (2014).

An important constraint is that the off-taker is not financially credible. They are unable to pay their bills. (A senior officer at Renewable Energy Promotion, Energy Commission of Ghana)⁴

We can't call ECG a credible off-taker. So now, it is a major bottleneck... who would buy the power I'm generating and can pay at the end of the month? Most of the people who have got PPAs [power purchasing agreements] from ECG are asking for further guarantees because of their notorious track record of being unable to pay. (A senior officer at KITE)

The policies counting with the highest support in our interviews included the privatisation of the revenue arm of the power sector and the improved management of the national distribution company.

5.1.1 Privatisation of the revenue arm of the power sector

One of the key policy interventions that could help to unlock the off-taker risk in the power sector is the privatisation of the revenue arm of the power sector. This policy has been strongly supported by donors, and particularly by the United State's Millennium Challenge Corporation. A private, competitive retail market would be solely driven by the objective of profit maximisation. Accordingly, it would not be subject to political interference demanding, for example, lower tariffs, or exemption from paying their bills for public administration consumers. Such private retailers would also be more likely to implement innovative monitoring and metering systems resulting in higher revenue collection, the narrative goes (Eberhard *et al.* 2008).

Several counter-narratives oppose the privatisation approach, mainly the fear of tariff escalation; ideological perspectives of ECG as a national identity; and job uncertainty.

According to Hall, Lobina and Motte (2005), initiatives towards privatisation of essential national assets such as the energy sector are never without oppositions for the fear of price increment. Privatisation in most cases widens the affordability gap, increasing the population who cannot afford services that used to be provided by the public institutions (*ibid.*). Hall *et al.* (2005) and Nellis (2003), dwelling on the negative implications associated with privatisation, note that it increases the cost of living, deepening poverty. Such fears by citizenry have negative effects on governance due to the ‘patron–client relationship’ practices in developing countries in which there is a trade market for cost of electricity and votes (Barnett *et al.* 2016). Narratives from the in-depth interviews indeed attest to the fact that the fear of increase in tariff has been pursued by various stakeholders over time to block the implementation of this intervention as this one shows:

I think the stakeholders that are kicking against this are basically the final consumers who in effect have witnessed tremendous increase in electricity tariffs. The fact is you are bringing a third party, which we see will be more efficient and more effective. The fact too, however, is that we also have information about the cost of electricity being higher than how much we are paying and it means that a third party who is coming in with a business motive or private motive will need to break even or make profit for that matter through high cost of electricity tariffs. So, consumers would then try to fight against those things. (A senior officer at KASA-Ghana)

Second, the belief that ECG is a national asset and should stay as such also emerged strongly as a reason against privatisation. According to this narrative, the government has no moral right to either sell or give out ECG’s function to a foreign private entity since that will be tantamount to weakening the country’s sovereignty.

Looking at what is happening and the attempt by government through MiDA to give ECG to a company to manage as a concession for 25 years, it’s on a large scale and taking it from the hands of Ghanaians to a foreign company. (A senior officer at KASA-Ghana)

Ownership should be Ghanaian. It should be listed on the Ghana Stock Exchange so that every Ghanaian will be a shareholder. In that way, it will still be for Ghanaians but it will mean government cannot take out anything from the ECG.⁵ (Chief policy analyst, Ghana Institute for Public Policy Options (GIPPO))

Concerns about job security and the possible creation of jobs for only a few elites are the third most frequent arguments against the policy instrument of privatising the revenue arm of ECG. While assurance has been given in the MiDA Compact II deal, emphasising that no ECG worker would be laid off in the first five years⁶ of the concession, opponents of the initiative, including ECG workers, are not entirely convinced about the provision, since they are unsure of their retentions after the first five years. This uncertainty has triggered a series of strike actions⁷ by ECG workers against government. Birdsall and Nellis (2003) observe that privatisation unfairly disenfranchises workers.

They [ECG workers] have legitimate concerns because they are afraid of job securities and are not sure what the private entity would do. (A senior officer at ACEP)

I think it's really job security, first of all. Maybe pride a little bit, but job security and mistrust of whoever is coming in, that they are simply coming to make money on top of their labour. (A senior officer at Solar Light Ghana)

5.1.2 Improved management of ECG

As an alternative to privatisation, the improved management of ECG would result in a more efficient revenue collection from debtors – government and others. Authors (Hall *et al.* 2005; Barnett *et al.* 2016) argue that the privatisation of the energy sector in Africa would not be necessary if there were mechanisms in place to avoid governments' interferences. The inability of Ghana's power sector off-taker to function effectively is attributable to long-standing interferences by various governments. Unsurprisingly, the government itself is identified as the main obstruction for the improved management of ECG.

I will say that the reason why some people are kicking against it [privatisation] is because they feel that government is the cause of the problem so don't blame it on ECG. Government owes ECG so much and they feel if government can put in place measures to curtail this, then ECG can operate efficiently. (A senior officer at Renewable Energy Promotion, Energy Commission of Ghana)

But we do know that what has crippled the ECG is not that we don't have people with brains to deliver but it has been the interference of government to just cripple them and the solution is to either make them independent or to give it to a private entity to handle, which also brings the independence that is required. (A senior officer at ACEP)

It has been argued that Ghana's government seems powerless to resist external pressures requiring privatisation as a precondition for financial assistance, mainly through the Millennium Challenge Corporation Compact II. Hence, its inability to support the initiative of improved management of ECG. For instance, Mehrotra and Delamonica (2005) observe that in most privatisation initiatives in developing countries, donor partners and international organisations strongly push governments to accept the deals, with a lot of them being done behind the scene without proper consultation.

When something is coming from outside Ghana we are going to push back easily, good or not. So, what would have been nice is for us to recognise that the way we run these parastatals over the years has been wrong. So we need a government that is mature enough to step out and say no. (A senior officer at Solar Light Ghana)

Another critical intervention to unlock the off-taker binding constraint is the provision of guarantees for power producers in Ghana. However, the government cannot commit to high levels of debt and a lack of financial resources.

5.2 Inadequate power sector regulation constraint

Effective regulation of the power sector with incentivised strategies tailored towards RE development are paramount to boosting investment in RE sources. All over the world, different countries are formulating and implementing such policies on RE, to enhance energy security and climate change mitigation drives. Although Ghana's power sector regulatory regime aims at diversifying energy portfolios in order to enhance the green economy, it is still fraught with challenges that undermine RE investors' confidence. Three policy interventions that could have addressed the inadequate regulatory constraint in Ghana, had an RE agenda been attended to seriously, were unearthed: establishment of a full-time level facilitator in the power sector; establishment of a reliable and transparent full-cost tariff pricing system; and full implementation of the RE Act (Act 832) and its subsidiary instruments.

Regarding the setting up of a full-time level facilitator in the power sector, opposers have argued that it is unnecessary and will only bring about extra cost, since current practices in the power sector already take account of that. Concerning the setting up of a reliable and transparent full-cost tariff pricing system, opposers have gone against it on the basis that electricity prices will increase; and secondly, electricity is regarded as a public good. The lack of full implementation of the RE Act (Act 832) is attributable to the non-incentivisation approach to RE development in Ghana; RE is not considered as an immediate priority by policymakers compared to thermal energy and lack of political will. The following narratives give credence to the weaknesses of the regulatory environment as a result of the energy regimes and infrastructure niches supported by state:

We have the key issue as being the Renewable Energy Act, which says that the tariffs cannot be changed before 10 years. But then for investment like this, we are looking at a lifespan of 20 to 30 years. So if an investor is only guaranteed for 10 years then what happens to the 10 or 20 years left? So, these are some of the issues that hold back some of these investors. (A senior officer at ECG)

The truth of the matter is that when it comes to the renewables, the approach has always been different even in matured democracies and matured countries like the UK and the US. There were incentive mechanisms through the FiT with the obligation to pay. We cannot do otherwise because our scenario is even more complicated. (A senior officer at KITE)

You have one arm of government or ministry promoting a green agenda and the other doing something that contradicts it. Ghana signed up to the Sustainable Energy for All initiative and our president chaired a session in the UN on sustainable energy, but we are talking about coal. So there is a disconnection between various government agencies leading on policies on energy and environmental sustainability. (A senior officer at KITE)

I don't even think the minister [former minister of power] ever thought of the renewable option whenever as a credible option. His thoughts were all about how to get fuel and thermal plants running, whereas you don't need fuel for renewables. (A senior officer, ACEP)

5.3 Lack of access to appropriate finance

Financial instruments remain essential ingredients for the development of RE. It is therefore not surprising that governments and policymakers in developed countries create economic and financial incentives to facilitate the development of renewable energy technologies. According to Painuly (2001), credit subsidy was introduced in Denmark to finance RE development for a ten-year period. Other financial instruments such as tax exemptions, credit facilities, and third-party financing mechanisms are also introduced in other jurisdictions in developed economies to boost RE investment (IEA Renewable Energy Working Party 2002).

A fundamental factor sustaining the lack of appropriate finance in Ghana, which in turn affects RE investment is the low financial portfolios of domestic banks. Despite its positive effect on RE development, current financial portfolios of domestic banks cannot make the policy implementable. The high risk of doing business coupled with the low portfolios of domestic banks makes it difficult for entrepreneurs to access loans. This affects the pricing of electricity from RE sources, which also affects consumers' willingness to appreciate the usefulness of the technology, as it is perceived to be expensive relative to other technologies.

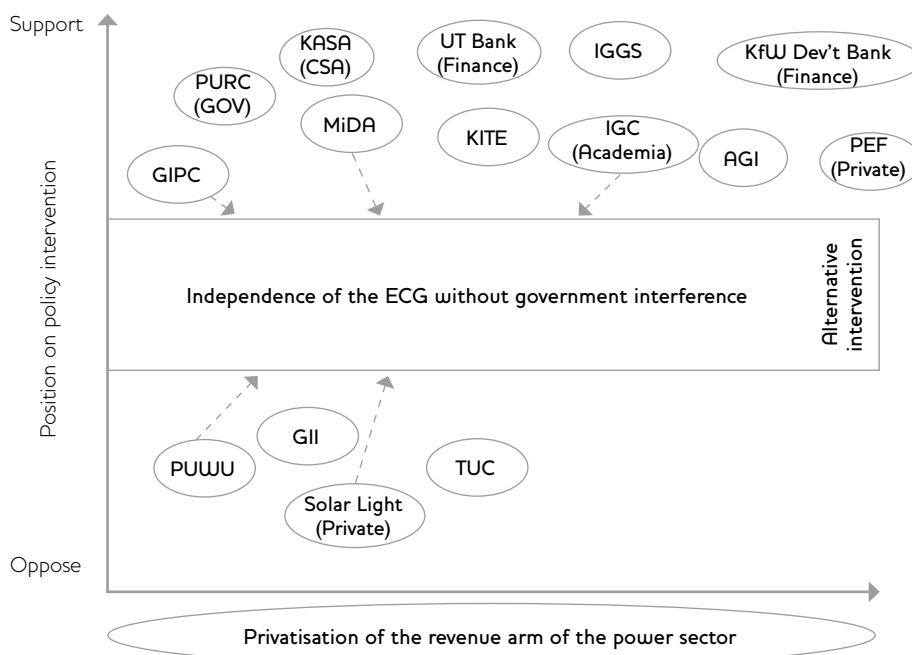
The technology is still a bit expensive and you need to get a good feed-in tariff before you can make good business. Unfortunately, we also don't have flexible financing schemes. We still have to deal with the same commercial banks and they don't understand the investment aspect in the renewables. They are still doing short-term loans with 30 per cent to 35 per cent interest rates. (A senior officer at KITE)

6 Emerging interventions for change

Our interviews⁸ revealed institutional patterns of support or opposition as well as alternative policies that could gather more support than those opposed. However, the article could not establish clear-cut coalitions for or against policies due to insufficient information on how stakeholders exert power differently. The majority of these stakeholders have not evolved from the mere expression of support for or opposition to the policies, to building coalitions, and exertion of different influences to bring about these changes. In the view of a key stakeholder: 'Networking and advocacy for RE development by civil society organisations and allied groups have been weak in Ghana' (a senior officer, ACEP). The graphs included in this section depict the group of stakeholders that support (upper part) and those that oppose (lower part) the potential policies that could boost RE development in the country. The policy proposed is presented under the horizontal axis and the dominant suggested alternative is presented in the centre.

The privatisation of the revenue arm of the power sector policy received high-level support from the majority of the institutions, with only PUWU, GII, TUC, and Solar Light opposing this policy (Figure 1).

Figure 1 Stakeholders' support or opposition to privatisation of the revenue arm



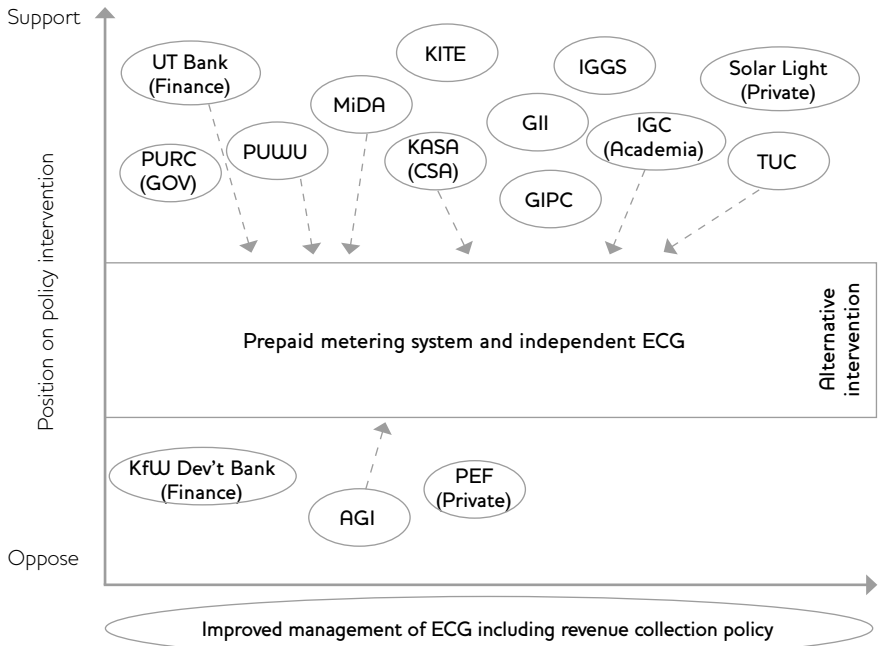
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Various alternative policies have been proposed by these stakeholders as being capable of addressing the off-taker risk constraint. However, only stakeholders from GIPC, MiDA and IGC, who support the policy, and PUWU and Solar Light Company, who oppose the policy, have proposed a common alternative policy intervention. This alternative policy intervention to the privatisation of the revenue arm of the power sector entails guaranteeing the independence of ECG, including government non-interference, since it will facilitate the expansion of the prepaid billing system to maximise revenue collection.

Similar to the privatisation of the revenue arm of the power sector policy, the improvement in the management of ECG is widely accepted by a majority of the interviewed stakeholders (Figure 2) as an important solution to the off-taker constraint. Only AGI, PEF, and the KfW Development Bank oppose this policy, considering it insufficient to improve the creditworthiness of the off-taker. The proposed alternative policy option is a prepaid metering system and independence of the ECG.

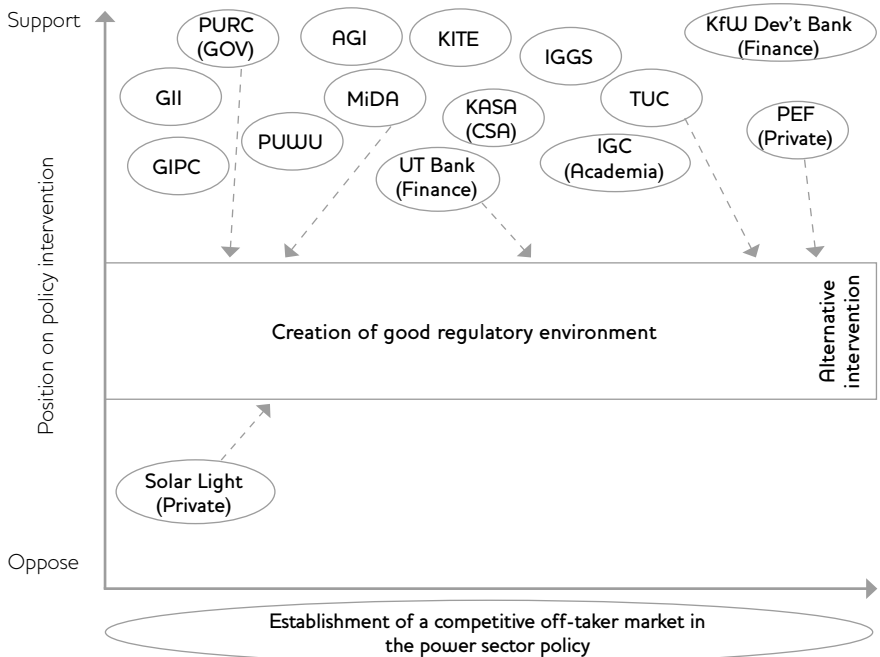
While all but one (Solar Light Company, Ghana) gave maximum endorsement to the establishment of a competitive off-taker market in the power sector, PURC, MiDA, UT Bank, TUC, PEF, and Solar Light were of the view that the creation of a good regulatory environment, with independent regulators and independent distribution and retailing could achieve similar results (Figure 3).

Figure 2 Stakeholders' support or opposition to improved management of ECG policy



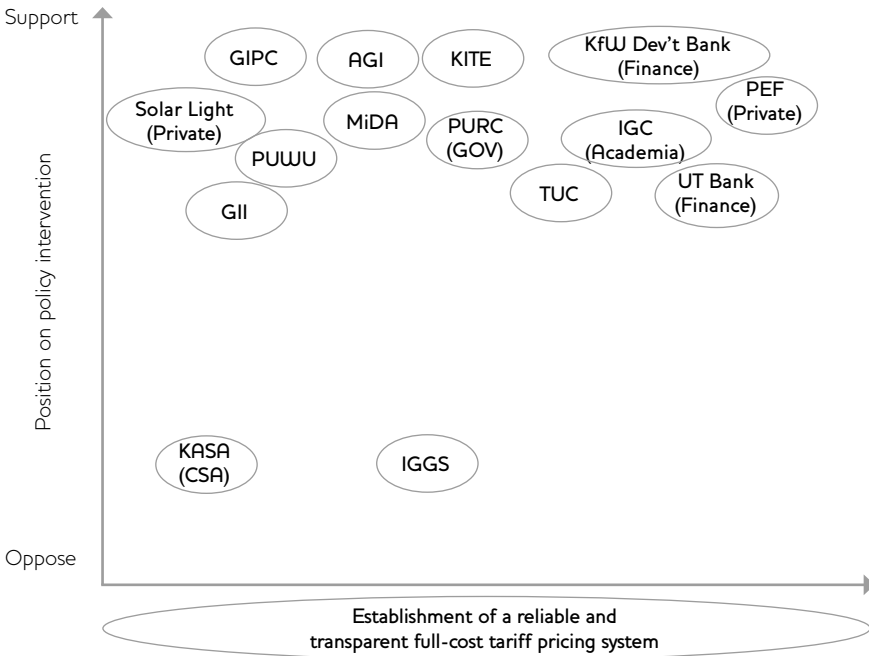
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Figure 3 Stakeholders' support or opposition to the establishment of competitive off-taker market policy



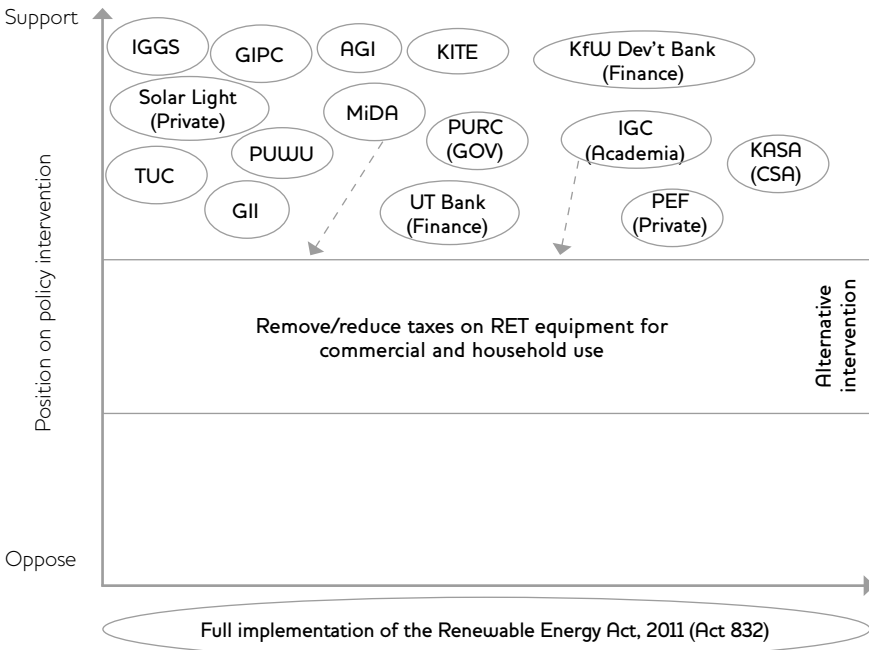
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Figure 4 Stakeholders' support or opposition to the establishment of a reliable and transparent full-cost tariff pricing system



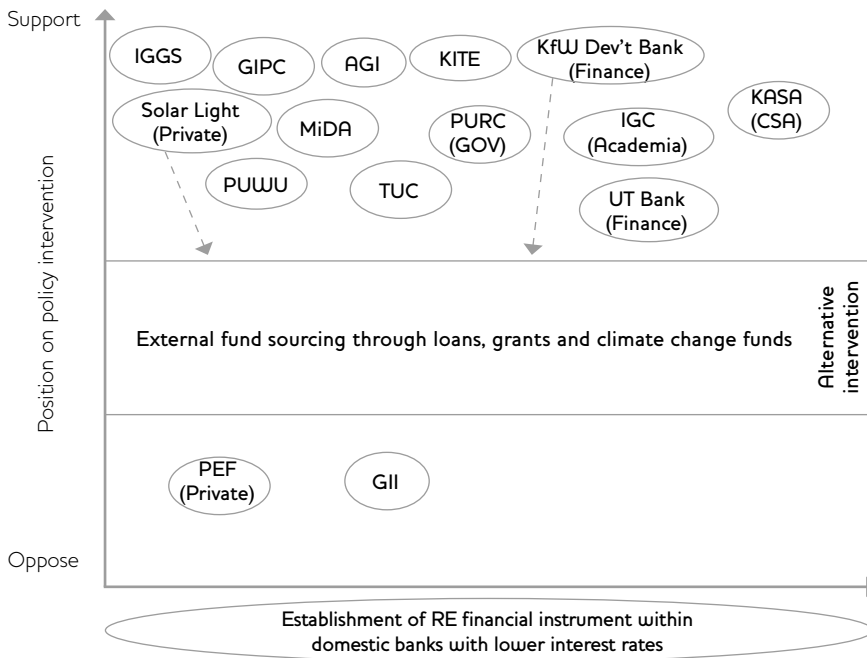
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Figure 5 Stakeholders' support or opposition to full implementation of the Renewable Energy Act, 2011 (Act 832) policy



Source Author's own.

Figure 6 Stakeholders' support or opposition to RE financial instruments



Source Author's own.

The majority of the stakeholders support the establishment of a reliable and transparent full-cost tariff pricing system devoid of government intervention to overcome the faulty power sector regulatory constraint (Figure 4). The opposing stakeholders did not propose an alternative policy. The dominance of the supporting group, however, shows that many stakeholders want this policy to be implemented.

There is total support for the full implementation of the Renewable Energy Act, 2011 (Act 832) by all institutions interviewed. This is considered by all the institutions as a means to overcome the faulty power sector regulatory constraint. Nevertheless, MiDA and IGC were of the view that reducing or removing taxes on RET equipment is equally imperative (Figure 5).

The establishment of RE financial instruments within domestic banks with lower interest rates is a potential policy that could overcome the binding constraint on access to appropriate finance. All the institutions except GII and PEF are in support of this policy (Figure 6). Solar Light Company and the KfW Development Bank, however, proposed external fund sourcing as an alternative means to improving access to finance for RE projects. Clearly, there is not a mutually proposed alternative policy by the opposing and supporting stakeholders. The dominance of the supporting group, however, shows that many stakeholders want the establishment of RE financial instruments within domestic banks with lower interest rates to be implemented.

7 Conclusion

The discussion in this article has underscored the critical role political economy dynamics have played as part of the elements influencing the underinvestment within the RE landscape in Ghana. While several factors may constrain investment in the sector, previous research using the Green Investment Diagnostics framework and further in-depth interviews with key stakeholders unearthed three binding constraints: off-taker risks, inadequate power regulation, and lack of access to appropriate finance. The permanence of these binding constraints is caused by dominant institutional, regulatory, and policy regimes on energy in the country, which are more fossil fuel inclined. While several policies or strategies could enhance RE in the country, inertia from the country's leadership coupled with the weaknesses of advocates, have precluded implementation. Ghana's political leaders should champion those RE policies that already attract overwhelming support from stakeholders for renewables to have a chance in a fossil fuel-dominated paradigm.

Notes

- * The author would like to thank the reviewers for their helpful comments on an earlier version of this article.
- 1 ISSER, University of Ghana (bawasius@hotmail.com; bawasius@isser.edu.gh).
 - 2 www.ghanaweb.com/GhanaHomePage/NewsArchive/Gov-t-projects-80-of-power-plants-to-be-thermal-430382; www.urbanafrika.net/urban-vocies/15378/.
 - 3 Association of Ghana Industries; Ghana Investment Promotion Council; Ghana Integrity Initiative; International Growth Centre; Institute of Green Growth Solutions; Kasa Initiative Ghana; Kumasi Institute of Technology and Environment; Millennium Development Authority; Private Enterprise Federation; Public Utilities Regulatory Commission of Ghana; Public Utilities Workers Union; Solar Light Co. Ltd; Trade Union Congress; UT Bank Ghana Ltd; Energy Commission; Ghana Investment Promotion Centre; Africa Centre for Energy Policy (ACEP); Biogas Technologies Africa Ltd; Electricity Company of Ghana; IMANI Ghana; Institute of Fiscal Studies; Integrated Social Development Centre; African Energy Consortium; African Energy Consortium; Sahel–Sahara Bank; Blue Energy Company; Lekela Power; Ghana Capital Partners; NEK–Ghana; Volta River Authority; International Growth Centre.
 - 4 The interviews took place between June 2016 and October 2016. Dates of interviews were: 10 June 2016; 19 July 2016; 20 July 2016; 22 July 2016; 12 August 2016; 19 August 2016; 8 September 2016; 9 September 2016.
 - 5 www.ghanaweb.com/GhanaHomePage/business/Tarzan-disagrees-with-ECG-workers-over-privatization-465173 (accessed 15 August 2016).
 - 6 'For the first five years we are telling whoever comes as a concessionaire that you cannot reduce the level of employment within ECG. It is a way of guaranteeing people's jobs at least for the next five years' (Chief executive officer, Millennium Development Authority).

- 7 www.africanews.com/2016/01/20/ghana-labour-groups-protest-increase-in-utility-and-taxes/ (accessed 15 August 2016).
- 8 The definitions of the acronyms for these organisations are as follows: AGI – Association of Ghana Industries; GIPC – Ghana Investment Promotion Council; GII – Ghana Integrity Initiative; IGC – International Growth Centre; IGGS – Institute of Green Growth Solutions; KASA – Kasa Initiative Ghana; KITE – Kumasi Institute of Technology and Environment; MiDA – Millennium Development Authority; PEF – Private Enterprise Federation; PURC – Public Utilities Regulatory Commission of Ghana; PUWU – Public Utilities Workers Union; Solar Light – Solar Light Ghana; TUC – Trade Union Congress; UT Bank – UT Bank Ghana Ltd.

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