The Political Dynamics of Electricity Sector Performance in Ghana and Côte d'Ivoire

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A Thesis

in the Department

of

Political Science

Presented in Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy (Political Science)

at Concordia University

Montreal, Quebec, Canada

August 2023

CONCORDIA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

This is to certify that the thesis prepared

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Entitled: The Political Dynamics of Electricity Sector Performance in Ghana and Côte d'Ivoire

and submitted in partial fulfillment of the requirements of the degree of

Doctor of Philosophy (Political Science)

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ABSTRACT

The Political Dynamics of Electricity Sector Performance in Ghana and Côte d'Ivoire

Mark Kwakye Frimpong, PhD Concordia University 2023

What factors drive variation in policy choices related to the electricity sector and, ultimately, in sectoral performance over time? This dissertation argues that differences in the form and intensity of competitive political pressures affect the choice and implementation of electricity sector policies and thus sectoral performance.

First, I explore bivariate relationships between commonly cited external factors – natural resource endowments, economic shocks, investment climate, droughts, and civil wars – and sectoral performance across Sub-Saharan Africa. The findings confirm associations between these factors and sectoral performance. Yet they indicate considerable unexplained variation in sectoral performance, which requires qualitative analysis.

Second, I analyze the politics of electricity sector management in Ghana and Côte d'Ivoire. In the 1980s and 1990s, these two countries faced similar economic and climatic crises that brought the electricity sector to its knees. Yet when the World Bank and the IMF pushed neoliberal policies as solutions for sectoral challenges, they responded differently. Liberalization and privatization policies moved forward more quickly in Côte d'Ivoire than in Ghana. Moreover, electricity sector performance differed in the two countries during 1990-2019. Electrification rates accelerated in Ghana, but they slowed in Côte d'Ivoire. Côte d'Ivoire improved the reliability of electricity supply more than Ghana. Electricity prices also reflected costs of service in Côte d'Ivoire but not in Ghana.

The comparative political analysis traces how different forms and intensity of competitive political pressures, especially coups d'état, electoral threats, civil wars, and risks of civil wars, affect the implementation of electricity sector policies and then sectoral performance in Ghana and Côte d'Ivoire. I argue that intense political competition encourages Ghanaian politicians to extend electricity access to rural areas to mobilize political support and to set artificially low tariffs to appease urban residents and swing voters. Politically motivated low tariffs, coupled with unpaid subsidies and governments' failure to pay their own electricity bills, result in inadequate investments in power utilities and, in turn, recurrent power shortages and outages.

On the other hand, I argue that existential threats, mainly contestations over Ivorian identity and citizenship and civil war, slowed electrification programs with governments prioritizing regime and national stability. My study shows that (the risks of) civil wars crowd out ordinary concerns like electricity provision. However, when political life returns to normal, high competition drives governments to mollify voters by extending access to electricity and setting below-cost tariffs. Low competition allows governments to make policy changes they view as solutions for sectoral challenges but might defer short-term voter gratification. I demonstrate that low electoral threats encouraged the privatization of the state-owned electricity company in Côte d'Ivoire. In contrast, intense political competition discouraged ruling elites from privatizing the national electricity distributor in Ghana.

Acknowledgments

Writing and completing this dissertation have reminded me of the African proverb *one finger cannot lift a pebble*, to wit, some tasks, even if they appear simple, require the help of others. A dissertation is hardly the product of a single person. Many people have helped me in diverse ways throughout the dissertation process.

First, I would like to thank the Fonds de recherche du Québec Société et Culture (FRQSC) for the funding provided me during 2018-2022. Without FRQSC's financial support, fieldwork for this project would not have been possible, and I could not have completed my doctoral studies.

Second, at Concordia University, I am indebted to many people whom I cannot repay. My supervisor, Amy Poteete, has bigheartedly supported me throughout my doctoral training. I can't thank her enough for her time, dedication, and diligence to this research project. Her eagerness to read each sentence and offer detailed feedback on countless chapter drafts has shaped the quality of the dissertation. In addition, she has been a source of motivation and advice for me throughout my time at Concordia. Leander Schneider put in time and effort right from the beginning of this project. I will forever be grateful for his constructive criticisms, which have contributed to the overall quality of the dissertation. I can't describe how thankful I am to Patrik Marier for his invaluable support and contributions throughout the dissertation process. I thank Alexandra Zeitz for her useful feedback on my statistical analysis. Other people have contributed to this project in different ways, including chats in the hallways and at the front desk of the Department of Political Science. I had support from Daniel Salée, Elizabeth Bloodgood, and Marlene Sokolon. Mireille Paquet's advice on the importance of humility in completing doctoral studies will live with me forever. Eve Pankovitch, Joanne Downs, and Kathryn Rawlings were always available to help me. Prof. Kwame Boafo-Arthur of the University of Ghana never ceased to check up on me throughout my doctoral training. Prof., I appreciate your prayers and wise counsel.

The pressures of graduate studies forged close relationships between me and graduate students at Concordia and other universities. Friendships with Rubens Lima Moraes, Manon Laurent, and Lindsay Larios helped me to develop professionally and personally. I counted on the support and encouragement of Prince Paa Adjei and Eric Agyemang.

I am grateful for persons in Ghana and Côte d'Ivoire who made field research possible. Dr. Festus Kwakye and his wife, Evelyn, hosted me in Accra. Ama Oppong-Damoah made accommodation arrangements for me in Abidjan. Kwasi Asare-Bekoe and his wife, Angie, accommodated me at no cost to me. Angie made sure my food bag was never empty. I am thankful for your hospitality. I appreciate people in Accra and Abidjan who found time out of their tight schedules to meet and interact with me. I couldn't have written this dissertation without their readiness to generously share their stories, experiences, and expertise with me.

Finally, I could not have completed this dissertation without the affection and support of my dear wife, Mariam-Grace Lartey. Thank you for putting up with my long absences from home and absent-mindedness even when I was at home. You cheered me up when writing the dissertation drained my energy and motivation. For your sacrifices and support, I dedicate this dissertation to you, Mariam-Grace, and our children – Markson, Markswell, and Marvin.

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Chapter 1

Africa's Pervasive Power Problems

1.1 Introduction

My home village, Droboso, like many villages and peri-urban areas in Ghana, had no electricity prior to 2000. In 2007, I realized that the problems in the electricity sector went beyond the issue of low access. Ghana plunged into rolling power outages (Boateng 2014). The loadshedding, which typically lasted 12 hours in a day, hindered my ability to study at night as I prepared for my last rounds of university examinations.

Recurrent power shortages and blackouts affect not only the education sector, but also the economy. Companies in electricity-dependent sectors, including manufacturing, mining, and hospitality, cut jobs and working hours and lay off workers because a lack of electricity limits operational capacity (Chronicle 2007; Boakye et al. 2016; Abeberese et al. 2017). These companies spend huge sums of money producing supplemental electricity with their standby generators (Chronicle 2007). Phillips (2007) cited an estimate from Databank, a local investment bank in Ghana, that "outages [forced] companies to spend $62 million a month, or about $744 million a year, on extra power generation, or about 6% of the country's entire economic output" during 2006-2007. This reduces companies' profits, government revenues, and ultimately national economic growth. The Institute of Statistical, Social and Economic Research (ISSER) of the University of Ghana found that Ghana lost between US$320 million and US$924 million every year in economic output because of recurring power outages during the 2012-2014 period (ISSER 2015). Local and foreign media highlight power outages and their damaging effects. One local newspaper claimed: "Ghana to Lose $1.4 Billion" (Business Day 2007). A Reuters' news headline in 2007 read: "Power cuts to shut Ghana's Valco [Volta Aluminum Company] from Friday" (Ryan 2007). Nine years later, the New York Times reported "The End for Ghana's Power-Cut President" (Osei 2016).

Persistent electricity failures are not unique to Ghana; they cut across Sub-Saharan Africa (SSA). In many countries in the region, frequent blackouts and high electricity tariffs compound limited access (Gratwick and Eberhard 2008b; Brew-Hammond 2010; Eberhard et al. 2011; Hafner et al. 2018; Toyana 2021; Marawanyika 2021). Homes and organizations in many African countries lose their electric appliances, including television sets and refrigerators, to power outages (Wines 2007). Lack of access and blackouts compel some residents to rely on traditional fuel sources like charcoal for cooking (Ngezi 2019). For those who depend on mobile phones for business transactions, recreation, and connection to their social networks, life becomes difficult in the absence of electricity to charge their phones' batteries. Some hospitals in the region lack energy for storing critical supplies, including medication and vaccines, and for conducting surgeries (Moloto 2015). Electricity crunches, in short, threaten human security and undercut social and economic development in Sub-Saharan Africa. They constrain industrial activity, lower productivity, and contribute to job and income losses, while disrupting social life (Eshun and Amoako-Tuffour 2016).

What policy measures have contributed to the performance of the electricity sector in Africa? Why did African ruling elites implement these policies? This dissertation answers these questions. Specifically, it investigates constraints on and opportunities for electricity policy choices and their (in)effectiveness. As I will argue in subsequent chapters, different forms and

intensity of competitive pressures contribute to differences in politicians' policy measures related to the electricity sector and the outcomes these strategies ultimately produce. High levels of threats of removal from office create incentives for politicians to court supporters or appease powerful interests with public goods and services (Harding 2020). These threats can push political leaders to carry out policies with a short-term horizon (Kopecky 2011, 728; see also Min and Miriam 2014; Chatterjee 2018). On the other hand, during periods of low competition, politicians may face little or no incentives to mobilize political support or demobilize opposition by providing public goods. Across democratic and authoritarian regimes, low threats to political elites' stay in office can make them unresponsive to popular expectations about the provision of public goods and might encourage them to implement sectoral policies that defer short-term citizen satisfaction.

To examine how competitive pressures influence African governments' policy choices regarding the electricity sector and their outcomes, my dissertation conducts a comparative study of Ghana and Côte d'Ivoire. I chose these countries for several reasons detailed in Chapter 2. In brief, Ghana and Côte d'Ivoire experienced similar economic crises and droughts during the 1980s. When the Bretton Woods' institutions pushed neoliberal reforms as solutions for electricity sector challenges in the 1980s and 1990s, the two countries managed the policy measures differently. Côte d'Ivoire enacted electricity legislation in 1985 and privatized its national power utility in 1990. Ghana started to implement the neoliberal electricity sector policies seven years later by enacting electricity laws and establishing independent regulatory agencies in 1997. Ghana did not privatize its national power utilities. Moreover, many dimensions of sectoral performance differed during 1990-2019. For example, Ghana improved access rates more than Côte d'Ivoire. In Ghana, national access rates increased from 23.5% in 1990 to 83.5% in 2019, showing a 255.3% change (World Bank 2018, 2021a). Rural electrification rates rose from 2.9% in 1993 to 70% in 2019, indicating a 2,313.8% change. On the other hand, national electricity access increased from 36.7% in 1990 to 68.6% in 2019, representing a change of 86.9% (World Bank 2021a). Rural access increased from 16.7% in 1993 to roughly 42% in 2019, intimating a 150.9% change (World Bank 2021a). However, Ghana experienced more electricity shortages and power cuts than Côte d'Ivoire (Kiazolu 2015; Abeberese et al. 2017; Citi Newsroom 2021). Last, electricity prices reflected costs of service in Côte d'Ivoire but did not reflect service costs in Ghana (AfDB 2019).

This chapter describes variation in electricity sector performance and potential explanations for sectoral policy initiatives. Section 2 documents differences between sectoral performance in Sub-Saharan Africa and other regions, before turning its attention to variations across countries in Africa. Section 3 reviews existing scholarly explanations for divergence in policy initiatives and their outcomes. Section 4 sketches my own argument. The concluding section (5) presents the plan of the dissertation.

1.2 The Puzzle of Electricity Sector Policy Choices and Performance

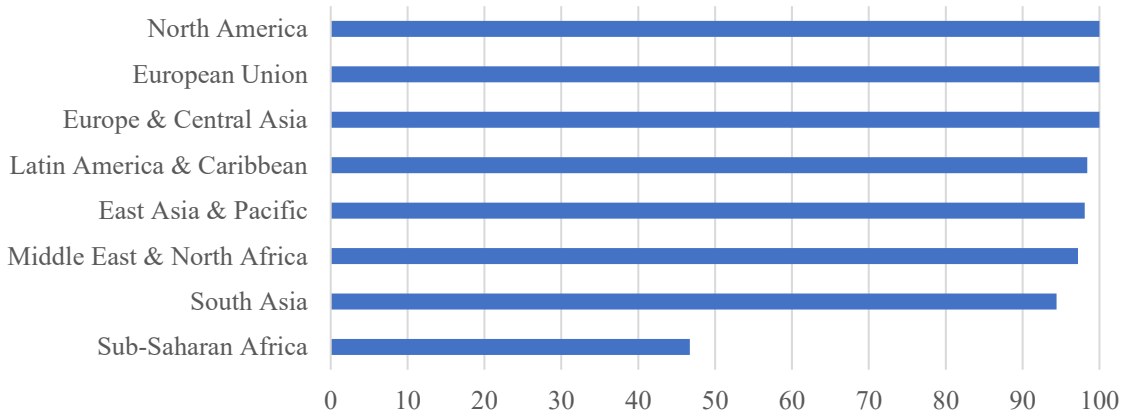
1.2.1 A Regional Overview of Sectoral Performance

This study examines electricity sector performance along three dimensions: access, reliability, and cost. The International Energy Agency (2017, 21) defines access as a household having electricity sufficient to power "a basic bundle of energy services," including at least lightbulbs, phone charging, and a radio. The data on electricity access may not be accurate because access rates may be under reported. Moreover, national statistical agencies that provide data on electricity access to international organizations such as the World Bank stand in need of

resources, including technology and funds, to correctly gather and evaluate data (Prabhu 2005). As Jerven (2013) pointed out, officials may cook up data or use insufficient evidence to generate them. Chapter 4 details these limitations. The available data show that access remains low, power cuts occur frequently, and production and consumer costs are high in Sub-Saharan Africa. Despite improvements in electrification rates in recent times, Sub-Saharan Africa still has the largest percentage of people without access to electricity in the world. More than half of the region's population (53.3%) lacked access to electricity in 2019 (World Bank 2021a). Figure 1.1 reveals that the proportion of people with access to electricity in developing regions such as South Asia was twice that of Sub-Saharan Africa in 2019. With electrification rates unable to keep pace with rapid population growth and urbanization, the International Energy Agency predicted in 2017 that roughly 600 million people in the region would lack access to electricity by 2030 (IEA 2017, 46).

These figures fail to depict the disparity in access rates between urban and rural areas. In 2019, roughly 22% of the urban population had no access to electricity, whereas more than two-thirds of rural residents (71.9%) lacked access in Sub-Saharan Africa (World Bank 2021a). To put this in a global perspective, data from the World Development Indicators show that only 3.4% of the rural populace in East Asia and the Pacific lived without access to electricity at the end of 2019 (World Bank 2021a). In the Middle East and North Africa, 6.1% of rural residents had no access to electricity in 2019, compared to 7% in Latin America and the Caribbean and 8.4% in South Asia (World Bank 2021a).

Figure 1.1: Access to electricity (% of population) in 2019: SSA in Global Perspective



Source: Data from World Bank (2021a)

In Sub-Saharan Africa, many of those who do have access to electricity experience recurring blackouts. Data from the Enterprise Survey show that, on average, businesses in Sub-Saharan Africa had nearly nine (8.8) power outages per month in 2019, higher than the world's average of 5.6 (World Bank 2021b). A single blackout lasted roughly six hours on average in 2019 (World Bank 2021b), as compared to the international security standard of seven hours per year (Gratwick and Eberhard 2008b). Recurrent loadshedding and blackouts resulted in part from insufficient operational capacity. In addition to low installed capacity, ageing power plants and inadequate or nonexistent maintenance rendered a significant share of installed capacity

inoperative (Eberhard et al. 2011; Reuters 2019b). Severe weather conditions undermine the generation capacity of countries that depend on hydroelectricity. Specifically, droughts and poor rainfall hinder the capacity of hydro plants to generate adequate power. In some instances, frequent power shortages compel some households and firms to rely on in-house generators, while governments resort to the use of emergency power plants (Eberhard et al. 2016; Agyekum et al. 2020). Emergency power plants are generators that specialized operators install, usually in shipping containers, to alleviate severe power shortages through short-term leases with governments (Eberhard and Shkaratan 2012; Eberhard et al. 2016).

Despite persistent power shortages and outages, electricity is expensive in many African countries (AfDB 2013; Trimble et al. 2016).[1] Akinwuni Adesina, the president of the African Development Bank (AfDB), bemoaned that "Africans pay too much for power" (quoted in Myjoyonline 2015). Africans pay high electricity prices compared to tariffs in other parts of the world. For example, in 2013, utilities charged US¢14 per kilowatt-hour on average, twice that of other regions in the developing world (AfDB 2013). The most recent study conducted for the World Bank – in 2014 – showed that residents in Sub-Saharan Africa paid roughly US¢17 per kilowatt-hour, compared to the average of US¢12 per kilowatt-hour in 27 member countries of the Organization for Economic Cooperation and Development (OECD) (Kojima and Han 2017, 7; see also World Bank 2021e).

1.2.2 Cross-National Variation in Sectoral Performance

Electricity access, reliability and prices vary across countries in Sub-Saharan Africa. Some Sub-Saharan African countries have improved access to reliable and affordable electricity more than others. In many cases, there are tradeoffs in sectoral performance, with some countries in the region doing exceptionally well on access, but poorly on reliability or cost. Others excel on reliability but underperform on access or prices.

Figure 1.2 illustrates that access to electricity has generally improved since 1990. In terms of absolute percentages, nine countries had access rates greater than 75% in 2019, Mauritius (100%), Seychelles (100%), Cabo Verde (95.5%), Gabon (90.7%), South Africa (85%), Comoros (84%), Ghana (83.5%), Eswatini (77.2%), and São Tomé and Príncipe (75.2%). On the other hand, less than a quarter of the population had access to electricity in Sierra Leone (22.7%), Democratic Republic of Congo (19.1%), Niger (18.8%), Burkina Faso (18.4%), Central African Republic (14.3%), Malawi (11.2%), Burundi (11.1%), and Chad (8.4%) in 2019. Seven countries – Togo, Ghana, Cabo Verde, Botswana, Kenya, Comoros, and Eswatini – had increases of more than 50% in access over the 1990-2019 period. For example, between 1990 and 2019, access to electricity jumped from almost nothing (0.01%) to 77.2% in Eswatini, from 3.3% to 69.7% in Kenya, and from 0.01% to more than half of the national population (52.4%) in Togo. During this period, little changed in access in other countries, including Djibouti, Equatorial Guinea, Zimbabwe and Burundi.

Likewise, the reliability of power supply differs from one African country to another. A conventional measure of power reliability is the frequency of outages. Data on this indicator are not readily available for the 1990s and much of the 2000s. The World Bank started collecting

[1] In Kenya, for example, although the Kenya Power and Lighting Company (KPLC) connected many people to the grid, about 1 million newly connected customers of the KPLC purchased no power in 2017 because they spent fortunes to get connected to the grid and could not pay electricity bills that they deemed to be too high (The Economist 2017; see also Avila et al. 2017).

data on electricity reliability in 2006 through its Enterprise Survey in response to the failure of many African governments to publish information on outages (World Bank 2021b). The Enterprise Survey database has some outdated data. For example, the most recent data for the Republic of Congo, Cabo Verde, Gabon, Mauritius, Eritrea, and Burkina Faso are for 2009. The database captures the 2007 outages in South Africa (before recent disruptions discussed below) and Guinea-Bissau's blackouts in 2006. They had since not been updated. Nonetheless, these data give some indication of cross-national variation in the reliability of electricity supply.

As Figure 1.3 depicts, the lowest number of outages occurred in Eritrea (in 2009), followed by Namibia (in 2014), South Africa (in 2007), Mauritius (in 2009), South Sudan (in 2014), Mozambique (in 2014), and Djibouti (in 2013). Botswana (2010), Lesotho (2016), Côte d'Ivoire (2016), Eswatini (2016), Kenya (2018), and Rwanda (2019), among other countries, had a low number of power cuts. Burundi (in 2014), Niger (in 2017), Central African Republic (in 2011), Benin (in 2016), Republic of Congo (in 2009), and Nigeria (in 2014) experienced a very high frequency of outages. Nigeria had one of the least reliable power utilities in the region, with blackouts occurring about 33 times monthly in 2014. Because of the regularity and severity of power outages, Nigerians sarcastically branded the country's previous power utility, Nigeria Electric Power Agency (NEPA), 'Never Expect Power Always' or 'Never Expect Power At All' (Obadare 2009, 249).

The duration of a typical outage varies across Africa. The average duration of an outage ranged from one hour in Rwanda in 2019 to 34.3 hours in the Republic of Congo in 2009 (World Bank 2021b). For instance, an outage lasted, on average, 1.6 hours in Djibouti in 2013, 2.7 hours in Botswana in 2010, and 10.9 hours in Zambia in 2019 (World Bank 2021b). A typical blackout lasted 11.6 hours in Nigeria in 2014 and 13.5 hours in Angola in 2013 (World Bank 2021b).

Household surveys conducted in 2014 confirmed the commonality of blackouts in seven African countries – Ethiopia, Madagascar, Malawi, Mali, Niger, Nigeria, and Senegal (Kojima and Trimble 2016, 27). Among these countries, power outages happened more frequently in Malawi, Niger, Nigeria, and Senegal. In Malawi, for example, six out of seven households experienced blackouts daily, compared to about six out of 10 households in Nigeria (Kojima and Trimble 2016, 27). Even in South Africa, considered by many as Africa's electricity powerhouse because of its "reliable repository of cheap electricity" (Bearak and Dugger 2008), rolling outages upset households and firms in 2008. Power outages occurred

> two or three hours at a time, two or three times a day. Radio announcers jocularly advised listeners to make their morning toast by vigorously rubbing two pieces of bread together and wisecracked about amorous uses for the extra darkness. But after three weeks of chronic failures – after regularly irregular vexations with lifeless computers, stove tops and stoplights – public forbearance has given way to outrage. (Bearak and Dugger 2008)

Since then, power outages have persisted in South Africa, with Eskom rationing electricity because of underinvestment in power generators and debt, among other challenges (Reuters 2020; Winning and Kumwenda-Mtambo 2021). Electricity shortages in South Africa sometimes compel Eskom to reduce power supplies to neighboring countries like Zimbabwe and Botswana (Gaotlhobogwe 2009; Ndlovu 2019). This exacerbates power shortages and outages there (Samaita and Ndlovu 2019).

The average electricity tariff per kilowatt-hour differs from one African country to another, with prices being exceptionally low in a few countries, but high in many others. Using Trimble et al.'s (2016; see also World Bank 2021e) data on tariffs, Figure 1.4 presents the

average prices of electricity and costs of service in 39 Sub-Saharan African countries in 2014.[2] It shows that electricity tariffs ranged from US¢4 per kilowatt-hour in Ethiopia to US¢50 per kilowatt-hour in Liberia.[3]

Although expensive, power tariffs rarely cover supply costs, undermining the financial viability and efficiency of utility providers. Figure 1.4 reveals that authorities set power prices below cost in 37 out of 39 African countries. Only Seychelles and Uganda fully covered operating costs and capital expenditure in 2014. Nineteen countries recouped operating costs but not capital expenditure, merely four countries covered capital expenditure, and in many countries, utilities lost more than US¢25 per every kilowatt-hour of electricity sold (Trimble et al. 2016). Anecdotal evidence supports the results of the study. For instance,

> In Nigeria, though the grid is fully privatized, electricity prices are kept artificially low by the regulator. So, distribution companies refuse to buy power from generating companies, complaining that they would make a loss selling it on. And customers rarely pay since the supply is so erratic. (The Economist 2017)

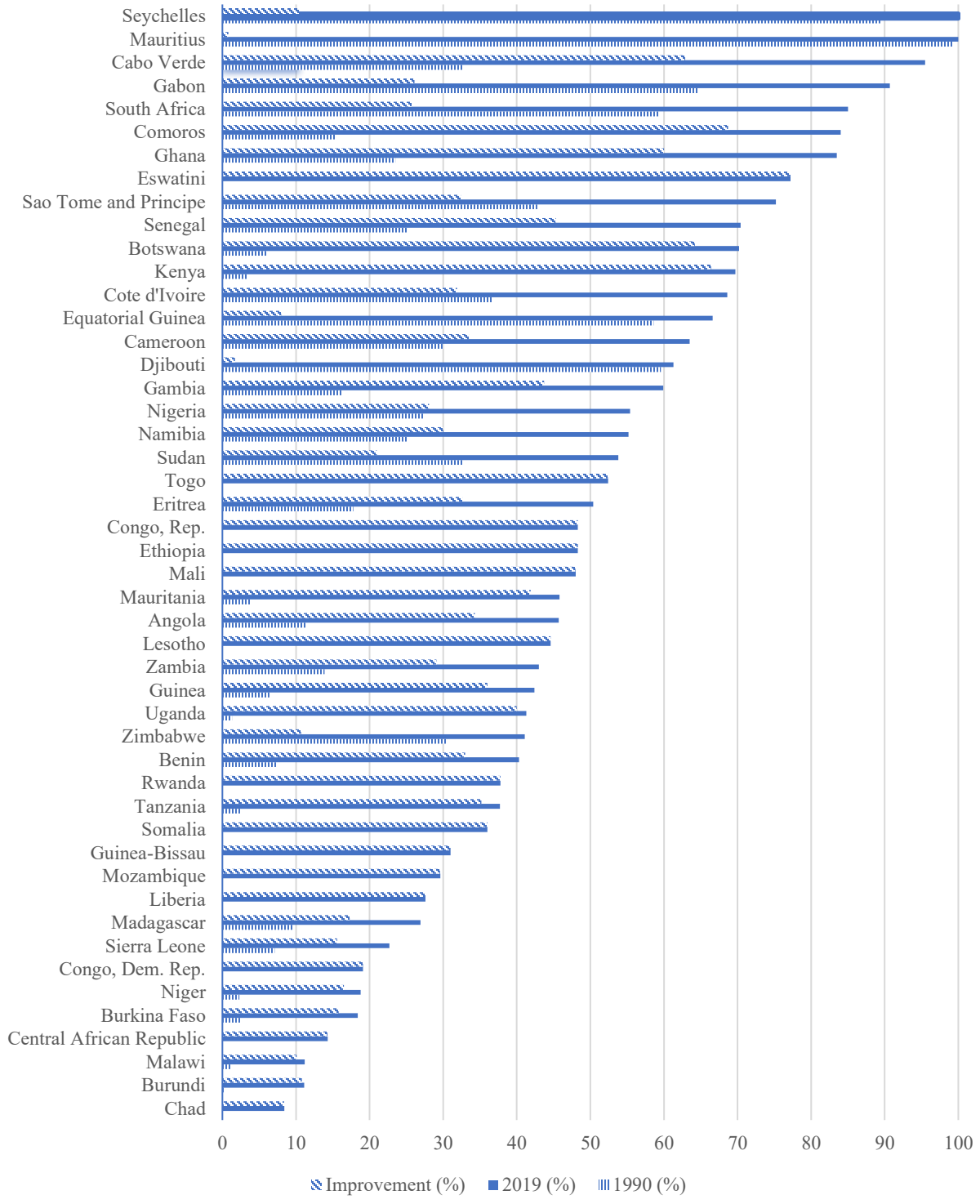
Underpriced electricity, despite high supply costs, means that many electricity companies depend on government subsidies to stay afloat. Pricewaterhouse Coopers confirmed this in a survey it conducted on power tariffs in 15 African countries between November 2014 and March 2015. According to the study, 65% of power and utility-sector participants (senior management) described tariff levels as insufficient (PwC 2015, 12). The respondents added that inadequate tariffs force African governments to give financial help to utilities (PwC 2015, 12).

In sum, while sectoral performance has generally improved, it varies significantly, with some countries outperforming others. Why do some countries perform better than others in electricity provision? What strategies have contributed to these outcomes? What factors drive African governments' policy choices regarding the electricity sector? This study answers these questions by analyzing how competitive pressures influence differences in politicians' strategies related to the electricity sector and thus sectoral performance, after probing the associations between commonly cited external factors and sectoral performance. I build my argument by drawing insights from explanations for variation in policy choices and their outcomes in the existing literature, as reviewed in the next section.

[2] Trimble et al.'s (2016) data, collected for the World Bank in 2014, are the latest available as of 2021 (see World Bank Sub-Saharan Africa tariff database). Blimpo et al. (2018) and Blimpo and Cosgrove-Davies (2019) used these data.

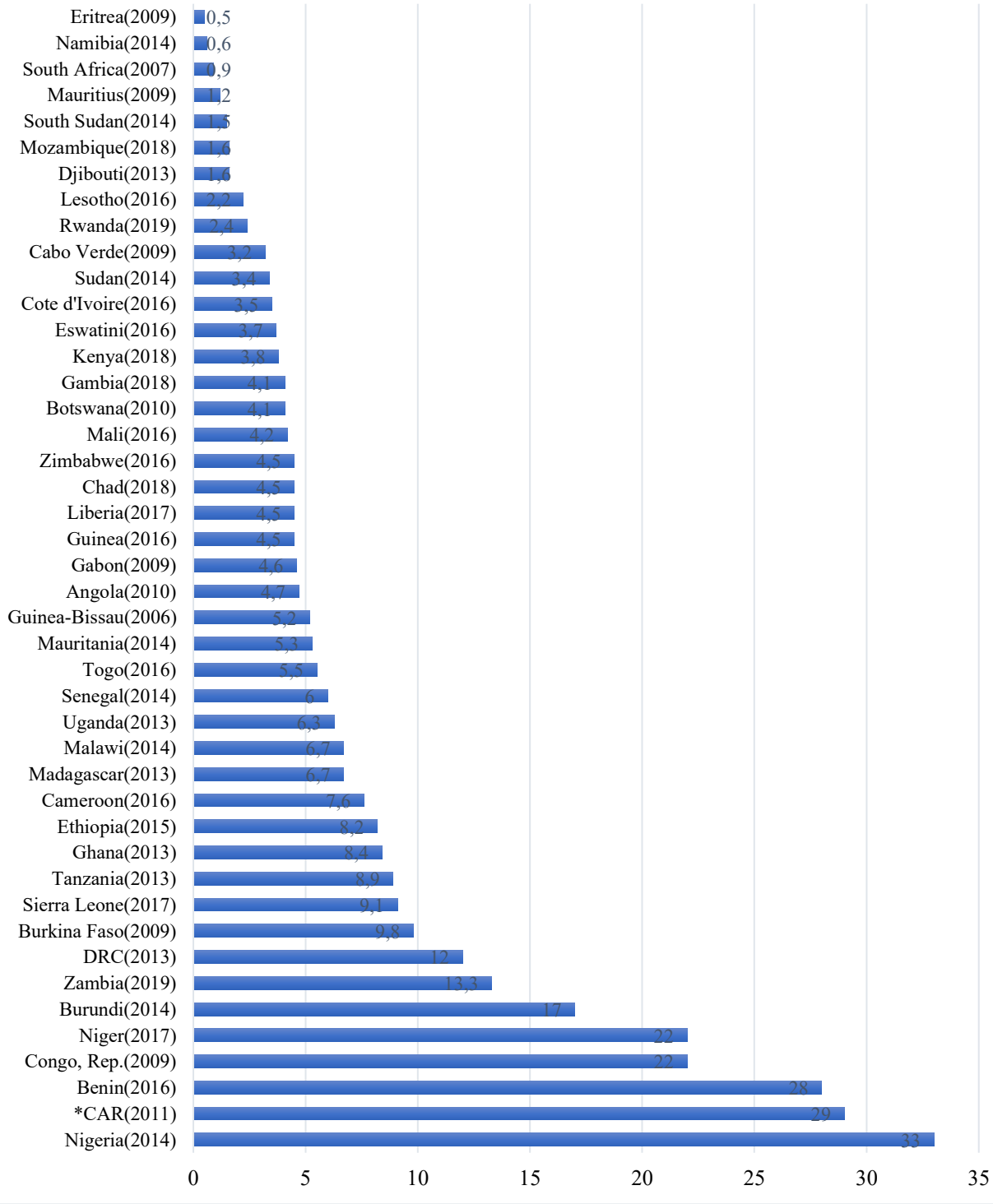
[3] In Liberia, the Liberia Electricity Cooperation (LEC) reduced tariffs to US¢39 per kilowatt-hour, from US¢49 per kilowatt-hour in 2017, following President Ellen Sirleaf's complaint in a message to the legislature about expensive electricity that prevented the poor from connecting to the grid (Yates 2017).

Figure 1.2: Cross-national changes in electricity access (% of population) in Sub-Saharan Africa, 1990-2019



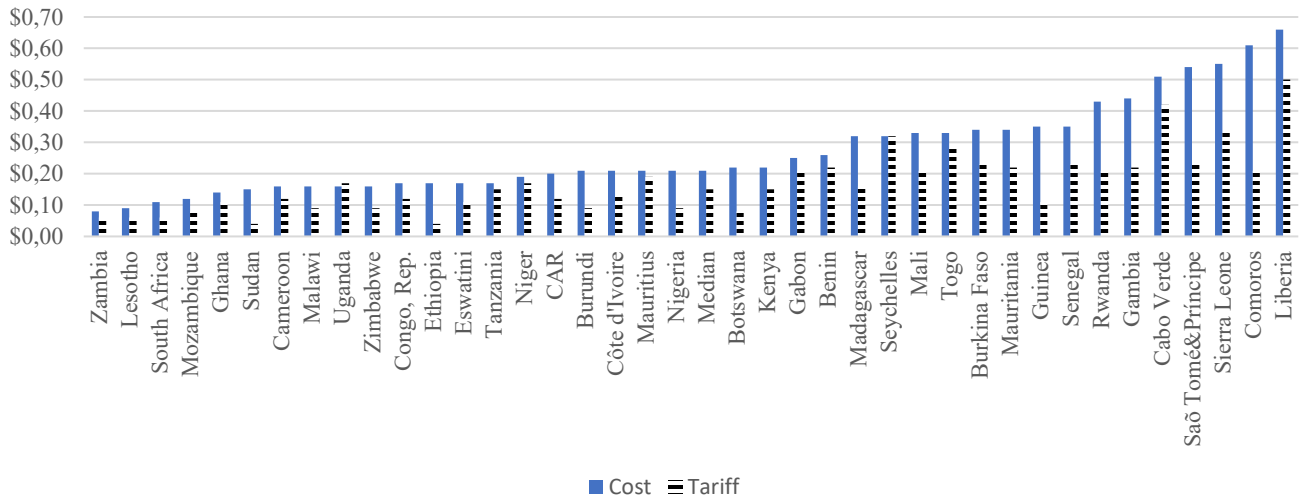
Sources: Data from World Bank (2018a, 2021a). Notes: Bars for 1990 do not show for countries with an access rate of 0.01%. These countries are Chad, DRC, Eswatini, Republic of Congo, Liberia, Guinea-Bissau, Mozambique, Central African Republic, Rwanda, Somalia, Ethiopia, Lesotho, Mali, and Togo. Improvement percentage equals to the percentage of access in 2019 minus the percentage of access in 1990.

Figure 1.3: Cross-country variation in the number of power outages firms experience in a typical month, various years between 2006 and 2018



Source: Data from World Bank (2021b) *Notes: CAR=Central African Republic; very low (<2); low (2-5); medium (6-10); high (11-15); very high (>15)

Figure 1.4: Cross-national variation in costs of service and tariffs in 2014*



Sources: Data from Trimble et al. (2016); Sub-Saharan Africa Tariff Database (World Bank 2021e)
*Notes: Costs of service refer to the sum of all costs incurred by electricity companies in providing services to consumers. These include production, transmission, and distribution costs.

1.3 Existing Explanations for Differences in Policy Choices and their Outcomes

What explains the electricity policy choices of ruling elites, which in turn affect sectoral performance? Some studies emphasize the role of "external factors" involving natural resource endowments, economic shocks, investment climate, droughts, and civil wars (e.g., Eberhard et al. 2011, 12; Eberhard et al. 2016; van Vliet et al. 2016). Others take a more political approach, stressing the explanatory value of institutions and politics (e.g., MacLean et al. 2016; Gore et al. 2019; Dye 2022). My study draws on these political explanations by highlighting the dynamics of political competition and their critical role in shaping political elites' policy choices and their outcomes. After examining external factors, it demonstrates that differences in the form and intensity of competitive pressures help to understand how African governments manage the electricity sector and, ultimately, much of the unexplained variation in sectoral performance. This argument is relevant in both democratic and authoritarian systems – one-party or military – in which competitive pressures shape ruling elites' policy choices. These regimes maintain themselves in power through a range of strategies. The provision of public goods and services to ensure citizen satisfaction is one of them. This subsection reviews three types of explanations: external factors, path dependency, and political competition.

1.3.1 External Factors

The literature on electricity provision identifies "external factors" that influence sectoral performance (Eberhard et al. 2008; Eberhard et al. 2011, 12; Eberhard and Shkaratan 2012, 11-12). According to these studies, external factors represent domestic and international conditions outside the electricity sector that nonetheless produce significant effects for sectoral performance (e.g., Williams and Ghanadan 2006, 819). Prominent external factors discussed in the literature include natural resource endowments, macroeconomic shocks, investment climate, droughts, and

civil wars (Williams and Ghanadan 2006, 819; Eberhard et al. 2008; Gratwick and Eberhard 2008a; Eberhard et al. 2011; Eberhard and Shkaratan 2012; Eberhard et al. 2016).[4]

External factors can influence the electricity sector in various ways. They can facilitate or hinder access to inputs (fuels, funds). They can affect not just economic growth but also the overall economic climate (e.g., Drechsel and Tenreyro 2018; Otchia 2019) and thus demand for electricity, users' ability to pay for it and investors' interest in investing. The remainder of this section details the impacts of external factors on development in general and the electricity sector in particular.

Natural resources are commodities and can be renewables (e.g., wind, solar, and hydro) and non-renewables; the latter include fuels (e.g., oil, natural gas, and coal) as well as non-fuel minerals (e.g., gold, bauxite, diamonds, copper, lithium, and coltan). Views on the effects of natural resources abundance on development in general vary. According to one widely held view, natural resources abundance can be a curse rather than a blessing, where windfalls of resources encourage rent-seeking and political patronage, among a host of problematic economic effects (Sachs and Warner 1999; Auty 2001; Isham et al. 2005; Eragha and Mesagan 2016). For example, Sala-i-Martin and Subramanian's (2008, 2013; see also Collier 2008) study of Nigeria found that corruption prevented the benefits of oil revenues from reaching the mass of the population. As they explained, the windfall of oil revenues encouraged Nigerian governments to raise their public spending, with poor institutions creating more opportunities for kickbacks. This suggests that abundant natural resources do not necessarily undermine economic performance. Instead, predatory institutions enable the wanton dissipation of natural resource revenues. Some resource-rich countries have used natural resource revenues to support economic development partly because of robust institutions (Amiri et al. 2019).

International prices of commodities experience fluctuations. Some price fluctuations are normal, but others can be severe enough to expose countries that depend heavily on commodity exports to greater macroeconomic shocks. Broadly, as Moshirian (2011, 502) observed, macroeconomic shocks may describe a "sharp decline in the value of assets, real estate, prices of commodities, the collapse of a number of large banks and non-banks [or] an increase in the level of unemployment." With primary commodities contributing a significant share of developing countries' revenues, declines in their prices tend to dampen economic growth and constrain poverty alleviation (Harvey et al. 2017). This suggests that rises in commodity prices can foster economic growth and reduce poverty. Commodity price fluctuations, however, affect balance of payments, foreign reserves, and revenues of governments and citizens (Varangis and Larson 1996; Harvey et al. 2017). They can increase or decrease tax incomes and demands for public services (Feler and Senses 2017). Commodity price variabilities cause uncertainties, which can affect planning and investment decisions. Commodity booms may enable governments to borrow more, while busts can impair their ability to repay or service their debts (e.g., Collier 2008). Increases in revenues from commodity booms can increase resources available to political elites for investment or patronage, but busts can diminish their resources.

As another form of macroeconomic shock, global financial crises can prompt governments to divert "public financing away from state services towards propping up private institutions" (Farnsworth and Irving 2011, 6). Governments may place tighter restrictions on

[4] These factors are scattered in the literature. Authors identified and discussed them without an easily identifiable logic of ordering. The ordering here follows no objective criterion. I also want to add that some of the political developments I will examine in this dissertation are external to the electricity sector, while others represent politics within the electricity sector itself.

social expenditures as they reorient fiscal and monetary policies and make changes in the political institutions designed to implement these reforms. Financial crises can further dry up private capital and influence firms based in developed countries to decrease risk exposure in developing countries (Gratwick and Eberhard 2008a, 310). They can influence creditors to reconsider and refocus their lending policies. Sudden reduction in the availability of foreign grants or concessionary loans may occur, forcing countries that depend on these sources to reduce their domestic expenditures (Tanzi 1986).

For the energy sector, natural resources serve as inputs. First, some non-renewable resources, such as fossil fuels, and renewables, including hydro, wind, solar and geothermal heat, constitute important sources for electricity generation and influence sectoral outcomes (e.g., Gosens 2017; Zhou and Solomon 2020). Gratwick and Eberhard (2008a) argued that countries with abundant natural resources, particularly low-cost fuels, perform better in electricity provision than those with scarce resources. Second, natural resources generate revenues for governments and citizens. If governments manage these revenues efficiently, electricity projects may benefit from windfalls of commodity booms. Additionally, if governments use revenues from natural resources to develop infrastructure, support education, boost economic growth, and alleviate poverty (Tanner and Restrepo 2011; Zhang et al. 2015), they will enhance citizens' ability to connect to the grid and pay for electricity services.

By contrast, a collapse of the prices of export commodities can undermine the fiscal capacity of governments in developing countries to invest in the electricity infrastructure. Similarly, a financial crash may hinder access to capital for financing electricity-expansion projects (Wamukonya 2003; Williams and Ghanadan 2006; Eberhard and Shkaratan 2012). When commodity prices fall and the financial market crashes, people's ability to pay for electricity services will decrease. Steep increases in the prices of oil and gas may result in high production and consumer costs of electricity in oil-importing countries (Eberhard and Shkaratan 2012). National electricity companies that rely on state budgets may suffocate under the weight of high financial deficit and debt stock (Williams and Ghanadan 2006).

The studies on natural resources and macroeconomic shocks generate a range of expectations. Based on the assumptions in this literature, I expect energy resource-rich countries to perform better than energy-resource poor ones on electricity access, reliability and tariffs because they should have revenues for sectoral investment or low-cost fuels should be available and reduce costs for utilities and electricity consumers. I expect institutional quality to mediate the relationship between natural resources and outcomes so that strong institutions will lead to better sectoral performance than weak ones. In addition, economic shocks that dry up resources for infrastructure investment are expected to push African governments to adopt policy initiatives necessary to improve electricity sector performance. The literature further yields the expectation that such macroeconomic shocks can decrease access, reduce reliability, and increase electricity prices.

Investment climate influences the likelihood of private sector investment, which is a condition for the success of neoliberal reforms in the electricity sector (Eberhard et al. 2016).[5] Investment climate refers to "the institutional, policy, and regulatory environment in which firms operate [or expect to operate] – factors that influence the link from sowing to reaping" (Dollar et al. 2005, 1). Smith and Hallward-Driemeier (2005) showed that improved investment climate stimulated economic growth and decreased poverty in China, India, and Uganda. Kasseeah (2016) confirmed that a relationship exists between investment climate and economic growth. In

[5] Chapter 3 discusses neoliberal reforms for the electricity sector.

the electricity sector, Gratwick and Eberhard's (2008a) found that countries in North Africa with good investment-grade ratings attracted more independent power producers (IPPs) during the 1990s and early 2000s than those in Sub-Saharan Africa with poor or no investment-grade ratings. My study expects that countries with favorable investment climates will have higher rates of electricity access, fewer power outages, and lower electricity prices than those with poor investment climates because, according to this literature, a favorable investment climate may attract more private investments and engender competition among private providers.

Droughts produce divergent impacts for socioeconomic development. Droughts do not only ruin agriculture (Mortimore 1998), but they also hurt the provision of public services such as health and education to the poor (Marquette 1997), and further reduce the volume of water for electricity generation in countries that rely on hydro-electric sources (Bekoe and Logah 2013; Ackah et al. 2014; Corrêa da Silva et al. 2016; van Vliet et al. 2016; Freire-González et al. 2017; Hafner et al. 2018). This study expects hydroelectricity-reliant African countries that experience droughts to have less access to electricity, more frequent and prolonged outages, and lower prices than those that depend on fossil fuels. By devastating generation capacity, droughts may compel governments and power utilities to pause access extension programs and power shortages may lead to power rationing. In general, hydroelectricity is cheaper than thermal electricity. Electricity tariffs may be high in hydropower-dependent and drought-stricken countries if recurrent droughts force them to diversify their generation mix by adding thermal-based electricity generation.

Some studies suggest complicated implications of civil wars for policy choices and socioeconomic performance (e.g., Stewart and Daga 2017; Kim 2017). Two competing positions on the effects of violent conflicts have emerged in the literature (e.g., Kang and Meernik 2005; Koubi 2005). On the one hand, one strand of the literature argues that acute or protracted wars destroy human resources, infrastructure, institutions, and technology (Collier 1999; Yepes et al. 2009; Blattmen and Miguel 2010; Fardoun et al. 2012) and undermine a state's capacity to provide public services (Lai and Thyne 2007). Governments may divert national budgetary allocations from public services, including electricity, to military expenditure during wars.

On the other hand, some studies uncover beneficial effects of civil wars (Olson 1982; Organski and Kugler 1989). In Olson's (1982) analysis, violent conflicts can redistribute power by decreasing the influence of entrenched rent-seeking actors, while increasing the power of pro-investment or growth-oriented coalitions. This sort of power redistribution can facilitate policy change. Moreover, states that experience severe and long-drawn-out conflicts tend to rebuild and grow rapidly in the post-war era (Koubi 2005). High investments in industrial capabilities, infrastructure, human capital, and technology by a post-war state, with the assistance of the international community, may contribute to positive socioeconomic performance (Kang and Meenik 2005; Koubi 2005; Kim 2017). In line with this literature, my study expects countries that have experienced civil wars to lag behind peaceful countries in electricity access and reliability not only because wars have destroyed their electricity infrastructure. They may also lack resources for rapid investments in infrastructure. Nevertheless, this study expects civil wars to encourage investment-oriented policies by redistributing power in favor of pro-growth coalitions during the postwar era.

Despite the importance of external factors, domestic institutional and political factors can mediate their effects. As Scharpf (2000, 769) noted, similar shocks produce different vulnerabilities for different countries "depending on the accidental goodness of fit between these changes and existing national policy legacies." In Scharpf's example, the energy shocks of the

early 1970s caused massive job losses in countries like Germany with non-accommodating monetary regimes, whereas widespread inflation occurred in Britain and other countries with accommodating monetary legacies (Scharpf 1991, 2000). Solway (1994) offered a similar argument about the social, economic, and political consequences of droughts. A drought, Solway (1994, 471-472) argued, is a 'revelatory crisis', which exposes and reinforces underlying socio-political forces. Research must thus pay attention to the effects of domestic institutional and political factors. The next two subsections review these explanations.

1.3.2 Path Dependency and Policy Feedback

How do institutional factors affect the policy choices of political elites and their outcomes? Some institutional explanations highlight path dependency that involves self-reinforcing feedback (e.g., North 1990; Skocpol 1992; Pierson 1993, 1994, 2000, 2004). Others point to gradual institutional change (e.g., Mahoney and Thelen 2010; Mahoney 2017) and the role of self-undermining policy feedback in policy change (e.g., Jacobs and Weaver 2015; Oberlander and Weaver 2015).

Some institutionalists view path dependency as a source of long periods of continuity in policymaking and political development (Kay 2005, 553; Peters et al. 2005, 1276). In this regard, path dependency entails two related but analytically different concepts: critical junctures and increasing returns. Critical junctures refer to "crucial … moments of [policy or] institutional formation that send countries along broadly different developmental paths" (Thelen 1999, 387). Pierson (1993, 1994, 2000, 2004) presented increasing returns as one of the most common forms of path dependency relative to policy and politics. In his view, initial policies sometimes become entrenched and increase the costs of policy change over time.

According to this self-reinforcing version of path dependency, policies persist because they generate positive feedback. Policy feedback refers to the effects of existing policies on future policy processes and political life (Skocpol 1992; Pierson 1993; Thelen 1999; Béland 2010; Oberlander and Weaver 2015; Béland et al. 2019). Policies get increasingly consolidated when they build a broad base of public support by providing benefits to a large number of recipients or offering "concentrated benefits to constituencies while many costs are delayed, diffused, or obscured" (Oberlander and Weaver 2015, 39). They generate incentives and resources for constituencies to mobilize against policy change because they have vested interests in the status quo (Pierson 1993; Béland and Schlager 2019). Labor unions and pensioners' organizations may, for instance, obstruct pension reforms, which they fear will lead to cuts in their benefits (Pierson 1996; James and Brooks 2001). When labor unions have large memberships, their political consciousness and capacity to mobilize constitute threats to incumbents, who dread the political consequences of cutting their benefits. Nonetheless, policy change can occur through abrupt and dramatic disruptions (Thelen 1999; Steinmo 2008; Baumgartner et al. 2014). Examples include civil wars, which can redistribute power by emasculating previously powerful actors and empowering weak ones (Olson 1982), as discussed in the section on external factors.

Other institutional scholars such as Thelen (1999, 2004) and Mahoney and Thelen (2010) have critiqued Pierson's increasing returns argument. Although they recognize that increasing returns leads to path dependency, they differ in their understanding of the relative prevalence of increasing returns versus other sources of path dependency. As Mahoney and Thelen (2010) pointed out, instead of abrupt and dramatic change, institutional change also happens gradually and as a result of small modifications that build up over time. Change occurs, for example, when the need for rule interpretation and enforcement arises (Mahoney and Thelen 2010). Mahoney

and Thelen (2010) identified four modes of institutional change. According to them, actors replace extant rules with new ones (displacement). Actors modify existing rules or add new institutions to old ones to change how the old institutions influence human behavior (layering). As regards drift, environmental shifts change the effects of existing institutions, but the institutions themselves do not change. Finally, conversion occurs when actors interpret old rules in new ways.

Recent literature on institutional analysis advances these discussions by highlighting mechanisms of negative feedback that undermine or change policies (Jacobs and Weaver 2015; Oberlander and Weaver 2015; Béland and Schlager 2019; Sewerin et al. 2020; Millar et al. 2021). The term negative feedback describes the "consequences of policy that tend to undermine rather than reinforce the political, fiscal or social sustainability of a particular set of policies" (Weaver 2010, 137; see also Jordan and Matt 2014; Jacobs and Weaver 2015). Policies can be self-undermining when they generate more costs than benefits for mobilized interests, elites, or the public (Jordan and Matt 2014; Oberlander and Weaver 2015; Skogstad 2017).

Policy feedback features in the analysis of energy policy change (Harris 2003; Hall et al. 2005; McLean et al. 2016b; Gregg et al. 2020). Harris (2003) identifies popular resistance to new initiatives as a bane of neoliberal reforms in the utilities sector across Latin America, Asia, and Sub-Saharan Africa, with privatization being the focus of violent demonstrations. Opponents think the privatization of state-owned electricity companies will lead to expensive prices, reduce or eliminate subsidies, cut jobs, and make workers insecure (Hall et al. 2005). Beneficiaries of existing policies may oppose these changes, reinforcing the status quo. As Batley (2004, 34-35) observed, policy change, including the introduction of user fees, is likely to become a matter of public debate since "the costs are to consumers and the impact is immediate and visible. Decision-makers therefore confront high political stakes in pushing such reforms." For example, governments that risk becoming unpopular, in the face of widespread opposition to the privatization of utilities, may renegotiate the transaction or re-nationalize utilities (Harris 2003). Popular resistance can further lead to significant delays, reversals, or cancellations of privatization contracts (Hall et al. 2005; Gore et al. 2019).

These explanations identified mobilized interests and their reactions to policy change as critical drivers of policy choices. Looking at interest groups in isolation, however, may not yield a comprehensive account of variation (and similarities) in policy choices and outcomes. Policy processes involve dynamic interactions between multiple political and social actors, including elites, mobilized interests, voters, policy constituencies, political parties, bureaucracies, and sometimes the courts, among other influential actors (Hall et al. 2005). Path dependency can miss these dynamic interactions. As Poteete (2009a, 548) puts it, "The emphasis on … institutional legacies obscures the strategic challenges and opportunities politicians face while competing for power." The analytical challenge is to recognize the influence of both policy legacies and political dynamics on policy choices, implementation, and outcomes.

1.3.3 Political Dynamics: Competition and Coalition Building

The previous section showed that work on path dependency emphasizes political mobilization as a mechanism of policy continuity or discontinuity. Political mobilization points to the importance of political competition, which this section examines more closely. A focus on political competition offers a deeper understanding of the constraints and opportunities political elites face. It further illuminates how governments in democratic and authoritarian regimes (attempt to) ensure their political survival amid political contestations.

Political competition, which refers to a struggle for power and public resources, occurs across all forms of political systems (Man 2014, 288; see also Mulligan and Tsui 2006). Political leaders across all political regimes face threats to their survival in office. They may face threats of removal from power through elections, rebellion, social mobilization, coups d'état, civil war, and the like. Sources of political competition vary, reflecting the distribution of authority in a given society. In many political systems, formal institutions such as the legislature, executive, courts, military, and political parties can shape policymaking (Tsebelis 2002, 2010; Hafner-Burton et al. 2013; Hymans 2015; Brouard and Hönnige 2017). The number of politically powerful actors and the ideological differences between them influence accountability in the policy process (Tsebelis 2002, 2010). Multiple and divided interests can block policy change, whereas fewer and more cohesive political actors can facilitate policy development and implementation. A study in Kenya revealed that decentralization enabled multiple formal actors at the national and local levels of government to stop the execution of land law reforms during 2012-2016 (Boone et al. 2019). Another study showed that, in developing countries, where the executive and the legislature evenly share policymaking authority, horizontal accountability fosters low foreign debt, as these two branches of government check each other's desire to spend on private goods (Choi and Luo 2019).

But, as some researchers have observed, depending exclusively on formal institutions to identify influential political actors will yield inadequate understanding of the political circumstances of policymaking and implementation (Helmke and Levitsky 2004; Arriola 2013; LeVan 2015; Roessler and Ohls 2018). Some influential political actors may have no formal authority or may function in informal contexts (Gehlbach and Malesky 2010; LeVan 2015). These powerful actors can be factions within a military, factions within political parties, regional or ethnic blocs, social and economic groups such as labor and business associations, and rebels (Acemoglu and Robinson 2006b; Gehlbach and Malesky 2010; LeVan 2015; Tilly 2017; Ansorg and Strasheim 2019). For instance, Tendi (2019) argued that the military succeeded in removing Robert Mugabe from office in 2017 because independence war veterans and an excluded faction in the Zimbabwe African National Union Patriotic Front (ZANU-PF) backed the coup's aim of reinstating the beliefs and values of the liberation movement in the ruling party. Harkness (2016) found that, in Africa, when political leaders try to reconstruct the ethnic composition of the army to the disadvantage of existing ethnic factions within the military, they incite fierce opposition. These dynamics occur in other contexts. Ceron et al. (2019), for instance, showed that divisions within a ruling party and unity among trade unions reduce governments' ability to cut welfare spending in Italy.

Moreover, in many African countries, chiefs and religious leaders wield significant power in their local jurisdictions (Gyampo 2008; Fin 2009; Baldwin 2016; Koenane 2018; Siuda-Ambroziak and Bahia 2020). Traditional leaders derive legitimacy from age-old customs and play influential roles in economic development through, for example, land allocation (Acemoglu et al. 2014; Boone 2014; Honig 2017). They work together with politicians to provide public goods and mobilize voters in many democracies in Africa (Koter 2013; Baldwin 2014, 2016). A study in Malawi demonstrated that the state relied on chiefs to implement health care policies (Walsh et al. 2018). According to the study, women stopped using traditional birth attendants and, instead, accessed maternal and neonatal health services at hospitals out of customary respect for chiefs, who advocated the new policy (Walsh et al. 2018). Bayer (2018) found an exchange relationship between traditional leaders and politicians in Zambia, with traditional leaders mobilizing electoral support in their local communities for politicians and

politicians providing legal protection for traditional leaders.

These multiple and competing centers of power – both formal and informal – require political leaders across all regime types to build coalitions to survive in office (Bueno de Mesquita et al. 2003, 1999; Bueno de Mesquita and Smith 2017; Carter 2017; Sudduth and Bell 2018). Political coalitions refer to "formal or informal groups which come together to achieve goals which they could not achieve on their own" (Leftwich 2010, 105). Incumbents, including even the most brutal autocrats, cannot stay in office without the support of powerful groups. So, they need to maintain or expand their coalition. Similarly, opposition leaders must build their support bases and attempt to chip away at those of incumbents to obtain power (Poteete 2009a; Bueno de Mesquita and Smith 2017).

How rulers build a viable support base differs from one regime to another. Authoritarian rulers ensure their political survival by building coalitions involving some combinations of allies within the public bureaucracy, security agencies, social groups, and a section of the public (Sudduth and Bell 2018). They may provide private goods to their allies to increase their interest in the survival of the regime, demobilize the masses by providing them more public goods, or crush their opponents (Acemoglu and Robinson 2006b; Bueno de Mesquita and Smith 2017). Gandhi and Przeworski (2006, 2007) maintained that authoritarians use such institutions as legislatures to expand their support base by co-opting opposition parliamentarians through spoils allocation and policy concessions. According to them, these strategies give the co-opted legislators an interest in the survival of the authoritarian leader. But, as Boix and Svolik (2013) noted, this explanation failed to provide much detail about why authoritarians must adopt institutions to co-opt contenders. Boix and Svolik (2013) departed from Gandhi and Przeworski (2006) by specifying that political institutions enhance the survival of authoritarians by reducing commitment problems through power sharing and interactions. Regular interactions between authoritarians and their allies in such institutional settings as politburos and legislatures improve information flow and transparency (Boix and Svolik 2013). In Riedl's (2014) analysis, an authoritarian leader may consolidate power in the face of competitive pressures either by incorporating local elites into the regime as power brokers or eliminating local elites and replacing them with new institutions and appointing new local agents. Furthermore, authoritarian rulers may use clientelist schemes to ensure political stability.[6] Hausken et al. (2004), for example, explained that autocratic regimes sometimes rely on rents as a strategy of redistribution to enable them to secure their grip on power. But clientelism is not peculiar to authoritarian regimes; it occurs in democracies, although its forms and extent vary from one regime to another (van de Walle 2007, 2009; Berenschot and Aspinall 2020).

The logic of political survival pervades democracies, too. In democracies, political competition takes a range of forms, but the most obvious is electoral competition. Elections promise voters the ability to hold their leaders accountable, by rewarding good performers with additional terms in office and punishing poor performers by removing them from office (Pinto and Timmons 2005; Przeworski 2018). This promise of accountability can become reality if incumbents do not merely permit opposition candidates to compete, but they also allow free and fair competition in which outcomes reflect the preferences of eligible voters (Schneider 2020). Institutions, especially electoral rules, party systems, and the authority of election management bodies, can further mediate voters' ability to hold politicians accountable (Kambale 2012;

[6] According to one widely used definition, clientelist relationships are based on quid pro quo exchanges, with benefits targeted to individuals or groups in exchange for political support (Kitschelt and Wilkinson 2007; Hicken 2011; Stokes 2013).

Doorenspleet and Nijzink 2014; Daddieh and Bob-Milliar 2014; Friedman 2014; Rudolph and Däubler 2016; Asamoah 2019). Kunicova and Rose-Ackerman (2002; see also Basinger 2013; Eggers 2014) argued that majoritarian systems impose more severe restrictions on representatives than proportional representation systems since the former makes politicians more directly accountable to electors at the polls than the latter. Anderson (2000) observed that voters can sanction a ruling party if they have viable options.

Moreover, accountability hinges in part on the intensity of electoral competition, which can manifest in victory margins, share of legislative seats, and power alternations (Cleary 2007; Man 2014). The intensity of competition in multiparty democracies affects politicians' relationship with potential voters. Competitive elections increase politicians' incentives for building winning coalitions – mobilizing a number of voters large enough to enable them to maintain or obtain power (Arriola 2013; Baldwin 2014). Building winning electoral coalitions in competitive multiparty democracies requires politicians to keep their base and add new supporters because, first, elections are close between major parties and, second, the number of floating voters is large enough to possibly tilt the election results toward any of the main parties (Kitschelt and Wilkinson 2007, 28). This challenge of building winning electoral coalitions can make political leaders responsive to the preferences of elites, powerful groups, and swing voters.

The degree of competition influences how politicians reach out to the electorate to build their electoral coalitions, including the relative attractions of various campaign strategies. Some scholars argue that politicians mobilize support through clientelist strategies or programmatic politics depending on socioeconomic conditions such as relative levels of poverty and institutional development (Kitschelt and Wilkinson 2007; van de Walle 2007; Jensen and Justesen 2014).[7] Political parties' lack of the institutional capacity and information needed to reach non-core voters drives politicians to use patronage networks (van de Walle 2007; Bleck and van de Walle 2012; Koter 2013). Van Ham and Lindberg (2015) found that competitors adopt vote buying strategies when democratization makes electoral fraud less feasible in Africa. Kramon (2016) demonstrated that vote buying strategies bear fruits in much of Africa because they enable voters to view candidates as reliable politicians who can provide much-needed public services and resources.

Some politicians rally support by politicizing ethnic identity (Posner 2004; Cheeseman and Larmer 2015; Gadjanova 2017). Political leaders in Africa instrumentalize ethnicity because of lack of other strong parties or forms of attachment other than to ethnic identity. In addition, as Bates (1974, 470) claimed, "most constituencies tend to be dominated by the members of one ethnic group." This assertion finds support in Posner's (2004) argument that political leaders seek political support from an ethnic group when it has a size relevant for building a winning electoral coalition. Horowitz (1985) argued that ethnicity constitutes a politically relevant mobilizing tool, given that African voters want their co-ethnic politicians to represent them. According to him, such representation provides them with psychological benefits, including self-esteem. Moreover, casting their votes for co-ethnic candidates expresses their loyalty to their ethnic group (Horowitz 1985). Furthermore, voters and co-ethnic candidates may share the same interests that manifest in shared policy preferences (Bratton and Mattes 2003; Lieberman and

[7] Stokes et al. (2014, 7-8) identified two characteristics of programmatic politics. First, policymakers and implementers make the rules of allocation, especially criteria of eligibility, known to the public. Second, the eligibility criteria determine the allocation of benefits. Hicken (2011) added that the criteria of distribution make no reference to recipients' voting behavior and politicians have limited discretion over the distribution of programmatic goods.

McClendon 2012).

But politicians do not always use clientelist tactics and ethnic identities to mobilize political support. In some contexts, issue-based campaigns coexist with clientelist strategies or ethnic-based voter mobilization. Electoral competitors may target swing voters by including policy platforms that send signals about the provision of national public goods (Taylor 2017). This follows on Bleck and van de Walle's (2012) argument that uncertainty about voter allegiances to political coalitions and lack of information about voters' preferences drive political elites to campaign on valence issues – issues that have broader public support. Afful (2017) confirmed that valence issues, in particular peace, dominated local media coverage of Ghana's election campaigns in 2008 and 2012. Sanneh's (2021) study of the 2016 elections in The Gambia showed that the opposition coalition defeated Yahya Jammeh because it mobilized voters not just on ethnicity but also on popular discontent with the incumbent's human rights abuses and economic deterioration.

As political actors compete over issues, so do issues compete for the attention of the public and policymakers. The literature on issue-attention cycle and agenda-setting suggests that some issues gain political salience, but other issues do not (Downs 1972; Kingdon 1984; Zahariadis 2014; Greer 2016; Gupta and Jenkins-Smith 2016). According to Downs (1972), an issue gains public attention for a certain period, but public interest in it declines when people become aware that the costs for larger social groups or a powerful minority can be higher than the benefits of solving it. This awareness may discourage or bore the public, which then gradually shifts its attention toward other issues. There exist no objective criteria to determine issue salience partly because "most issues are malleable entities subject to interpretation and prioritization in a contest over the construction of meaning" (Rochefort and Donnelly 2013, 189). In general, the cause, severity, prevalence, or crisis status of an issue can define its salience (Rochefort and Cobb 1993). For example, an issue that poses existential threats or has widespread and disastrous effects can crowd out issues that lack these attributes. Yet political actors can strategically frame issues to heighten or lessen their relevance and to mobilize or demobilize support for them (Rochefort and Cobb 1993; Birkland 2007; Poteete 2009b; Rochefort and Donnelly 2013).

The debate on the connection between political competition and policy choices and their outcomes in democracies remains unsettled, with researchers presenting mixed evidence. Several scholars argue that political competition drives politicians' policy choices and their effectiveness in democracies (Besley and Burgess 2001, 2002; Block 2002; Bardhan and Yang 2004; Humphrey and Bates 2005; Pinto and Timmons 2005; Bates 2008, 2010; Murillo 2009; Besley et al. 2010; Aydin 2013; Jones 2013; Man 2014; Nanes 2017; Ofosu 2019; Poteete 2019; Duggan and Martinelli 2020; Harding 2020; Schettini and Terra 2020; Dye 2022). The basic argument is that power holders pursue policies that appease voters because of their reelection incentives. As Min (2015, 4) puts it, public goods produce political externalities, which refer to

> the political costs and benefits that accrue in the political arena to politicians beyond the citizens who benefit from public goods and the state that funds them. Under democracy, political externalities are of great value, mapping tightly onto the reelection incentives of incumbents and spurring strategic efforts to deliver the benefits of public goods to pivotal areas at critical times.

This implies that in less competitive regimes, ruling elites may have little or no incentives to be responsive to popular expectations or demands regarding public goods provision.

Several studies in Africa found evidence of competition's positive implications for the

provision of public services and goods. Acemoglu et al. (2014) demonstrated that, in Sierra Leone, paramount chiefs in rural areas with many royal families face higher political competition, which gives them incentives to provide more and better public goods than those in localities with fewer ruling families. According to them, in more competitive localities, the fear of losing authority to a rival ruling family drives chiefs to rule better. Harding and Stasavage (2014) demonstrated that African politicians have incentives to fulfill electoral promises related to public services – such as the scrapping of school fees – that voters directly attribute to them. Rosenzweig (2015) showed that, in Tanzania's dominant party system, more competitive districts receive more and better public goods (than less competitive ones) because the level and the quality of such goods influence electoral outcomes in those areas. Trotter (2016) confirmed that competitive elections drive rural electrification in Sub-Saharan African democracies. Marx (2017) found that re-election considerations motivate politicians to speed up the completion of observable infrastructure projects in competitive regimes in Africa. Harding (2020) demonstrated that, in many African electoral democracies, politicians face incentives to win the support of rural voters, who constitute the majority of the electorate, with public goods and services.

However, intense political competition can hurt long-term investments. On the one hand, high competition can generate incentives for political elites to favor short-term decisions that are politically expedient, even if economically imprudent in the long term (Hausken et al. 2004; Acemoglu and Robinson 2006a; Chortareas et al. 2016; Chatterjee 2018; see also Popova 2010 and Leiras et al. 2015 on short-term horizons). Bardhan and Yang (2004, 10), for instance, argued that interparty struggles for electoral support in competitive regimes can foster "competitive populism, involving the use of money-power [by parties and candidates] to seek short-term political advantage at the expense of decisive political actions benefiting the long term." This means political leaders compete for power by trying to ingratiate themselves with powerful actors, committing to short-term benefits that compromise long-term investments. On the other hand, limited competition can allow for a long-term horizon in public investment decisions (Hovi et al. 2009; Poteete 2009a). For example, as Besley et al. (2010) explained, less competitive elections produce low threats to incumbents and therefore pose fewer constraints on their policy choices, a situation that can embolden them to choose investment-oriented policies.

Last, some studies question the theory that the logic of survival inherent in political competition induces political responsiveness and accountability (Ka and van de Walle 1994; Boyne 1998; Cleary 2007; Boulding and Brown 2014; Gottlieb and Kosec 2019). Factors unrelated to political competition may drive politicians' policy choices and their outcomes. For example, personal ideology (Crespin et al. 2006), party ideology (Toubeau and Wagner 2016), and financial resources (Boulding and Brown 2014) may also matter for public policy choices. Kopecky (2011), for instance, found that, in South Africa, affirmative action and Black empowerment, rather than interparty competition, drive politicians' choices related to appointments in the public sector.

1.4 Argument

The preceding section reviewed studies on external factors of sectoral performance. It further examined the literature on institutional and political approaches to policy choices and their outcomes. My study analyzes the implications and expectations of these works. It draws on elements of the literature that advance understanding of the strategic challenges and opportunities facing politicians. While recognizing the role of other factors, I emphasize the effects of political competition on policymaking, implementation and, in turn, outcomes.

In a first step, this research uses statistical analysis to probe the associations between external factors and the performance of the electricity sector across Sub-Saharan Africa. The statistical analysis reveals a lot of unexplained variation in sectoral performance, which requires qualitative analysis to understand it. Furthermore, external factors provide limited insights into why some countries perform better than others in electricity provision, although they face similar external conditions. Besides, while external factors can influence sectoral performance and lead governments to adopt policy change, they disclose little about why some governments reform, but others do not when they face similar economic and climatic challenges.

I then utilized an in-depth case comparison of Ghana and Côte d'Ivoire to elucidate these questions. The case-comparison chapters argue that political competition offers deeper understanding of differences in politicians' choices regarding the electricity sector and helps to explain much of the unexplained variation in sectoral performance. Directing attention to competitive pressures reveals not just legacies, but also the constraints and opportunities political elites face. It demonstrates differences in actors' relative power and roles, the dynamics of coalition building, as well as the impacts of both formal and informal institutions on electricity policymaking and implementation.

In keeping with the idea of path dependency, this study expects previous policies to engender social, economic, and political conditions that shape subsequent policy choices. This implies that colonial era policies regarding the distribution of development projects can affect (re)distribution policies during the post-independence period by creating winners who would like to maintain the status quo and losers who would like to change it. Similarly, I expect that infrastructure distribution policies that African governments made during the immediate postcolonial era will influence later policies. On the other hand, based on the logic of gradual institutional change, my study expects reforming African governments to (attempt to) replace existing institutions with new ones (i.e., displacement) or add new rules to old ones (i.e., layering). I expect these institutional changes to stimulate social mobilization, with potential winners supporting them and losers putting up a fight.

Given that social mobilization suggests the importance of competition for policymaking and implementation, my research draws upon works that stress the explanatory role of political competition. I expect that political leaders will use the provision of electricity as a useful resource to build political support or to demobilize opposition within and outside their coalitions. If electricity provision serves as a tool that politicians use to court political support, then this study expects electricity provision to be politically relevant during periods of intense competition, such as when a viable opposition party exists and electors can throw out nonperforming politicians. It will additionally have political importance in contexts vulnerable to coups d'état.

Moreover, this study expects that when electricity provision has political relevance, political elites' strategies related to it will be responsive to powerful political actors during intense competition. Political responsiveness can yield conflicting outcomes. On the one hand, this study expects that political responsiveness to popular expectation for electricity access may accelerate electrification. On the other hand, I expect government responsiveness to urban residents to promote politically rewarding, but economically imprudent, short-term decisions about electricity prices. Ruling elites may manipulate electricity tariffs for political benefits when competition is high. This can hurt the reliability of electricity supply if ruling elites fail to meet sectoral investment needs.

Electricity provision may lack political relevance during intense contestations if non-electricity issues have greater prominence. For instance, ethnic contentions can present existential crises for the state and dwarf public discourses on public goods. When the provision of electricity lacks political relevance, political elites may not be responsive to popular expectation for its provision. This study expects a lack of political relevance and low responsiveness to stall rural electrification. But a lack of political relevance of electricity provision can encourage economically prudent decisions about tariffs. It will make politicians less likely to manipulate electricity prices for political advantage. This may enable them to make long-term infrastructure investments that can contribute to a reliable supply of electricity. My study additionally expects that, if politicians do not politicize electricity provision in the struggle for power, other factors such as economic motivation and political ideology can affect the framing of issues and influence political elites' policy choices related to the sector.

Last, I expect differences in the dynamics of political competition to contribute to differences in the trajectories of electricity sector policy change. When competition is high, electricity sector reforms may not happen because they may endanger incumbents' hold on power. In competitive regimes, policy change may galvanize different interests – formal or informal, individuals or groups – into action. Divided interests will compete to shape sectoral policy change through, for example, social mobilization, elections, or lobbying. By contrast, low levels of political competition that result from fewer and more cohesive influential actors may increase the likelihood of sectoral policy change. Broad-based support from actors with political leverage, including the ruling coalition's constituent members, the public, and beneficiaries of the status quo, can spur the implementation of sectoral policy initiatives.

In short, this study does not argue that political competition *determines* politicians' policy choices related to electricity provision and their outcomes. Neither does it argue that variation in the dynamics of political competition represents the only source of difference in political elites' strategies and their (in)effectiveness. This study acknowledges the explanatory value of other factors, but it emphasizes the links between competitive pressures and political elites' sectoral strategies. It demonstrates that political competition provides more understanding of the variation in political elites' policy choices regarding the electricity sector and, ultimately, sectoral performance than external factors, especially economic and climatic conditions.

1.5 The Plan of the Dissertation

The remainder of this dissertation proceeds in eight chapters. Chapter 2 describes the research design. Chapter 3 sketches the neoliberal electricity sector policies that the Bretton Woods institutions pushed on African governments and the extent of their implementation. Chapter 4 analyzes the associations between external factors and sectoral performance across Sub-Saharan Africa. Chapters 5, 6, 7, and 8 present the case studies. Chapter 9 concludes the study.

Chapter 2 outlines the research strategies employed in this dissertation. I used statistical analysis and comparative case studies to understand factors that drive variation in sectoral policies and, ultimately, sectoral performance. The statistical analysis probes the relationships between external factors – natural resource endowments, macroeconomic shocks, investment climate, droughts, and civil war – and indicators of sectoral performance in Sub-Saharan Africa. The case studies employ process tracing to examine evidence on interconnections between broad socioeconomic and political developments and sectoral performance in Ghana and Côte d'Ivoire.

Chapter 3 aims to understand the institutional and policy changes African governments have carried out in the electricity sector since the late 1980s and 1990s. It provides a regional

overview of the pre-reform performance of Africa's power utilities. It further presents the Bretton Woods organizations' policy prescriptions for the electricity sector, before documenting the extent of the execution of the policies. This chapter shows that, although many African governments have adopted the neoliberal electricity sector reforms in principle, none has executed the entire reform package. Several countries in Africa have set up independent regulatory institutions and authorized independent power production. Nonetheless, many of them have neither privatized nor split their vertically-integrated power utilities. In most African countries, tariffs do not cover the costs of service (i.e., production, transmission, and distribution).

In Chapter 4, the bivariate statistical analysis shows the correlation between often cited external factors and electricity sector performance in Africa. The findings confirm that natural resource wealth, economic shocks, investment climate, droughts, and civil wars have relationships with sectoral performance. Nonetheless, the results suggest a lot of unexplained variation in sectoral performance. This dissertation thus shifts attention to comparative qualitative analysis of political sources of variation in the choice and implementation of sectoral policies and their outcomes in Ghana and Côte d'Ivoire.

Chapter 5 examines the interactions between Ghanaian politics and electricity provision during the late colonial period through the early 1990s. President Kwame Nkrumah's commitment to state-led development encouraged him to invest heavily in hydroelectric dams. He had hoped that this approach would modernize Ghanaian society and foster rapid economic development. The failure of this strategy to meet popular aspirations contributed to his overthrow and to a move away from large-scale state investments in the electricity sector during the late 1960s. In the early 1970s, Prime Minister Kofi Busia extended electricity to his political base in fulfilment of electoral promises and in expectation of successes in future elections. Busia cut the military's electricity and water subsidies, leading to his removal from office by the army in 1972. Political instability, mismanagement, and corruption pushed the Ghanaian economy to the brink of collapse, which hamstrung the provision of electricity and other public services during the late 1970s and early 1980s. As a result, Jerry Rawlings ousted President Hilla Limann in 1981. During the late 1980s, Rawlings invested massively in infrastructure, including electrification, in rural areas, partly to court political support and appease opposition. He had incentives to accelerate rural development, as domestic and international pressures for multiparty democracy intensified during the late 1980s and the early 1990s.

Chapter 6 analyzes the links between competitive electoral democracy and sectoral policies and performance since Ghana restored constitutional rule in 1992. Rawlings expedited rural electrification during and after the transition elections. Rapid electrification without adequate investments in electricity generation resulted in power shortages in the mid to late 1990s. A sharp tariff increase to resolve the electricity crisis sparked nationwide social mobilization. When electricity workers opposed Rawlings' decision to split the Volta River Authority (VRA) into two companies – one for generation and another for transmission – ahead of elections in 2000, the National Democratic Congress' (NDC) electoral incentives prevented him from implementing the policy. The NDC lost the 2000 elections to John Kufuor's New Patriotic Party (NPP), which coopted the electricity workers by guaranteeing their jobs and conditions of service – a move that paved the way for the unbundling of the VRA in 2006. Kufuor continued rural electrification and other development projects to address the NPP's narrow representation in the countryside. He used electricity subsidies and electrification projects to galvanize his political base and mollify swing voters. Rapid electrification, coupled with low

tariffs, unpaid subsidies, and underinvestment, contributed to crippling power shortages during 2006-2007, which in turn played a role in the NPP's defeat in the 2008 elections. Similar dynamics occurred during the tenures of the NDC's Atta Mills and John Mahama, as well as the NPP's Akufo-Addo.

Chapter 7 studies interconnections between broader socioeconomic and political developments and electricity management in Côte d'Ivoire during the late colonial era through the early 1990s. In the first few years after independence, foreign aid and windfalls from commodity booms enabled President Félix Houphouët-Boigny to invest massively in development projects, including electrification. He concentrated these infrastructure investments in southern Côte d'Ivoire. Economically, he intended to create an enabling environment for farming in forest zones in the south to increase agricultural exports and thus foreign exchange earnings. Land and climatic conditions in the south favored cash crop production and timber exploitation. Politically, the allocation of infrastructure reflected the preferences of powerful political forces in the south – chiefs, rich farmers, and educated elites – who dominated the ruling party and the public bureaucracy. Moreover, Houphouët lacked incentives to redistribute development projects to the rural north because the Democratic Party of Côte d'Ivoire (PDCI) already had massive political support in the north. Northern residents credited Houphouët for ending forced labor. In addition, immigrants, who constituted about a quarter of the Ivorian population, supported PDCI rule so that they would continue to exercise economic and political rights, which Houphouët conferred on them. Houphouët redistributed infrastructure projects to the impoverished north in response to agitation by northern elites within the PDCI and students for equity during the late 1970s. He yielded to domestic and international pressures for political liberalization in the late 1980s into 1990 and won the first post-independence multiparty elections in 1990. Following his death of natural causes in 1993, PDCI infighting blew up publicly, with Konan Bédié, the Speaker of the National Assembly, claiming his constitutional right to succeed Houphouët and Prime Minister Alassane Ouattara resigning from the PDCI.

The impacts of this division on Ivorian politics, electricity sector policy choices, and sectoral performance from 1993 to 2020 constitute the subject matter of Chapter 8. Higher profile issues, including ethnic disputes, civil wars, and term limits, overshadowed developments in the electricity sector for much of this period. In 1994, PDCI legislators from the north broke away, formed a new party – the Rally of the Republicans (RDR) – and called on Ouattara to lead them. Bédié understood this move as a threat to the political survival of the PDCI and the Ivorian state and passed an ultranationalist policy (*Ivoirité*) that banned immigrants from participating in national politics. This exclusion triggered protests by people from the north, who felt targeted by the government. It contributed to a military coup in 1999 and then civil war during the 2000s. Elections intended to restore peace and unity in 2010 resulted in another civil war, as defeated President Laurent Gbagbo refused to hand over power to the winner, Ouattara. French troops removed Gbagbo from office, paving the way for Ouattara to become president in 2011. By this year, the armed conflicts had stalled economic growth and the provision of electricity and other public services. Ouattara's pro-reform coalition introduced institutional changes and invested massively in the electricity sector to accelerate electrification and economic development. In the lead-up to the 2020 elections, Ouattara's third term bid triggered social mobilization and crowded out issues related to socioeconomic development.

Chapter 9 concludes this dissertation. It restates the main argument, summarizes the key findings, highlights electricity sector policy differences and similarities, and draws out theoretical and empirical implications of my findings.

Chapter 2

Research Design

2.1 Introduction

This chapter details the research strategies used in this dissertation. My research uses statistical analysis and comparative case studies. The next section discusses the large-N analysis of the region's power sector performance. It sketches the contributions of the statistical analysis to the study and data problems. Section 3 describes the case comparison. It defines the case-selection criteria, justifies this study's focus on Ghana and Côte d'Ivoire, and outlines strategies for collecting and analyzing data. The concluding section (4) summarizes the research design and draws out its analytical value. Refer to Appendix 1 for in-depth information about operationalization, indicators, and data sources.

2.2 Large-N Study of Regional Power Sector Performance

This section highlights the goal and the scope of the statistical analysis. The literature on electricity provision in Africa identifies "external factors" – domestic and international forces outside the electricity sector – as explanations for sectoral performance (Williams and Ghanadan 2006, 819; Gratwick and Eberhard 2008a; Eberhard et al. 2011, 12; Eberhard et al. 2016). Often cited external factors include natural resource endowments, macroeconomic shocks, investment climate, droughts, and civil wars. The large-N study explores the plausibility of associations between these external factors and sectoral performance. The statistical analysis covers up to 48 countries in Sub-Saharan Africa depending on data availability for particular measures. It includes small island countries – Cabo Verde, Comoros, and Seychelles, and Saõ Tomé and Príncipe – as well as larger ones – Mauritius and Madagascar. The inclusion of these countries is a standard practice in studies of electricity provision in Africa (e.g., Eberhard et al. 2011; Blimpo and Cosgrove-Davies 2019). I excluded South Sudan, which separated from Sudan and became sovereign in 2011. This means that South Sudan did not exist as an independent state during the 1990s and 2000s, when the neoliberal electricity sector reforms were in vogue.

The large-N study documents changes in sectoral performance during 1990-2019. This period includes the 1990s, when the neoliberal electricity sector reforms began, and sectoral performance over the next 30 years. The analysis stops in 2019 because the COVID-19 pandemic strongly affected economic performance in 2020. For instance, the World Bank (2021c, 107) recorded a regional real GDP growth of -3.7% in Sub-Saharan Africa in 2020, as compared to a growth rate of 2.4% in 2019. The economic decline in 2020 represents a plunge in real per capita income of 6.1% (World Bank 2021c, 101 and 107). With many African governments needing funds to manage economic lockdowns and their effects, foreign direct investments declining, and remittances dropping (IMF 2021a), the pandemic reduced finances for investment in infrastructure like electricity. The socioeconomic perturbations additionally meant African governments had to put on hold the execution of some electricity projects and policies as they managed the pandemic. In short, the statistical analysis stopped with data from 2019 since 2020 was an anomaly.

I employed descriptive statistics and bivariate analysis because I found no formal theory in the literature on external factors. This decision agrees with Chris Achen (2002, 446) who argues that, when a study has no formal theory but has "… more than three independent variables, no one can do the careful data analysis to ensure that the model specification is accurate and that the assumptions fit as well as the researcher claims." In this situation, Achen

(2002) advises researchers to use descriptive statistics and bivariate analysis. Given the absence of a formal theory in the literature, my study's statistical analysis of five independent variables relies on descriptive statistics.

The use of descriptive statistics and bivariate analysis adds value to this project. First, it offers a sense of plausible explanations for electricity sector performance in Sub-Saharan Africa. Second, it demonstrates the range of variation and the extent of change in sectoral performance in the region since the adoption of electricity sector reforms; in other words, it highlights the variation to be explained. Third, the statistical analysis suggests that external factors alone provide inadequate explanations for variation in sectoral performance.

Notwithstanding these contributions, data problems limit a multivariate analysis. For example, data on the frequency and duration of power outages prior to the mid-2000s are unavailable. Although some organizations such as the World Bank started gathering these data since the mid-2000s, they remain inadequate, with a lot of missing data. In addition, the statistical analysis overlooks complex processes and causal mechanisms through which external factors influence political elites' policy choices regarding the electricity sector and ultimately their (in)effectiveness. Moreover, the scarcity of comparable data on domestic political and policy processes makes it impossible to use a large-N design to evaluate their role in sectoral policy choices and performance. My study turns to case studies to understand the factors that account for differences in electricity sector policies, which in turn affect sectoral performance.

2.3 Comparative Case Studies

This research uses comparative case studies to trace sources of variation in electricity sector policies, which in turn influence sectoral performance in Ghana and Côte d'Ivoire. The case studies cover the postwar period through the present, but it focuses on the 1980-2020 period. It starts from the late colonial era because colonial administrations began to develop infrastructure, including education, water, communication and electricity, as part of welfare colonialism in Africa during this period (Babou 2010). I emphasized the period of 1980-2020 because multiple crises during the 1980s made the original post-colonial strategies for development in general, and electricity provision in particular, untenable. The following subsections present the case selection criteria, the process-tracing method for evaluating data, and how I identified and recruited participants for interviews and informal conversations during field research.

2.3.1 Case Selection

This study analyzes variation in the choice and implementation of policies regarding the electricity sector and ultimately sectoral performance in Ghana and Côte d'Ivoire over time. I selected these countries for multiple reasons (see Table 2.1 for summaries). First, Ghana and Côte d'Ivoire experienced similar economic and climatic crises during the 1980s. Second, the trajectories of electricity sector reforms in these two countries differed. Third, many dimensions of their electricity sector performance vary. Fourth, Ghana and Côte d'Ivoire have experienced a reversal in electricity trade since the mid-1990s. Fifth, these countries challenge an expectation that peaceful countries develop and maintain infrastructure better than countries that experience civil wars (e.g., Yepes et al. 2009). The remainder of this subsection details these reasons in turn.

To begin with, I selected the two countries because of their similarities in broad economic and environmental conditions during the 1980s. Like many African countries, Ghana and Côte d'Ivoire experienced historic droughts, which exacerbated their economic crises during

the 1980s. Both countries had invested heavily in hydroelectricity. Dependence on hydroelectricity made their energy sectors vulnerable to rainfall shortages. Data from the Energy Information Administration (2021) show that Ghana's hydro-generation capacity plummeted from 4.941 billion kilowatt-hours in 1982 to 1.799 billion kilowatt-hours in 1984, representing a decrease of 64%. In Côte d'Ivoire, hydro-generation capacity fell from 1.731 billion kilowatt-hours in 1982 to 0.369 billion kilowatt-hours in 1984, indicating a 79% reduction (Energy Information Administration 2021). While the droughts undercut their hydroelectric generation capacity, the economic downturn stifled their ability to invest in the energy sector and meet national demands for electricity. As many African countries did, Ghana and Côte d'Ivoire turned to the International Monetary Fund (IMF) and the World Bank for financial assistance. In both cases, these organizations made such assistance conditional on market-oriented reforms. Ghana and Côte d'Ivoire have carried out much of the proposed neoliberal electricity sector reform package. The two countries began to implement institutional changes in their electricity sectors in the 1990s (e.g., Karekesi and Kimani 2002; Clark et al. 2005; Foster and Pushak 2010; Traoré 2013). As I will show in the chapters on case studies, both countries have restructured state-owned power providers, allowed private sector participation in generation, and formed regulatory agencies to govern the operations of electricity companies.

Despite these similarities, the trajectories and specifics of electricity sector reforms in the two countries vary. Côte d'Ivoire privatized its national electricity company in 1990. Its power sector remains vertically integrated, with the Ivorian Electricity Company (*Compagnie Ivoirienne d'Electricité* – CIE) having a monopoly over power transmission and distribution, except production. Although a new electricity law promulgated in 2014 seeks to unbundle the sector, it has yet to happen. As compared to Côte d'Ivoire, Ghana delayed the implementation of sectoral reforms. Although the World Bank requested sectoral reforms in the 1980s, Ghana adopted them in 1994 (Eshun and Amoako-Tuffour 2016). The actual implementation started with institutional changes in 1997, three years after the adoption of electricity sector reforms. Ghana unbundled its vertically-integrated power utility, the Volta River Authority (VRA), in the mid-2000s. Ghanaian authorities privatized the national electricity distributor (Electricity Company of Ghana – ECG) in 2019, but renationalized it less than six months later (Millennium Challenge Corporation 2019).

Several aspects of sectoral performance in the two countries differ. Load shedding and blackouts are more frequent in Ghana than in Côte d'Ivoire (Kiazolu 2015; Abeberese et al. 2017). In addition to the first power shortages in the 1980s, Ghana experienced severe electricity shortfalls and load shedding, including during the periods of 1993-1994, 1997-1998, 2006-2007, 2012-2016, and 2021 (Edjekumhene et al. 2001; Ackah et al. 2014; Abeberese et al. 2017; Peacefmonline 2021a; 3News 2021; Ghanaweb 2021; Citi Newsroom 2021). By contrast, Côte d'Ivoire has experienced fewer power shortages and load shedding since 1990. It rationed electricity from February to May 2010 – the first period of power shortages during the last three decades (Abidjan.net 2010; World Bank 2017b). World Bank (2021b) data reveal that businesses in Côte d'Ivoire experienced blackouts only two times monthly in 2009 and about three (3.5) times per month in 2016 – far below disruptions firms experienced in Ghana.[8] As a result, Africanews (2017) concluded that, "Unlike many countries in Sub-Saharan Africa, Ivory Coast had a reliable power supply." Côte d'Ivoire's second period of power cuts began a few years

[8] The World Bank Enterprise Survey has data for different years. For Ghana, the World Bank has data for 2007 and 2013 and for Côte d'Ivoire, 2009 and 2016. The IEA depends on the Enterprise Survey and so does not have its own data on reliability in Africa.

later but it was relatively brief (April to July 2021) (Africanews 2021b; Elemide 2021).

If Côte d'Ivoire has achieved better reliability of supply, Ghana has improved access more, becoming the country with the third highest electrification rate in mainland Sub-Saharan Africa in 2019. Only Gabon (90.7%) and South Africa (85%) had higher access rates than Ghana in 2019 (World Bank 2021a). In Ghana, electricity access rose from less than a quarter (23.5%) of the total population in 1990 to 83.5% in 2019 (World Bank 2018, 2021a). This represents a 255.3% change. Rural dwellers' access to electricity in Ghana improved from 2.9% in 1993 to more than two-thirds of the rural population (70%) in 2019, indicating an impressive increase of 2,313.8% over the past three decades (World Bank 2021a). In Côte d'Ivoire, roughly two-thirds of the entire population had access as of the end of 2019. Access rose from 36.7% in 1990 to 68.6% in 2019, showing an increase of 86.9% (World Bank 2021a). About 41.9% of rural residents had access to the electricity grid as of 2019, as compared to one-sixth (16.7%) in 1993 (World Bank 2021a). This intimates a 150.9% change in rural access in Côte d'Ivoire. Urban electrification rates remain identical in Côte d'Ivoire and Ghana in 2019. In both countries, access to electricity in urban areas increased from about 73.6% in 1993 to roughly 94% in 2019 (World Bank 2021a).

Although complicated pricing systems make comparison difficult, it seems that neither country has had consistently lower tariffs. Residential users in Ghana paid less than those in Côte d'Ivoire in the 2000s and early 2010s. In Ghana, residential consumers paid about US$0.053 per kilowatt-hour, while non-residential users paid approximately US$0.074 per kilowatt-hour (excluding the monthly service charge) during the 2000s (PURC 2001; AfDB 2019, 55). On the other hand, in Côte d'Ivoire, residential consumers using less than 80 kilowatt-hours over two months paid roughly US$0.06 per kilowatt-hour for much of the 2000s and early 2010s (AfDB/OECD 2004, 115; World Bank 2017b). Those who used more than 80 kilowatt-hours bimonthly paid approximately US$0.12 per kilowatt-hour (AfDB/OECD 2004, 115). By 2016, price levels had flipped, with consumers paying more in Ghana than in Côte d'Ivoire. Brako (2016) reported that domestic consumers paid an average of US$0.09 per kilowatt-hour in Côte d'Ivoire, while those in Ghana, on average, paid US$0.19 per kilowatt-hour in 2016. That same year, the average electricity tariff stood at US$0.32 per kilowatt hour for commercial users in Ghana, but US$0.13 per kilowatt-hour in Côte d'Ivoire (Brako 2016). In 2015, the Africa Center for Energy Policy (ACEP) concluded that "Ghana's electricity cost [was the] highest in West Africa" (Quist 2015). Nonetheless, recent data from the African Development Bank reveal that electricity had once again become cheaper in Ghana than in Côte d'Ivoire as of 2018. The average end-user price of electricity was US$0.13 per kilowatt-hour in Ghana, compared to nearly US$0.16 per kilowatt-hour in Côte d'Ivoire (AfDB 2019, 61).

The structure of electricity tariffs differs in the two countries. Ideally, a country's tariff structure should reflect the cost of service. Electricity is produced and transmitted at a high voltage and requires additional investments in infrastructure to step it down for distribution to low voltage users. Therefore, the cost of supplying power to low voltage users is higher than the cost of service for medium and high voltage customers (Interview with Officer 1 of the PURC, Accra, 21 June 2019). According to this logic, medium and high voltage industrial users should pay less than low voltage domestic users. Côte d'Ivoire has a cost-recovery tariff structure, whereby industrial customers pay less than domestic users. In contrast, in Ghana, industries pay more than domestic users. A breakdown of tariffs as of 2018 depicts this difference in tariff structure. Low voltage domestic users paid almost 50% more in Côte d'Ivoire (US¢22/kWh) than

in Ghana (US¢11.4/kWh) (AfDB 2019, 52). The social tariff[9] in Ghana was 1.4 US cents cheaper than in Côte d'Ivoire as of 2018 (AfDB 2019, 52). Medium voltage industrial users paid less in Côte d'Ivoire (US¢17.3/kWh) than in Ghana (US¢19.7/kWh) (AfDB 2019, 52).

Moreover, Ghana and Côte d'Ivoire have reversed roles in electricity trade since they started implementing sectoral reforms in the 1990s. In the 1970s and 1980s (minus the power crisis years in the mid-1980s), Ghana exported electricity not only to Côte d'Ivoire but also neighboring Benin and Togo (Williams and Ghanadan 2006; Eshun and Amoako-Tuffour 2016). By 1995, however, the tables had turned, with Ghana importing electricity from Côte d'Ivoire (Foster and Pushak 2010; Traoré 2013; Kiazolu 2015). Recurrent power shortages have made Ghana incapable of meeting domestic electricity demand and fulfilling export contracts. On the other hand, Côte d'Ivoire has become a net exporter of electricity in West Africa, supplying to Ghana, Benin, Burkina Faso, Mali, and Togo, while exploring electricity markets in Guinea, Liberia, and Sierra Leone (Oxford Business Group 2020). Côte d'Ivoire honored its electricity export contracts even during its protracted period of political turmoil (Foster and Pushak 2010). It is thus often cited as a relative success story of power sector reforms in Sub-Saharan Africa (Kiazolu 2015). The role reversal raises interesting questions. Why does Côte d'Ivoire export power to neighboring countries when it still has a relatively modest – if improving – record of access? Is this a sign of reform effectiveness? Is it a matter of differences in reform objectives and priorities, or something else entirely?

Finally, Ghana and Côte d'Ivoire defy the conventional wisdom that conflict-troubled countries perform more poorly in developing and maintaining infrastructure than do peaceful ones (e.g., Yepes et al. 2009). Côte d'Ivoire experienced several years of civil war (2002-2011) but has achieved reliable electricity supply (Traoré 2013; Kiazolu 2015). On the other hand, Ghana has gained notoriety for erratic power delivery, despite more than two decades of democratic stability (Mathrani et al. 2013; Acheampong and Ankrah 2014; Ackah et al. 2014; Abeberese et al. 2017; Citi Newsroom 2021).

In short, this study selected Ghana and Côte d'Ivoire because of similarities and differences in their electricity sector policies and sectoral performance over time. Similar economic conditions and droughts impelled authorities in both countries to turn to the IMF and the World Bank for support during the 1980s, but the pace and forms of sectoral reforms have varied over time. Several dimensions of sectoral performance have differed, too. The similarities and differences documented in this section allow me to compare and trace the sources of variation in electricity sector management and ultimately sectoral performance in the two countries over time.

[9] Social tariffs refer to low electricity prices for vulnerable users, especially low-income earners.

Table 2.1: Summary of Case Selection Criteria

	Ghana	**Côte d'Ivoire**
Similarities during the 1980s	Macroeconomic crises and droughts	Macroeconomic crises and droughts
Substantive reforms implemented since 1990	Independent regulator ↓ Independent power production ↓ National power utility split into two entities: generator and transmitter	Privatization of the national electricity company ↓ Independent power production ↓ Independent regulator
Performance:		
Access		
% of national population	23.5 in 1990; 83.5 in 2019	36.7 in 1990; 68.6 in 2019
% of urban population	73.6 in 1993; 93.8 in 2019	73.6 in 1993; 93.9 in 2019
% of rural population	2.9 in 1993; 70 in 2019	16.7 in 1993; 41.9 in 2019
Reliability	High frequency of power shortages and load shedding	Low frequency of power shortages and power cuts
Tariffs	Not cost recovery	Cost recovery
Role reversal	Net exporter of electricity to neighboring countries during the 1970s and 1980s (except the crisis year of 1983); imports from Côte d'Ivoire since the mid-1990s	Net exporter of electricity since the mid-1990s
Political stability	Democratic stability since 1992 (8 multiparty elections; 3 peaceful power alternations)	Political instability since 1999 (coup in 1999; civil war during 2002-2011)

Sources: Williams and Ghanadan (2006); Foster and Pushak (2010); Eshun and Amoako-Tuffour (2016); Ministry of Energy (2018); (AfDB 2019); World Bank (2021a)

2.3.2 Small-N Data Sources and Analysis

The comparative case studies document the influence of different forms and intensity of competitive pressures, including coups d'état, electoral threats, civil wars, and risks of civil wars, on the choice and implementation of electricity sector policies and, in turn, sectoral performance. I argue that intense political competition encourages Ghanaian politicians to extend electricity access to rural areas to mobilize political support and to set artificially low electricity prices to appease urban residents. Low electricity prices, combined with unpaid subsidies and governments' failure to pay their own electricity bills, lead to underinvestment in power utilities and then recurrent power shortages and load shedding. In contrast, existential threats, especially contestations over Ivorian identity and citizenship and civil war, stalled electrification programs as governments prioritized regime and national stability. This suggests that the risk of civil wars and civil wars relegate mundane things like electricity to the back burner. But when political life returns to normal, high competition pushes governments toward voter gratification, which typically takes the form of extending access to electricity and setting artificially low tariffs. Low competition leaves policy space that governments may use to make changes that (1) might defer voter appeasement and (2) governments may judge to be solutions that are conducive to long-

term efficiency. Low electoral threats encouraged the privatization of the national power utility in Côte d'Ivoire, while intense political competition discouraged ruling elites from privatizing the state-owned electricity distributor in Ghana.

The small-N analysis uses process tracing to examine the mechanisms through which dynamics of political competition influence variation in electricity sector management, which then contributes to sectoral performance. Qualitative researchers use process tracing to analyze evidence on the sequences of steps linking a cause to a given effect (George and Bennett 2005; Bennett and Elman 2006). Process tracing is a within-case analytic technique, meaning it prioritizes the "use of evidence from within a case to make inferences about causal explanations of that case" (Bennett and Checkel 2014, 4). Some researchers conducting process tracing assess explanations for a specific effect by analyzing multiple pieces of evidence about major developments in a temporal sequence. They pay attention to "causal mechanism as the basis of explanation" (Bennett and Elman 2006, 456).

Process tracing allows my study to identify and analyze mechanisms that link developments in the electricity sector with those related to broader socioeconomic, electoral, and regime dynamics in each country. The within-case analysis (for each country) in this dissertation uses narratives that highlight the sequences of these socioeconomic and political developments and their connections with policy choices and outcomes in the electricity sector. The analysis covers several decades dating as far back as the colonial era. To enable within-case comparison, the analysis involves three periods per country: postwar through postcolonial pre-crisis, crisis until political regime change, and political regime change through present. Nonetheless, the focal period of the analysis begins in the 1980s – when economic and environmental crises constrained postcolonial strategies for development in both countries – and ends in 2020. My study identifies and links more context-specific sub-periods in a temporal sequence for each country to enhance process tracing. For example, the chapter on Ghana during multiparty rule distinguishes presidencies since 1992. Similarly, I break down Côte d'Ivoire since the regime change into three sub-periods: immediately after the reintroduction of multiparty elections until the civil war, during the civil war, and after the civil war. I look for connections between political dynamics, socioeconomic and climatic conditions and sectoral policies (including reforms), which in turn affect sectoral performance over time.

This analysis requires evidence on (1) economic and climatic conditions, (2) sectoral policies and institutions – both past and present, (3) political dynamics, including competition, coalitions, and civil war, and (4) electricity sector performance over time. I collected these data from a wide variety of sources such as reports from governmental and non-governmental organizations, media coverage, archival materials, secondary sources, and interviews conducted during field work in Accra (Ghana) and Abidjan (Côte d'Ivoire). Having these multiple sources of evidence strengthens confidence in the validity of the study's inferences (King et al. 1994).

Examining the interconnections between economic and climatic conditions and electricity performance requires historical evidence about these situations. Archival materials, reports of government agencies, and the Bretton Woods organizations, media coverage, and secondary sources provided information about Ghana's and Côte d'Ivoire's macroeconomic conditions (e.g., GDP, debt levels, and inflation) and droughts since the 1980s. Interviews with academics and managers of electricity supplemented these sources.

The dissertation analyzes data on sectoral policies and institutions – both past and present. I gathered this evidence from archival materials, media reports, and reports of governmental agencies, the World Bank, the IMF as well as secondary materials. From these

sources, I gleaned information about pricing policies and strategies for expanding electricity access and for ensuring reliable supply of power. I looked for differences in proposed and actual pricing regimes, regulatory mechanisms, unbundling, and privatization to evaluate proposed reforms and what both countries have implemented. Through interviews, I sought the perspectives of managers of electricity, academics, politicians, and representatives of civil society organizations on factors that drive electricity prices, strategies for extending electricity access, and factors that shape the reliability of electricity.

To understand the relationships between political developments and political elites' policy choices and their outcomes, this study required data regarding the distributional consequences of path dependent policies, political contestation, and political coalitions dating as far back as the late colonial period. I collected these data from archives, secondary sources, media reports and press releases – both in print and online.[10] Interviews with academics, politicians, representatives of business associations, managers of power utilities, and leaders of organized labor compensated for gaps in documentary evidence. From these sources, I obtained information about the effects of existing infrastructure distribution policies on subsequent ones. Specifically, I looked for French and British colonial administrations' policies regarding infrastructure and their effects on post-independence African governments' redistribution policies. I also gleaned evidence about how African governments allocated development projects during the first few years after independence and their outcomes. These sources gave me information about the reactions of beneficiaries and losers of these policies and government responses to them.

Data on the nature of and changes in political competition covered a range of areas, including social mobilization, the nature of social groups, their activities and policy positions, especially those related to electricity provision. I collected data on electoral rules, intra and interparty relations, political parties and their election platforms, electoral violence, turnout rates, margins of victory, share of legislative seats, and power alternations. Understanding political competition requires information about the dynamics of political coalitions. Based on Leftwich's (2010) definition (see Chapter 1), I counted as a political coalition an amalgam of groups that coordinate to obtain a shared political goal. To determine whether a group met this condition, I gathered evidence about its composition, goals, and strategies for building support and demobilizing opposition. These data enabled me to understand the processes by which politically relevant groups shaped specific aspects of electricity policies and their implementation.

Civil war represents a form and a product of political competition. To ascertain whether and how civil war affected electricity policies and sectoral performance, I collected data on the effects of the Ivorian civil war (2002-2011) for changes in political coalitions, electricity access, reliability, and prices. I used media coverage, secondary materials, and interviews with academics and politicians to identify the pre-war composition of coalitions and post-war changes in their composition and roles in Côte d'Ivoire. Finally, reports of electric utilities and non-governmental organizations as well as interviews, provided information about whether and how violent conflicts affected electricity infrastructure.

[10]I relied on national dailies that are accessible online. Some have archives dating back to the late 1990s. Many newspapers in Côte d'Ivoire and Ghana are either pro-government or pro-opposition or have affiliations with political parties and prominent political actors. Therefore, I made conscious attempts to represent all sides of political issues by searching for and analyzing articles and reports from newspapers on different sides of the two countries' political spectrums.

I relied on reports of governmental agencies, including ministries of energy, power utilities, and regulatory agencies, and international organizations, such as the African Development Bank, the World Bank, and the Energy Information Administration for data on electricity sector performance over time. Archival materials (both in print and online), secondary sources, media coverage, and interviews with academics, journalists, politicians, and electricity bureaucrats provided additional information about sectoral performance. I looked for changes in electricity access rates, the frequency and duration of outages, and tariffs.

I inferred processes from the data by identifying and examining political discourses, sequences of broader socioeconomic developments, and electoral and regime dynamics. The analysis followed an inductive process of rereading interviews and other materials to construct important periods and themes and identify key actors involved in policies and politics. It highlights the interconnections between economic and climatic conditions and political developments on the one hand and electricity policies and outcomes on the other hand. This enabled me to tease out causal chains and mechanisms through which political competition contributes to variation in electricity sector policies, which then influence sectoral performance.

2.3.3 Interviews and Informal Conversations: Identifying and Recruiting Participants

As may be clear by now, interviews are crucial to this study's objective. I aimed to use interviews to understand the political drivers of electricity sector policies and sectoral performance over time. To this end, I conducted interviews during field work in Ghana from April to June 2019 (10 weeks) and in Côte d'Ivoire from September to November 2019 (8 weeks). The interviews involved elites and non-elites. I recorded informal conversations in my field notes.

The elite interviews involved five categories of respondents: bureaucrats, politicians, leaders of civil society organizations, local academics and journalists, and representatives of international agencies. Table 2.2 provides counts for each category of respondents, broken down by country. The remainder of this section describes the categories of participants interviewed during field research and the challenges encountered in recruiting them.

I interviewed bureaucrats in the ministries of energy and finance who are directly involved in the formulation and implementation of government interventions in the electricity sector. Bureaucrats included managers of electricity agencies and representatives of frontline electricity workers (consisting of leaders of their labor unions).

Two categories of politicians – national party officials and Members of Parliament (MPs) who also served on the legislative committee responsible for electricity – granted me interviews. My selection criteria involved national party officials engaged in the development of party programs and strategies (e.g., electoral platforms) as well as campaign management. Political parties invited to participate through their secretariats appointed officials for the interviews based on these criteria. For legislators, I intended to interview those in government and in opposition. In Ghana, the public affairs directorate of parliament directed me to the secretariat of the mines and energy committee, where they respected my criteria and arranged meetings with MPs on my behalf. The MPs did not only belong to the ruling and opposition parties, but they also worked on the mines and energy committee of parliament. As in Ghana, in Côte d'Ivoire, my first port of call was the National Assembly (*Assemblée nationale*), where I submitted a letter of invitation to participate in interviews at the registry of letters. The National Assembly's committee with responsibility for energy, the *Commission des affaires économiques et financières*, designated one legislator of the ruling *Rassemblement des Houphouëtistes pour la démocratie et la paix*

(RHDP) coalition to participate in the interviews. This arrangement deviated from the selection criterion because it involved no opposition lawmaker.

At the end of the interviews with politicians, I asked them to suggest relevant individuals for interviews and materials for further study. This strategy worked more effectively in Ghana than in Côte d'Ivoire. In Ghana, for instance, a former minister arranged interviews with two electricity bureaucrats for me. In Côte d'Ivoire, the only legislator I interviewed indicated that he knew no additional resource persons and instead directed me to the Ministry of Mines, Petroleum Resources and Energy and the *Autorité Nationale de Régulation du secteur de l'Electricité de Côte d'Ivoire* (ANARE-CI) for data on access, reliability, and prices. Attempts to speak with executives of all three major political parties in Côte d'Ivoire – the *Parti démocratique de Côte d'Ivoire* (PDCI), the RHDP, and the *Front populaire ivoirien* (FPI)– failed. Although party offices arranged interviews and invited me by phone, the party officials repeatedly failed to respect the appointments. To compensate for my inability to interview party officials in Côte d'Ivoire, I relied on more archival materials, media reports, and secondary materials for information about sources of political contestation as well as party positions on electricity strategies for increasing access to reliable and affordable electricity.

Representatives of civil society organizations (CSOs) – 10 in Ghana and five in Côte d'Ivoire – granted me interviews. The participants comprised leaders of national and sectoral labor unions and think tanks because of their experience in national policy processes related to electricity provision. For the same reason, I included leaders of business associations such as the Private Enterprise Federation and the Association of Ghana Industries in Ghana and the *Chambre de Commerce et d'Industrie de Côte d'Ivoire* in Côte d'Ivoire. I visited their offices in person and asked respondents for referrals. This snowball technique bore fruit in both countries. Representatives of CSOs provided me with contact information for other potential respondents and made phone calls on my behalf. In one case, a civil society representative even drove me in his vehicle to meet a potential interviewee.

The next category of respondents comprises academics and journalists. Academics (2 in Ghana and 3 in Côte d'Ivoire) with backgrounds in political science and economics gave formal interviews. I hoped to interview journalists who report on electricity or politics. Calls at the offices of newspapers in Abidjan yielded an interview with one journalist, whose employer reports on economic developments in Côte d'Ivoire. He interacted with me on the nature of the Ivorian Electricity Company's contract, its performance, and access rates in Côte d'Ivoire, and shared some of his articles with me. He connected me to another journalist, whose busy schedule made it impossible for us to meet in person or interact electronically.

For interviews with representatives of donors, I targeted the African Development Bank (AfDB), the World Bank, and the United States Agency for International Development (USAID) in Accra and Abidjan. These institutions engage in the development and execution of policy interventions in the electricity sector and provide funding for sectoral reforms. The World Bank and the USAID responded to neither my phone call nor my letters inviting them to participate in the interviews and tell their side of the story. To mitigate the impact of their non-participation on the research, I relied more on documentary and secondary materials. A representative of the AfDB in Abidjan provided information about electricity regulation and prices in West Africa, thanks to a staff member of the bank who helped me arrange the meeting.

For elite interviews, I used purposive and snowballing sampling techniques to identify and recruit key informants based on their sectoral expertise and experiences. A snowball strategy means the researcher relies on referrals by his or her acquaintances and initial respondents to

recruit additional participants (Trost 1986; Mason 2002; Robinson 2014). I used the snowball technique because, in the African setting, social connections are often more important than formal channels for gaining access to potential respondents (e.g., Hulse et al. 2018). Social connections remain the keys that open office doors.

The interviews with elites – 32 in Accra and 13 in Abidjan – were semi-structured. I used no standard questionnaire and topics differed with a participant's background, with some questions being follow-ups. During these interviews, participants answered background questions about their education, careers, and involvement in the electricity sector. Bureaucrats shared their knowledge and experiences related to the design, implementation, and results of electricity policies. These policies included proposed and actual pricing regimes, regulatory mechanisms, unbundling, privatization, and strategies for increasing access. Interviews with politicians yielded information about their parties' election platforms, sectoral strategies, experiences with carrying out sectoral policies, engagements with civil society organizations on electricity sector policies, and strategies for political mobilization and demobilization. From the interviews with representatives of civil society organizations, I obtained evidence about their involvement in sectoral policymaking and implementation, as well as their positions on and reactions to electricity sector policies. The representatives provided information about their mobilization strategies, the political relevance of electricity, and the influence of time horizons on politicians' policy choices. Academics and the journalist interviewed shared evidence about the electoral role of electricity, non-electricity factors that shape electoral outcomes, sectoral policymaking and implementation, and the effects of civil wars on electricity provision.

Interviews with slum residents relied on convenience sampling. I spoke with easy-to-reach residents – those I encountered at public places such as by roadsides and at retail shops. We had free-flowing conversations rather than formal interviews. Six residents of Abobo in Abidjan, Côte d'Ivoire, and five residents of Nima in Accra, Ghana, narrated stories of their personal experiences with electricity supply and prices.

Finally, informal interactions with residents in Accra and Abidjan, which I recorded in my field notes, offered me additional insights into residents' lived experiences with electricity. I initiated conversations about electricity with acquaintances at restaurants, where I occasionally visited for meals, and at barbershops when I went for a haircut. In Abidjan in particular, taxi drivers were my friends because of my limited knowledge of the city's geographic layout and, by contrast, their intimate knowledge of it. I thus relied on their services in moving around the city and had conversations with them about electricity supply during the war years and their lived experiences with electricity in general.

Table 2.2: Counts for each category of respondents

	Ghana	**Côte d'Ivoire**
Bureaucrats	12	2
Politicians	7	1
Representatives of civil society organizations	11	5*
Academics	2	3
Journalists	0	1
Representatives of international agencies	0	1
Slum residents *Non-elite interviews*	5	6
Total elite interviews	**32**	**13**
Total non-elite interviews	**5**	**6**
Total interviews	**37**	**19**

*Notes: Included two former energy bureaucrats.

2.4 Conclusion

In sum, this research combines both statistical analysis and comparative case studies to understand sources of variation in electricity sector policies and performance. The descriptive and bivariate statistics probes relationships between sectoral performance and natural resource endowments, macroeconomic shocks, investment climate, droughts, and civil wars. This provides a sense of the plausibility of links between these external factors and sectoral performance. It further gives a regional overview of variation in electricity sector performance. Chapter 3 sets up the background for the statistical analysis in Chapter 4.

Although data limitations precluded any evaluation of causal processes in the large-N study, the statistical analysis shows that external factors alone cannot explain variation in sectoral performance. This study uses comparative case studies to understand sources of divergence in detail by identifying causal mechanisms. I chose Ghana and Côte d'Ivoire for the comparative case studies partly because they capture variation in electricity sector management and sectoral performance. This variation permits comparison across space (Ghana and Côte d'Ivoire) and over time. The focal period involves pre-crisis, crisis to regime change, and multiparty regime. Both countries' similar duration of experience with electricity sector reforms – about three decades – allows process tracing over time. Process tracing – a within-case strategy for examining evidence on causal steps – directs my attention to processes and interconnections between broad socioeconomic and political dynamics and electricity development in these two countries. Chapters 5, 6, 7 and 8 present the within-case analyses.

Chapter 3

The Extent of Electricity Sector Reforms in Sub-Saharan Africa

3.1 Introduction

At independence, African governments had hoped to use power utilities to accelerate socioeconomic development through universal electrification and industrialization. But by the 1980s, power utilities were performing abysmally. The dismal performance of the sector, macroeconomic crises, and severe droughts precipitated electricity sector reforms in many African countries. The sectoral reforms formed part of the broad wave of market-oriented reforms of the 1980s and 1990s, known as the Structural Adjustment Programs (SAPs) (see section 3.4 in this chapter for more discussion).

This chapter begins by examining the historical context of Africa's power utilities. It documents the pre-reform performance of the electricity sector, starting from the colonial period through 1990, when sectoral reforms commenced in the region. It discusses the neoliberal power sector reforms, before turning attention to the extent of their execution in Sub-Saharan African (SSA) countries as of the end of 2020. I aimed to understand what African countries have implemented since the Bretton Woods agencies pushed the reform program on them. The next chapter assesses the outcomes of sectoral policies in the region and the plausible influence of commonly cited external factors.

3.2 Africa's Electricity Sector in a Historical Context

Colonial administrations introduced electricity in Africa in the late 19th century, but they did not prioritize the provision of public utilities to the colonized peoples (Midgley and Piachaud 2011; Showers 2011). They limited electricity supply to colonial residences, offices, hospitals, industries, and commercial concerns. The extension of electricity and other public utilities accelerated after the end of the Second World War in some African countries and, in others, following the end of colonial rule (Williams and Ghanadan 2006).

For example, the colonial government first installed electricity generation plants in Lagos in Nigeria in 1896 (Akpen 2006). The colonial administration in Nigeria, through the Nigerian Railway agency and the Public Works Department, extended electricity to major urban centers, including Kaduna, Kano, Zaria, Jos, and Ibadan, between 1928 and 1940 (Akpen 2006). In 1951, it institutionalized state provision of electricity by enacting a statute, which established the Electricity Corporation of Nigeria (Sambo et al. 2003). In Ghana, the colonial administration introduced electricity in Sekondi in 1914, Accra in 1922, and Takoradi in 1928 (IDE-JETRO 2019). In 1920, the colonial administrations in Rhodesia (today's Zambia and Zimbabwe) and the Belgian Congo (now DRC) formed the Rhodesia-Congo Power Company to supply electricity to mining companies (UNDP-World Bank 1983a). Although plans to form a power utility in Uganda date back to 1905, the colonial administration founded the first power stations in Kampala and Jinja in 1938 (Mwaura 2012; Mawejje et al. 2013). It created the Uganda Electricity Board (UEB) through the Electricity Ordinance of 1947.

Limited electricity expansion by colonial administrations meant that many African countries had extremely low electricity access at independence. Urban and rural areas of little or no interest to colonial governments had no electricity. Data on electricity access in Africa during the first three decades after independence (1960s-1980s) are unavailable. The World Bank's World Development Indicators has data on access rates in Africa for the 1990s. These data reveal

that national electricity access stood at less than 1.5% in 18 Sub-Saharan African countries in 1990 (World Bank 2018). Given that some African countries had a nationwide electricity coverage of 0.01% in 1990 (World Bank 2018), one can imagine that some of them lacked electricity at independence.

Many independence leaders, including Kwame Nkrumah of Ghana, Félix Houphouët-Boigny of Côte d'Ivoire and Julius Nyerere of Tanzania, saw electricity as developmental and promised universal electrification to support modernization (e.g., of agriculture), industrialization, and improvements in the quality of social life (see e.g., Nkrumah 1997 [1961]; Houphouët-Boigny 2016 [1961]). They created state-owned vertically-integrated monopolies to accelerate the development of electricity and other public utilities, with financial aid from the World Bank and other western donors (World Bank 1993; Newbery 2002; Batley 2004; Bayliss and McKinley 2007). For example, Mali set up l'Energie du Mali in 1960, Ghana created the Volta River Authority (VRA) in 1961, and Tanzania founded Tanesco in 1964. While some states aimed at expanding existing thermal – mainly diesel – infrastructure bequeathed by colonial administrations, other states attempted to develop alternative energy sources. In more than half of African countries, postcolonial governments identified and invested in hydroelectric power as a source of potentially cheap and abundant electricity (Showers 2011). Table 3.1 illustrates common characteristics of the electricity sector in the immediate postcolonial era.

Table 3.1: Typical features of Africa's electricity sector prior to reforms

Key element	Common characteristics
Structure of utilities	State-owned, monopoly, vertically integrated
Government priorities for power sector	Industrialization, universal access to electricity, employment, improved standards of living
Policy and regulation	Policies made by national governments Regulatory units located within energy ministries
Financial and investment conditions	Energy ministries determined tariffs Governments subsidized electricity for residential consumers, strategic industries, and public agencies Self-financing limited by low tariffs, limited use of meters, weak collection enforcement
Operational performance	High system losses, > 30% on average
Energy sources	Energy mix a function of domestic resources >50% of countries in SSA relied on hydro

Sources: Kuruk (1989); World Bank (1994b); Williams and Ghanadan (2006); Showers (2011)

Many African governments controlled the power sector for economic, social, political, and pragmatic reasons (World Bank 1993). Economically, postcolonial African governments understood the need for electricity to support industrialization, an agenda they pushed (Newbery 2002; Gratwick and Eberhard 2008; Showers 2011). State electricity agencies, African

governments anticipated, would supply inexpensive and reliable electricity to strategic industries to drive socioeconomic development.

Social objectives constituted another justification for state-controlled electricity provision. Most African countries attempted to promote social equity by expanding public services and utilities to unserved areas and underprivileged groups. They saw state-owned electricity companies as mechanisms for increasing their populations' access to electricity and improving living standards (Williams and Ghanadan 2006). As the World Bank (1993, 11) put it, "This [statist] structure is partly based on the view that electricity is a strategic and publicly-provided good and that people have a right to power at low prices." The postcolonial state became an instrument of redistribution, attempting to remedy colonial inequities in the provision of utilities (Batley 2004).

Politically, state ownership and supply of utilities reflected the ideology of African socialism, versions of which nationalist politicians, such as Kwame Nkrumah of Ghana, Julius Nyerere of Tanzania, and Ahmed Sekou Touré of Guinea, espoused (Chazan et al. 1999). Zambia and Mali also championed some varieties of African socialism. While the specifics of this ideology varied across countries, unifying elements included an egalitarian society in which the government controlled the commanding heights of the economy and owned public utilities (Batley 2004; Batley and Larbi 2004; Matiku 2007).

Last, practical reasons drove state provision of electricity. Postcolonial governments feared that leaving critical public services such as electricity at the mercy of a private sector would create inequities, with private providers prioritizing profits. Additionally, private investors and businesses were, in some cases, unable and, in other cases, unwilling to provide the investment capital needed by public utilities. While indigenous private enterprises remained embryonic and undeveloped in the immediate postcolonial era (Nkrumah 1957; Boahen 1975), foreign firms lacked the will to make such investments (Asante 2003).

Postcolonial African governments funded state-owned utilities from revenues from commodity booms and loans. The global export booms of 1950-1975 boosted state revenues (Jerven 2010, 129; see also Kofi 1994; Calamitsis 1999). Colonial powers and newly independent African governments used proceeds from the booms to finance public utilities and other infrastructure. Besides, African countries borrowed extensively from bilateral and multilateral donors to expand utilities for their populations (e.g., Rimmer 1995). The World Bank, for instance, pushed large state-led investments in the power sector during the 1960s.

However, in the late 1970s and 1980s, multilateral financial institutions began to critique the statist approach (World Bank 1993, 1994b). For the World Bank and its allies, statist interventions through central planning, direct state ownership of key enterprises like utilities, and price controls hurt economic growth and services delivery (World Bank 1993; Tangri 1999). In statist economies, the World Bank (1993) argued, a political calculus of costs and benefits to leaders and their coalition of supporters motivated the awarding of contracts, licenses, and investment projects. According to the World Bank, political expediency resulted in the misallocation of resources, inappropriate location of projects, and uneven development. It also dampened investor confidence through corruption (Chazan et al. 1999, 328; Munemo 2021).

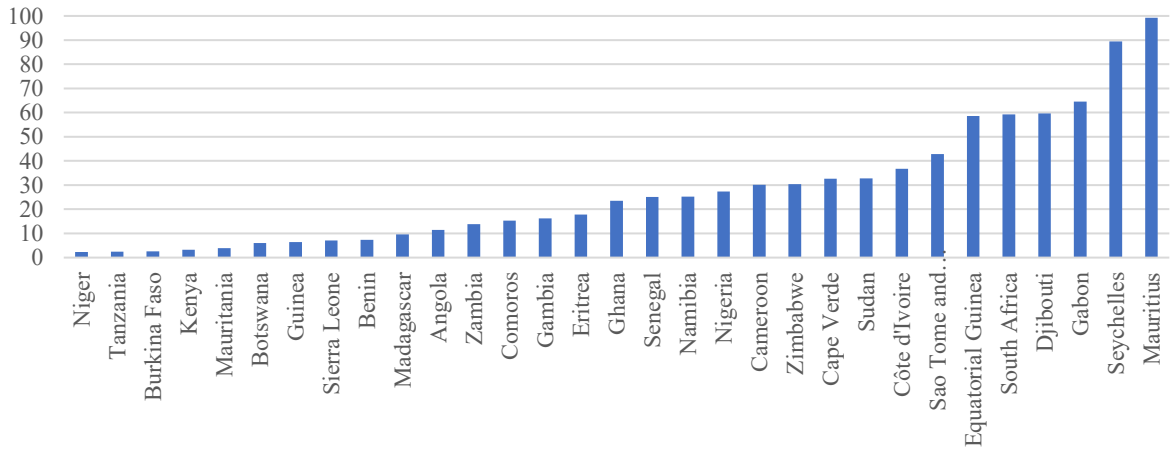
3.3 Pre-reform Performance of the Electricity Sector

Many power utilities in Africa performed poorly on access, reliability, and cost during the late 1970s and early 1980s (World Bank 1994b; Bayliss and McKinley 2007). If performance is assessed based on post-colonial African governments' own objective of achieving universal

access to reliable electricity (see Table 3.1), then they had missed their targets by the 1990s (World Bank 1994b; Williams and Ghanadan 2006; Showers 2011). On the face of it, they achieved the objective of providing power at cheap prices through mechanisms such as subsidies. But upon closer inspection, electricity supply lagged behind increasing demand. Tariffs failed to cover the costs of service and utilities' financial requirements. The remainder of this section examines pre-reform performance relative to African governments' objective of providing universal access to reliable power at cost-recovery prices.

To begin with, despite promises of universal electrification, an extremely low proportion of Africans had access to electricity in 1990. Most rural residents, who accounted for more than two-thirds of the population in many African countries, lacked access to the grid. In 1990, less than one-fifth of the total population (16%) across the region had access to electricity (World Bank 2018a). Figure 3.1 presents access rates in 1990 for 31 countries. It excludes 14 countries with national access rates of 0.01% (World Bank 2018). Ten countries – Niger, Tanzania, Burkina Faso, Kenya, Mauritania, Botswana, Guinea, Sierra Leone, Benin, and Madagascar – had electricity access rates of less than 10%. In three countries – Senegal, Namibia, and Nigeria – only one-quarter of the national population had access to electricity. Merely six countries, comprising Equatorial Guinea, South Africa, Djibouti, Gabon, Seychelles, and Mauritius, had national electrification rates of more than 50%, with only the last two approaching universal access.

Figure 3.1: Percentage of national population with electricity access by country in 1990



Sources: Data from World Bank (2018), World Development Indicators
Notes: The graph excludes 14 countries with an access rate of 0.01%. They are Central African Republic, Chad, DRC, Republic of Congo, Ethiopia, Guinea-Bissau, Lesotho, Liberia, Mali, Mozambique, Rwanda, Somalia, Eswatini, and Togo.

The few Africans and companies that had access experienced unreliable supply in the 1980s. Electricity companies in most African countries failed to expand generation capacity to meet rising demand for electricity and to maintain and repair transmission and distribution installations (World Bank 1993). This failure precipitated power shortfalls and load shedding during the 1980s. For example, in Sudan, aging infrastructure and shortage of spare parts wiped out 91 megawatts out of a total generation capacity of 311 megawatts in 1982, resulting in an unreliable power supply (UNDP-World Bank 1983c, 5). In Tanzania, frequent disruptions to transmission and distribution lines led to widespread outages that impacted users and critical

installations like Dar es Salaam's water supply network during the early 1980s (UNDP-World Bank 1984a). As the joint UNDP and World Bank mission to Tanzania (1984a, 64) noted, "The losses caused by these outages in terms of loss of production and sheer human suffering were massive and urgent action was required." Similarly, electricity consumers in Eswatini reported recurrent blackouts and voltage volatility during the mid-1980s (UNDP-World Bank 1987). Each blackout lasted no more than 30 minutes, but they happened many times in a day (UNDP-World Bank 1987, 44-45). In Uganda, users in major towns like Kampala and Tororo experienced regular voltage fluctuations (UNDP-World Bank 1983d). Obsolete installations, inadequate maintenance and repairs, as well as "Local overloading due to increased domestic demand, including illegal connections," contributed to the voltage volatility (UNDP-World Bank 1983d, 9). In 1983, in response to severe droughts, Ghana's Volta River Authority (VRA) cut electricity exports to Togo by 50% (UNDP-World Bank 1985b, 59). This shortage resulted in power rationing. In Nigeria, frequent "breakdowns, scheduled maintenance, and non-completion or inadequate fuel supply lines" spawned repeated outages during the 1980s (UNDP-World Bank 1983e, 19). These power cuts forced about 90% of businesses to use in-house electricity generators that increased their cost of operations by about 25% (UNDP-World Bank 1983, xx; World Bank 1993e, 29).

Finally, although many African governments set up their power companies to fix rates that reflected the costs of service or utilities' financial needs, electricity prices failed to achieve these objectives (Republic of Ghana 1961; UNDP-World Bank 1982; 1983b, 1983c; World bank 1993). For instance, in Tanzania, even after the TANESCO increased tariffs by roughly 50% in 1983, its average tariff (T¢97.5 following the increase) fell short of its own "established financial target of creating enough internal cash to cover at least 25% of total capital expenditures until 1986 and 40% thereafter" (UNDP-World Bank 1984a, 92).[11] The UNDP-World Bank (1984a, 92) found that the TANESCO needed an additional increase of about 40 to 70% to cover costs. In Sudan, electricity prices in 1982 failed to "meet … operational, debt service, working capital, and normal development requirements" of the National Electricity Corporation (UNDP-World Bank 1983c, 54). Despite a 20% increase in electricity prices in 1980, Zimbabwe's Electricity Supply Commission needed an additional raise to be financially viable (UNDP-World Bank 1982, 9). In Uganda, the Uganda Electricity Board (UEB) set tariffs on commercial principles, including the costs of service, debt servicing, and infrastructure expansion, during the 1961-1979 period, as the post-colonial government envisioned (UNDP-World Bank 1983d). However, the UEB abandoned these principles and raised tariffs only marginally relative to devaluation and run-away inflation during the 1980s – a period of civil war and regime change. As a result, tariffs lagged behind economic cost, declined in real terms, and made no important contribution to infrastructure development (UNDP-World Bank 1983d). Similarly, Senegal's average price of CFAF38.7 per kilowatt-hour fell short of the economic cost of CFAF42 per kilowatt-hour in 1981 (UNDP-World Bank 1983b, 43).[12]

In sum, the much-anticipated universal electrification, reliable supply of electricity, and rapid industrialization had yet to happen in the 1980s. Cheap consumer cost, in the face of high costs of service, implied financial deficits and contributed to poor maintenance and underinvestment in power utilities. Lack of investment and maintenance led to power interruptions and extremely high system losses during the 1980s (World Bank 1993, 22; UNDP-

[11] T¢ = Tanzanian cent; 1 Tanzania Shilling = US$0.082 in March 1983 (UNDP-World Bank 1984a)
[12] CFAF38.7=US¢14kWh in 1981 (UNDP-World Bank 1983b, 43)

World Bank 1983d, 9; Wamukonya 2003; Clark et al. 2005; Williams and Ghanadan 2006).[13] Macroeconomic and climatic crises during this period gave most African governments little or no financial room to maneuver and prompted them to seek support from the Bretton Woods agencies. The next section discusses these agencies' sectoral loan conditionalities.

3.4 The Proposed Power Sector Reform Program

A mélange of factors, in particular macroeconomic crises, severe droughts, the precarious finances of state-owned electricity companies and their resulting poor performance, impelled many African governments to turn to the International Monetary Fund (IMF) and the World Bank for financial help during the 1980s. World Bank officials diagnosed Africa's power utilities and concluded that ineffective institutions and lack of finances accounted for low access and poor quality of electricity supply in the region. In their view, utilities' poor finances resulted mainly from low tariffs rooted in political expediency (World Bank 1993). Addressing the financial challenge, the World Bank argued, needed institutional changes that would roll back the state from electricity provision and enable private sector participation (World Bank 1993; Bayliss and McKinley 2007; Murillo 2009; Ruiz-Mendoza and Sheinbaum-Pardo 2010; Nepal and Jasmab 2015).

The electricity sector reforms formed part of the broader wave of reforms in Sub-Saharan Africa beginning in the 1980s. Out of fear that countries in the region would default on their mounting debts, western international financial institutions and donors pressed African governments to adopt Structural Adjustment Programs (World Bank 1981). Structural Adjustment Programs aimed to halt the economic decline and recover growth by steering African economies toward less state intervention (e.g., Englebert 2000). Policy strategies involving liberalization, privatization, cost recovery, removal of subsidies, eradication of price controls, and elimination of trade barriers, among other market-oriented measures, featured prominently on the neoliberal agenda (Rimmer 1995; Chazan et al. 1999). Donors made the adoption and implementation of these policies conditions for lending.

In the electricity sector, international financial institutions required African governments to implement a standard model of reforms that consisted of "a series of steps that move vertically-integrated utilities toward competition" as prerequisites for loans for electricity development (Gratwick and Eberhard 2008a, 309; World Bank 1993; Malgas and Eberhard 2011). As elaborated below, the standard model included the introduction of independent regulators, the unbundling of power utilities, privatization, and cost recovery measures. Western donors understood this model of reforms as the solution to the problems of national electricity companies. Once adopted, they argued, the policies would foster competition, ensure efficiency in resources allocation, and enhance the overall performance of the sector (World Bank 1993).

The Bretton Woods institutions pushed the establishment of independent regulatory agencies, which refer to specialized bureaucratic institutions with the authority to make sectoral decisions grounded in technical expertise (Majone 1996; Dubash and Morgan 2013; ECA 2017). These decisions typically relate to prices, service standards, and entry and exit conditions in the electricity sector (Guasch and Spiller 1999). According to the World Bank, autonomous and transparent regulatory agencies represent the starting point for sectoral institutional reforms because the openness and certainty that accompany independent regulation would attract businesses to invest in the power sector (World Bank 1993; Kapika and Eberhard 2013;

[13] System losses refer to technical losses resulting from problems within a power system (for instance, electricity dissipated by a faulty transformer) as well as non-technical losses due to power theft.

Mohamedou 2014). Independent regulation also matters for consumer welfare. In theory, independent regulators tackle equity concerns and protect consumers against the interests of private capital by setting and enforcing service standards and electricity tariffs (Kikeri and Nellis 2004). Independent regulators, the World Bank anticipated, would take the economic interest of private firms and governments' social objectives into full consideration (Gratwick and Eberhard 2008b). In short, they would walk a tightrope between cost-recovery prices and social tariffs.

International financial institutions prescribed the unbundling of vertically-integrated monopoly utilities after the creation of an independent regulator. A structural change, unbundling may be horizontal, vertical, or both (Bacon 2018; Summanen and Arminen 2018; Pollitt and Nillesen 2021). Horizontal unbundling means 'decentralizing' national utilities into smaller local utilities – district, municipal, regional, or provincial (or state). Vertical unbundling describes a process of breaking up a monopoly utility into separate entities for production, distribution, and transmission (Joseph 2010; Nepal and Jasmab 2012, 2015). Supporters of vertical unbundling, especially the Bretton Woods agencies, maintain that competition is less feasible in transmission networks than in the generation and distribution subsectors (Bacon and Besant-Jones 2001; Bacon 2018). Transmission grids represent natural monopolies and remain less profitable than generation and distribution subsectors (e.g., Brunekreeft 2015). Separating them can attract private-sector investments to the potentially profitable generation and distribution subsectors. Furthermore, proponents argue that unbundling will ensure that electricity generators and distributors "trade with each other in a competitive wholesale power market" (Bacon and Besant-Jones 2001, 336). On the other hand, unbundling can allow private investors to take over profitable assets and saddle the state with the entity least likely to cover its own costs (Pollitt 2008). It further assumes that multiple investors would get involved, which may not be the case in Africa.

The standard model of reforms included the privatization of national electricity companies. Privatization describes a range of processes, policies, or activities (Hodge 2018; Parker and Kirkpatrick 2005; Starr 1988). Privatization can mean the process of transferring ownership of parastatals, including power utilities, to private firms, individuals, or groups. It may also refer to the process of allowing private entities to participate in the production and supply of services traditionally in the domain of public authorities.

Privatization can thus manifest in several forms in the electricity sector. Divestiture of generation and distribution, whereby a government transfers public ownership and control of power utilities' assets to private actors (World Bank 1993), has not occurred in Sub-Saharan Africa to date. Privatization in the region has instead taken the form of independent power production or producers (IPPs), management contracts, and concessions (Foster and Briceño-Garmendia 2010). Independent power producers are private companies that own and operate facilities to generate electricity and then sell it to an offtaker, that is, a buyer, usually a utility or a government, under a power purchase agreement (Eberhard et al. 2017). Independent power producers invest in electricity generation technologies and recover their costs and make profits through the sale of electricity. In a management contract, a government hires a private firm to manage a state-owned electricity company in return for a fee for a set period. A concession, on the other hand, refers to a contractual agreement whereby a government grants a private enterprise the right to provide a specified service at commercial standards for a stated period (Kerf et al. 1998).

In advocating policies that emphasize state retrenchment in favor of free markets, the international financial institutions assumed that state interventions hinder development (Mbaku

1998; Coolidge and Rose-Ackerman 1999). Yet state involvement is not always bad and has resulted in growth and development in some countries (Evans 1995). For example, as Magubane (2002, 101) shows, "The sectors in which South Africa has world-class technological and export capabilities … are those in which state intervention has been greatest." South Africa used the electric parastatal, Eskom, to facilitate industrialization by providing subsidized electricity to mining and industry (Magubane 2002; Bowman 2020). This contributed to economic growth and made South Africa one of Africa's wealthiest countries. Elsewhere, Japan's postwar rapid growth and the East Asian development miracle in the twentieth century partly depended upon state interventions. Governments in Japan, Hong Kong, Singapore, South Korea, and Taiwan have coordinated their nations' industrial transformation, producing remarkable economic growth and increasing the real incomes of their populations (Haggard 1990; Wade 1990; Tan 2005; Yeung 2017).

State interventions, such as state-funded rural electrification projects, may be needed to address market failures – "negative externalities created [by] the undisciplined workings of the marketplace" (Hale 2009, 17). Market failure can mean an undersupply of positive externalities such as rural electrification. The state should regulate the market to address market failures like monopolies or cartels conniving to fix prices for their members to avoid competition (Majone 1998; Humphreys and Simpson 2008). The state should, in addition, intervene in response to social and economic inequities and to provide public goods, which may be "privately unprofitable but socially beneficial" (Schatz 1996, 246).

Assumptions that ignore market failures are problematic. Advocates of neoliberal reforms, in particular the World Bank (1993), assumed that investors would be interested in the African electricity sector if states pulled back – enough so that there would be competition. Instead, investors have yet to show the much-anticipated interest, as shown in Section 3.5 (Kempe 1999; World Bank 2021d). Weak investor interest implies weak competition, which means benefits associated with competition (e.g., efficiency and reliable supply of power) will not be attained.

No wonder that, while many African countries have undertaken at least one key sectoral reform, none has, to date, implemented the standard model of electricity sector reforms entirely. Western donors promoted these sectoral reforms as a package during the past three decades in anticipation of private investments to the power sector (Gore et al. 2019; Nweke-Eze 2021). Nonetheless, its actual implementation has been slow and piecemeal in Africa. African governments treat the reform package like a menu, choosing and adopting strategies based on external forces and internal factors to be discussed in later chapters. In what follows, I describe the state of neoliberal electricity sector reforms in the region.

3.5 The Extent of Sectoral Reforms and Private Investments

Some African countries have moved forward with unbundling, the creation of independent regulators, and private participation in electricity generation. About 10 countries had unbundled their electric utilities by 2019 (IEA 2020, 76; see also Eberhard et al. 2017). Four countries – Ghana, Nigeria, Sudan, and Uganda – have fully broken up their power utilities into separate companies responsible for generation, transmission, and distribution. Kenya and Zimbabwe have separated generation, leaving both transmission and distribution functions for a single utility. Ethiopia has detached distribution from the national power utility, leaving it in charge of generation and transmission. The electricity sector remains vertically integrated in more than two-thirds of countries in the region, including Côte d'Ivoire, Mauritius, Rwanda, and Senegal.

African governments have made considerably more progress in setting up independent electricity regulators, with at least 40 countries establishing such mechanisms since the 1990s (AfDB 2020, 87-88; Imam et al. 2019). Independent regulators perform different functions from country to country. In some countries, such as Nigeria and Côte d'Ivoire, regulators have responsibility for activities in the electricity sector alone. In other countries, including Ghana, Niger and Rwanda, regulatory agencies' mandates extend beyond the power sector, covering some combination of water, telecommunications, mines, and minerals. Table 3.2 provides examples of the institutional frameworks, functions, and stated goals of independent regulators in Africa. Despite differences in functions and goals, independent regulators share some commonalities. In countries that have created electricity regulators, the legal framework requires them (i.e., regulators) to establish, monitor, and enforce performance standards; determine the structure and the level of tariffs; and resolve disputes among stakeholders in the sector (Mohamedou 2014).

However, regulatory weaknesses permeate the electricity sector. Governments in many African countries have failed to give regulatory institutions full independence (ECA 2017, 18; AfDB 2021). In most countries in Africa, governments appoint board members and the head of the regulator, an arrangement that potentially compromises the agency's independence (AfDB 2020). In many instances, regulators lack the capacity to perform their core functions effectively. Lack of capacity arises from technological, financial and human constraints (AfDB 2018a). Regulators rely on national budgetary allocations, undermining their financial and operational autonomy. Some staff lack the required skills and experience for running electricity regulators. A lack of experts for licensing, tariff setting, and technical regulation constrains regulators' day-to-day activities in some cases (AfDB 2018a).

Table 3.2: Examples of independent regulators in Africa by year created as of 2021

Country and year regulator created	Independent national regulator	Institutional frameworks	Functions	Stated goal(s)
South Africa, 1994	National Energy Regulator of South Africa (NERSA)	National Energy Regulator Act No. 40	NERSA regulates tariffs and issues licenses for electricity generation, transmission, distribution, import, and export. It enforces performance and compliance standards.	Transparency, accountability, efficiency, and public interest
Ghana, 1997	Public Utilities Regulatory Commission (PURC)	PURC Act 1997 (Act 538)	PURC is responsible for setting tariffs, protecting the interests of consumers and utility providers, settling disputes between consumers and utility providers, and monitoring and enforcing performance standards.	Competition and transparency
Zambia, 1997	Energy Regulation Board (ERB)	Energy Regulation Act, Cap 436 of the Laws of Zambia	ERB issues licenses, monitors energy companies, receives and investigates complaints from electricity suppliers and consumers, and designs quality, safety and reliability standards.	Competition and efficiency

Table 3.2: Examples of independent regulators in Africa by year created as of 2021 (continued)

Country and year regulator created	Independent national regulator	Institutional frameworks	Functions	Stated goal(s)
Cameroon, 1998	Agence de Régulation du Secteur de l'Électricité (ARSEL)	Law No. 98/022 of 1998, replaced by Law No. 2011/022 of 2011	ARSEL regulates, controls, and monitors the activities of operators in the electricity sector. ARSEL has the duty to protect the rights of consumers relative to prices, supply and quality of electricity.	Fairness and transparency
Côte d'Ivoire, 1998	L'Autorité nationale de régulation du secteur de l'électricité (Anaré)	Presidential Decree No. 98-726 of 1998, Electricity Law of 2014 replaced this decree	Anaré has authority to control operators in the electricity sector, arbitrate disputes, protect the interests of electricity consumers, and propose tariffs to the government.	Trust among all electricity actors
Senegal, 1998	Electricity Sector Regulatory Commission (CRSE)	The 1998 Electricity Law	CRSE is responsible for preserving the interests of consumers and protecting their rights regarding price, delivery and quality of electricity.	Competition and private sector participation
Niger, 1999	Autorité de Régulation Multisectorielle (ARM)	Order No. 99-044	ARM regulates public utilities, including electricity. It has the authority to grant and revoke licenses of electricity operators. ARM protects consumer interests.	Fair competition
Uganda, 2000	Electricity Regulatory Authority (ERA)	Electricity Act, 1999	ERA regulates the generation, transmission, distribution, sale, export, and import of electricity. It oversees the liberalization of the electricity industry, while managing licensing, rates, safety, and other matters concerning the industry.	Efficient, reliable, and sustainable electricity supply
Rwanda, 2001	Rwanda Utilities Regulatory Agency (RURA)	Law No. 39/2001	RURA regulates public utilities including, electricity.	Sufficient, reliable, affordable, and sustainable energy supply
Nigeria, 2005	Nigerian Electricity Regulatory Commission (NERC) (Replaced the National Electric Power Authority, NEPA)	Electric Power Sector Reform Act 2005	NERC licenses operators, determines operating codes and standards, establishes customer rights and obligations, and sets cost-reflective tariffs.	Transparency, fairness, and accountability
Kenya, 2006	Energy Regulatory Commission (ERC)	Energy Act 2006	ERC regulates electricity, petroleum, renewable energy, and other forms of energy.	Fair competition

Table 3.2: Examples of independent regulators in Africa by year created as of 2021 (continued)

Country and year regulator created	Independent national regulator	Institutional frameworks	Functions	Stated goal(s)
Malawi, 2007	Malawi Energy Regulatory Authority (MERA)	Energy Regulation Act 2004	MERA issues licenses for energy undertakings, approves tariffs and prices of energy sales, monitors and enforces performance standards, arbitrates commercial disputes, and resolves consumer complaints.	Fairness, transparency, and efficiency for sustainable socio-economic development
Tanzania, 2008	Energy and Water Utilities Regulatory Authority (EWURA)	EWURA Act 2006, Electricity Act 2008	EWURA issues licenses, formulates and enforces quality codes and standards, reviews and approves tariffs.	Quality, availability and affordability of electricity
Zimbabwe	Zimbabwe Energy Regulatory Authority (ZERA)	Energy Regulatory Authority Act 2011	ZERA issues licenses to and regulate electricity operators; it has a mandate to extend access to reliable electricity	Energy efficiency, affordability and fair competition
Ethiopia, 2014	Ethiopian Energy Authority (EEA)	Ministry of Council Regulation No. 308/2014	EEA determines quality and standards of service and issues licenses.	Energy efficiency
Botswana, 2017	Botswana Energy Regulatory Authority (BERA)	BERA Act 2016	BERA regulates electricity supply and the Botswana Power Corporation. It sets and maintains service standards and fix tariffs.	Transparency in fixing tariffs
Mozambique, 2017	Energy Regulatory Authority (ARENE)	ARENE Act 2017	ARENE has the authority to approve tariffs, propose new energy legislations and promote competition in energy services.	Competition

Sources: Republic of Ghana (1997); Republic of Zambia (1997); République de Côte d'Ivoire (1998); Republic of Uganda (1999); Republic of Rwanda (2001); Republic of Nigeria (2005); Republic of South Africa (2005); National Council for Law Reporting (2006); Republic of Tanzania (2006); Republic of Malawi (2007); République du Niger (2007); Republic of Cameroon (2011); Republic of Ethiopia (2014); BERA (2019); African Development Bank (2021); République du Sénégal (2021); Energy Regulators Regional Association (2022); ZERA (2022).

The Bretton Woods agencies promoted privatization, in its varied forms, as an instrument to enhance access to investment capital for development (Kikeri and Nellis 2004). As shown below, private investment has increased in generation and distribution since the inception of the standard model of electricity sector reforms in Africa (World Bank 2021d). By contrast, the transmission subsector had received no private investment as of 2017 (PPIAF 2017). Overall, a few countries have privatized their power utilities to date (Nweke-Eze 2021). Subsequent chapters will analyze the political dynamics of privatization of state-owned electricity companies in Ghana and Côte d'Ivoire to show why power utility privatization occurs in some countries but not in others.

Independent power production (IPP) represents the most common form of private investment in the region's electricity sector. Many African countries have signed IPP contracts to offset perennial power production deficits experienced by government-owned power utilities and to improve supply. Côte d'Ivoire was the first African country to allow independent power production in 1994, followed by Kenya in 1996, and Mauritius in 1997. Since then, the number

of private power projects has increased. Yet the spread of IPPs in Sub-Saharan Africa trails other regions. Table 3.3 depicts cross-regional differences in the number of private power projects, total investments, and per capita investment in electricity infrastructure. It shows that a total of 288 privately financed electricity projects reached financial closure, totaling more than 47 billion US dollars in investment over the past three decades. With 43,066 US dollars private investment per capita by the end of 2020, Sub-Saharan Africa had the lowest private investment in electricity.

At least two-thirds (33) of countries in Sub-Saharan Africa have launched private power projects since the 1990s, with the projects unevenly distributed. Out of a total of 288 privately funded electricity infrastructure projects in the region by the end of 2020, seven countries had two-thirds (192). Table 3.4 presents the total number of ongoing private electricity projects, total private investment in electricity infrastructure, and investment per capita in African countries from 1990 to 2020. South Africa stood out with 90 private power projects, followed by Kenya and Uganda with 25 projects apiece. There were 16 privately funded electricity projects in Senegal, 13 in Ghana, 13 in Tanzania, and 10 in Rwanda. The remaining 96 private undertakings spread across 26 countries, including Cameroon (4), Côte d'Ivoire (7), and Botswana (1). Roughly a third of countries in Sub-Saharan Africa, including Benin, Central African Republic, Comoros, Democratic Republic of Congo, Djibouti, Gambia, Mauritania, Niger, Somalia, and Sudan, had no private investment in electricity by the end of 2020. Table 3.5 presents examples of active private power projects in Africa as of 2020.

Project count, however, portrays little or nothing about the amount of private investment in a country's electricity sector, as the projects differ by size and cost. While some countries have attracted more privately financed projects, the monetary value of investments has remained low. Conversely, some countries had a low number of privately funded projects, but they had a high investment value. For instance, as Table 3.4 displays, Uganda's 25 projects represented a total of 1.568 billion US dollars in private investment, whereas Côte d'Ivoire's seven private power projects cost 2.252 billion US dollars. The sole privately funded electricity project in the Republic of Congo received a total of 325 million US dollars, compared to 124 million US dollars for Ethiopia's three private power projects.

Table 3.4 further reveals substantial cross-national variation in private investment per capita in electricity. Out of the 33 countries with privately funded electricity projects, only eight had private investment per capita of 100 US dollars or more by the end of 2020. Private investment per head varied from 10 US dollars to 90 US dollars in at least 50% of the 33 countries with privately funded electricity infrastructure. Eight countries in the region had investment per capita of less than 10 US dollars. For instance, private investment in electricity per capita stood below one dollar in Madagascar (US$0.7) and approximately one dollar in Ethiopia (US$1.1) and Burundi (US$1.3). About 15 countries in Sub-Saharan Africa had no sectoral private investment in 2020. These data intimate that limited private investments have occurred in Africa's electricity sector since the beginning of sectoral reforms.

Table 3.3: Regional differences in privately funded power projects reaching financial closure, 1990-2020

Region	Number of projects	Total investment (Current US$ millions)	Population	Per capita investment (current US$)
Middle East & North Africa	111	34,599	609,862	56,732.5
SSA	288	47,130	1,094,366	43,066
South Asia	723	189,051	1,856,377	101,838.7
East Asia & Pacific	1,021	228,886	2,389,387	95,792.8
Latin Amer. & Caribbean	1,164	318,610	653,962	487,199.6

Source: Data on project count and investment from the World Bank Private Participation in Infrastructure database (2021d); data on population from UN Department of Economic and Social Affairs (2021)

Table 3.4: Cross-national variation in private investment per capita in electricity, 1990-2020

Country	Private investment per capita in electricity (US$)	Total private investment in electricity (US$ million)	Number of privately funded electricity projects	Population (thousand)
Madagascar	0.7	18	2	27,691
Ethiopia	1.1	124	3	114,964
Burundi	1.3	16	1	11,891
Malawi	3.5	67	2	19,130
Burkina Faso	4.2	87	3	20,903
Chad	4.3	70	2	16,426
Angola	8.7	286	7	32,866
Sierra Leone	9	71	3	7,977
Tanzania	11	653	13	59,734
Guinea	12	157	2	13,133
Mali	12	241	2	20,251
Nigeria	12.5	2,577	7	206,140
Mozambique	23	717	6	31,255
Uganda	34.3	1,568	25	45,741
Togo	36.2	300	4	8,279
Botswana	44.2	104	1	2,352
Zimbabwe	45	666	3	14,863
Rwanda	51.7	670	10	12,952
Namibia	52.3	133	7	2,541
Congo, Rep.	59	325	1	5,518

Table 3.4: Cross-national variation in private investment per capita in electricity, 1990-2020 (continued)

Country	Private investment per capita in electricity (US$)	Total private investment in electricity (US$ million)	Number of privately funded electricity projects	Population (thousand)
Kenya	60.1	3,232	25	53,771
Liberia	67.2	340	3	5,058
Senegal	83	1,387	16	16,744
Côte d'Ivoire	85.4	2,252	7	26,378
Cameroon	89.2	2,369	4	26,546
Djibouti	125.5	124	1	988
Mauritius	140.7	179	5	1,272
Cabo Verde	144	80	2	556
Ghana	160.1	4,975	13	31,073
Zambia	166.4	3,060	8	18,384
Saõ Tomé & Príncipe	228.3	50	2	219
Gabon	240.3	535	5	2,226
South Africa	334.2	19,819	90	59,309

Sources: Data from the World Bank Private Participation in Infrastructure database (2021d) and the United Nations Department of Economic and Social Affairs Population Dynamics (2021)

Table 3.5: Examples of private power projects in Sub-Saharan Africa, 1990-2020

Country	Projects	Value of private investment (US$ million)
Botswana	KSE Orapa and Mmashoro IPP	106
Burkina Faso	Zina Solaire	45
	Hydro-Afrique Hydroelectric Plant	6
Cameroon	Kribi Power Plant	342
Cabo Verde	Electra Cabeolica Wind Project	80
Congo, Rep.	Sounda S.A.	325
Côte d'Ivoire	Compagnie Ivoirienne de Production d'Électricité	903
Ethiopia	Daewoo Aysha Wind Farm	120
Gabon	Societé d'Énergie et d'Eau du Gabon	294
Ghana	Kpone Independent Power Project	900
Guinea	Societé Guineenne d'Électricité	36
Mali	Kayes Thermal Power Plant	136
Mauritius	Belle Vue Power Plant	109
Kenya	Aldwych Lake Turkana Wind Farm	764
Liberia	Kataka Power Plant	170
Madagascar	Hydelec Madagascar S.A.	18
Mozambique	Ressano Garcia Gas-Fired Plant	200
Namibia	Ejuva One and Ejuva Two Solar Plants	32
Nigeria	Azura-Edo Gas-Fired Power Plant Phase 1	880
Rwanda	HQ Peat-Fired Power Plant	345

Table 3.5: Examples of private power projects in Sub-Saharan Africa, 1990-2020 (continued)

Country	Projects	Value of private investment (US$ million)
São Tomé & Príncipe	Sinergie Concession Contract	50
Senegal	Thermal Facility	172
Sierra Leone	Addax Biomass Plant	30
South Africa	Xina Solar One CSP	854
Tanzania	Songo Gas to Power Project	316
Zimbabwe	African Power	600

Source: Data from the World Bank Private Participation in Infrastructure database (2021d)

3.6 Conclusion

This chapter sketched post-independence African governments' strategies for developing their electricity sector and the economic and climatic conditions that made them untenable during the 1980s. It documented the proposed neoliberal electricity sector reforms and the extent of their implementation in Africa. It then highlighted the state of private investments in Africa's electricity sector over the last three decades.

During the 1960s and early 1970s, many African countries massively invested in electrification projects to promote industrialization and social transformation. However, in the 1980s, economic and climatic crises constrained their strategies for development in general and electricity in particular. In the same period, African power utilities performed poorly, with some national electricity companies becoming bankrupt. In most African countries, access to electricity remained low, outages occurred frequently, and tariffs lagged behind costs of service.

To address these problems, western donors required African governments to carry out neoliberal electricity sector reforms in return for loans. They expected that the reforms would enhance sectoral performance through private investments. This chapter demonstrated that most countries in Africa have adopted at least one component of the standard model of electricity sector reforms, but none has implemented the full set of recommended policies. Most African countries have established regulatory agencies and permitted independent power production.

Despite broad trends, lots of variation exist. A few countries have privatized power utilities or moved forward with unbundling. Some countries had no private investment in electricity generation as of 2020. What is more, although sectoral performance has generally improved since the inception of sectoral reforms, access rates, supply disruptions, and prices vary. Drivers of divergence in the implementation and outcomes of the electricity sector reforms remain unclear. Why have neoliberal electricity sector policies moved forward more quickly in some countries than others? What explains variation in the outcomes of sectoral reforms? My dissertation responds to these questions. The next chapter explores bivariate associations between frequently cited external factors and sectoral performance. The analysis suggests that external factors correlate with sectoral performance. However, they leave considerable unexplained variation, which requires qualitative analysis to understand the pattern of relationships. Later chapters examine political sources of variation in the trajectories of sectoral reforms and performance in Ghana and Côte d'Ivoire. They use process tracing to tease out interconnections between broader socioeconomic and political developments and developments in the electricity sector. They show that differences in the dynamics of political competition play an important role in differences in electricity sector management, which then influences sectoral performance.

Chapter 4

Statistical Analysis of Electricity Sector Performance in Sub-Saharan Africa

4.1 Introduction

This dissertation argues that variation in the management of the electricity sector and ultimately sectoral performance reflects differences in the dynamics of political competition. This contrasts with some literature that emphasizes the role of external factors in sectoral performance (e.g., Williams and Ghanadan 2006; Gratwick and Eberhard 2008a; Eberhard et al. 2011; Eberhard et al. 2017). This literature lacks a well-developed theory but often cites natural resource endowments (e.g., Zhou and Solomon 2020), macroeconomic shocks (e.g., Feler and Senses 2017), investment climate (e.g., Gratwick and Eberhard 2008a), droughts (e.g., Corrêa da Silva et al. 2016; van Vliet et al. 2016), and civil wars (e.g., Lai and Thyne 2007). The arguments in the literature imply nondeterministic relationships, with external factors framed as contributing to power sector performance.

This chapter explores bivariate relationships between frequently mentioned external factors and indicators of the performance of the electricity sector in Africa (access, reliability, and tariffs).[14] Rather than test hypotheses or reject these relationships, I provided an exploratory overview that shows variation in sectoral performance across Africa and highlights unexplained variation. These plausibility probes suggest that, while frequently cited external factors in the literature may influence sectoral performance, external factors alone provide insufficient understanding of differences in Africa's power sector performance.

As explained in Chapter 2, data limitations influenced my decision to conduct bivariate instead of multivariate analysis. The databases on sectoral performance have a lot of missing data. Table 4.1 presents data sources and the number of countries and years covered in the analysis. It shows that the number of countries and years changes with indicators of sectoral performance, with missing data accounting for this variation. Besides, underreporting of access, consumption, and blackouts can undermine the accuracy of data. Informal practices, including power theft and meter tampering, reduce data accuracy because official sources exclude clandestine uses (Smith 2004; Yakubu and Babu 2017; Jamil and Ahmad 2019). Furthermore, national statistical offices, which provide data to international institutions such as the World Bank and the IEA, lack resources such as technologies and funds to collect and analyze data accurately (Prabhu 2005, 381). Official data may also be made up or otherwise estimated based on limited evidence (Jerven 2013). Moreover, national governments may conceal data on, for example, power outages for political reasons. Blackouts can be embarrassing to governments and opposition politicians can take advantage of data on erratic power cuts to discredit incumbents. These observations imply that such data should be used conservatively and may not support complex analytical techniques. My approach follows Achen's "A Rule of Three (ART)," which encourages researchers to use descriptive statistics and bivariate analysis if their study has no formal theory and the explanatory variables exceed three (Achen 2002, 446). In brief, these techniques provide a sense of associations between external variables and sectoral performance and highlight unexplained variation.

The analysis focuses on the 1990-2019 period. I begin with 1990 when electricity sector reforms started in the region. The analysis ends in 2019 since the impacts of the COVID-19

[14] Refer to Appendix 1 for dimensions of sectoral performance and operationalization.

pandemic on the indicators of sectoral performance and other socioeconomic conditions make 2020 an anomaly (see discussion in Chapter 2). In this study, I considered correlation coefficients (positive/negative) of 0.00 – 0.24 as weak, 0.25 – 0.49 as moderate, 0.50 – 0.74 as strong, and 0.75 – 1.00 as very strong.[15] I highlighted whether associations are statistically significant at the 0.05 significance threshold ($p \leq 0.05$).

The remainder of this chapter has six sections. I explored the associations between natural resources and sectoral performance in section 2 before turning attention to the links between macroeconomic shocks and the performance of the electricity sector in section 3. Section 4 probes relationships between investment climate and access, the reliability of power supply, and electricity prices. I examined droughts in section 5. Section 6 analyzes the correlation between civil war and sectoral performance. The last section concludes that commonly cited external factors and sectoral performance leave a lot of unexplained variation, suggesting that other factors may play critical roles in the differences in sectoral performance. The rest of the dissertation considers the connections between political competition and sectoral policy choices, which in turn drive sectoral performance.

Table 4.1: Summary of variables, data sources and the number of countries and years covered in the statistical analysis*

External factors and sectoral performance indicators		**Data sources**	**Number of countries**	**Number of years**	**Number of observations**
External factors	Natural resource endowments	World Development Indicators	43	30	842
		Energy Information Administration	32	30	960
	Economic shocks	World Development Indicators	48	30	1359
	Investment climate	Moody's	25	10	156
		Doing Business database	48	10	470
	Droughts	Bhaga et al. (2020)	44	30	960
	Civil wars	PRIO	48	60	1440
Indicators of sectoral performance	Access	World Development Indicators	48	30	1359
	Outage frequency	Doing Business database	25	5	84
	Outage Duration	Doing Business database	25	5	83
	Tariffs	Doing Business database	43	5	164

*Notes: I have defined the variables in Appendix 1. In the statistical analysis, the number of observations changes with data availability on different measures of the independent and dependent variables.

[15] These categories and their generous descriptions recognize that my data are not of the highest quality.

4.2 Natural Resource Endowments

Some researchers claim that natural resource endowments drive sectoral performance because fossil fuels and renewable natural resources constitute inputs for electricity production (Gratwick and Eberhard 2008a; Gosens 2017; Zhou and Solomon 2020). They claim that natural resource revenues may help governments to invest in infrastructure, including electricity. Low-cost domestic sources of fuels should reduce costs for electricity producers and consumers. Others argue that natural resource endowments, especially fossil fuels, can lead to a resource curse of poor governance, so that countries do not benefit much from their natural resources (e.g., Collier 2008). In addition, natural resource endowments may not necessarily reflect the availability of resources for use by power utilities. Infrastructure and technology deficits in Africa may undermine the availability of domestic energy resources. Resources may be untapped – the lot of many African countries. An African country may be endowed with energy resources but may have inadequate or no infrastructure for power generation, transmission, or distribution. Infrastructure for conveying energy resources to power stations for electricity production may not exist in some African countries. As the International Energy Agency observed (2014, 433), "the challenge to turn these [oil and gas] discoveries into production and the resulting revenue into public benefits is formidable." Second, many African countries produce much of their energy resources, especially oil and gas, for export rather than for domestic electricity generation. Oil and gas produced in Africa may further serve sectors other than electricity (e.g., transportation and mining).

Based on the claims in the literature, my research probes the following expectations about natural resource endowments: 1) Natural-resource-rich countries can have higher levels of electricity access than natural-resource poor countries because the former has more energy resources and natural resource revenues for expanding access than the latter; 2) Countries that have more natural resources can have lower power outages than those with little or no natural resources, given that revenues and fuels should be more available for electricity generation in natural resource-rich countries than in poor ones; 3) Countries with abundant natural resources are more likely to have lower electricity tariffs than those with limited natural resources since the former can have cheaper fuels for electricity production, whereas the latter may depend on expensive fuel imports; 4) Alternatively, countries with abundant natural resources can have worse performance on all the three indicators.

This study operationalizes natural resource wealth as yearly fuel exports (%, see Appendix 1 for operationalization) and hydro-generation capacity (billion kW). I used annual fuel exports (%) in line with my emphasis on fossil fuels as inputs for power generation and sources of revenues for both investments in infrastructure and citizens' demand for goods and services. But evaluating fossil fuels alone neglects hydro sources of electricity, which are abundant in Africa. I thus varied the operationalization by using hydro-generation capacity (billion kW) to represent natural resource wealth. The World Bank's World Development Indicators provide data on fuel exports as a percentage of total merchandise exports and annual electricity access rates from 1990 to 2019. I obtained data on hydro capacity covering 1990-2019 from the United States' Energy Information Administration. The World Bank's Doing Business database presents data on yearly frequency and duration of outages as well as tariffs for the 2015-2019 period. Many countries have no data, and some countries have more data points than others in the Doing Business database. The analysis of electricity reliability and prices relies on much fewer observations.

Scatterplots (see Figures 4.1 – 4.4) show heteroscedastic and monotonic relationships between fuel exports and indicators of sectoral performance. These associations violate the linearity assumption of Pearson's correlation and thus make Spearman's rank correlation (r_s) an appropriate technique for this analysis (Schober et al. 2018). The Spearman's correlation analysis of data from 43 African countries indicates a weak positive connection between annual fuel exports and access to electricity during 1990-2019 (r_s=0.14, n=842, p<0.001).[16] The probability of less than 0.001 intimates a statistically significant relationship between yearly fuel exports and access. This suggests that, in line with expectation 1 and contrary to the resource curse argument, electricity access rates might increase with a high percentage of fuel exports. Figure 4.1 shows that electricity access ranged from 0.1% to 100% in countries with less than 1% fuel exports. Many countries with a high share of fuel exports (80% of merchandise exports or more) had an access rate of less than 50%. Yet access also varied from 50% to 90% in some countries with 80% or more fuel exports. This heteroscedasticity implies that lack of energy resources might constrain electricity access and energy resource wealth might contribute to higher access rates. Yet energy resource abundance does not necessarily translate into higher levels of access.

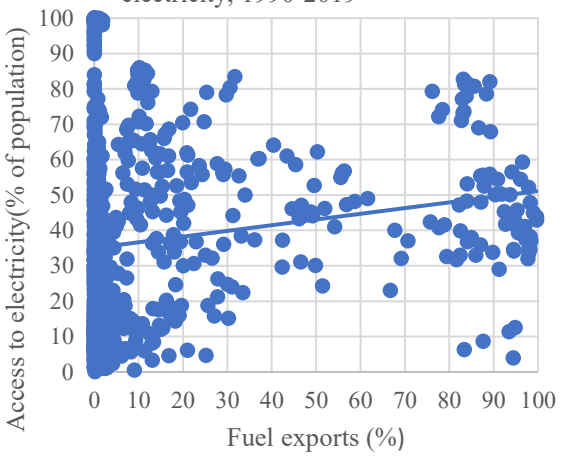
The evidence shows a moderate positive association between yearly fuel exports and annual frequency of power outages in 21 African countries (r_s=0.33, n=68, p<0.007). Fuel exports and frequency of blackouts have a statistically significant association. As seen in Figure 4.2, yearly fuel exports increase with the frequency of outages. The scatterplot reveals only six data points for which fuel exports represent more than 80% of total merchandise exports, and only four data points with more than 800 outages per year. Angola (2018-2019) and Nigeria (2015-2018) are the countries with greater than 80% fuel exports. The four country years with more than 800 blackouts annually represent Kenya in 2015 and Nigeria during 2015-2017. I conducted sensitivity analyses to ascertain whether these outliers drive the statistical relationship. Figures A.2, A.3 and A.4 in Appendix 2 present these re-assessments. They show that the strength of the correlation decreased when I dropped the six outliers based on fuel exports (r_s=0.27, n=62, p<0.04). But the relationship remains moderate positive and statistically significant. Excluding the four outliers based on outages, the association changed to weak positive but statistically insignificant (r_s=0.22, n=64, p<0.08). I found a moderate positive and statistically significant relationship when I excluded all the seven outliers (r_s=0.25, n=61, p-value=0.05). These findings imply that the outliers partly drove the statistical connection. The relationship is consistent and does not fluctuate too much in magnitude, so the statistical connection survives dropping the outliers. On the other hand, the statistical significance is not robust.

Figure 4.3 reveals similar patterns for the duration of power cuts. Some African countries exported more fuels than other merchandise and had shorter power outages. Others with low fuel exports had longer power cuts. In a few instances, as the proportion of fuel exports increased, the hours of outages rose. The results signify that, with a Spearman's correlation coefficient of 0.41 and a probability value close to zero, fuel exports and the duration of power outages have a moderate positive and statistically significant association for 67 observations from 21 countries in Africa during 2015-2019 (see Figure 4.3).

[16] I categorized correlation coefficient (positive/negative) of 0.00 – 0.24 as weak, 0.25 – 0.49 as moderate, 0.50 – 0.74 as strong, and 0.75 – 1.00 as very strong.

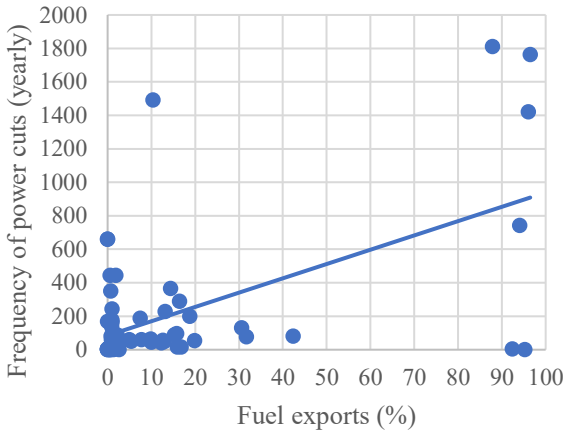
The Spearman's correlation analysis of data from 36 countries in Africa reveals a weak negative connection between fuel exports and electricity prices during 2015-2019 (r_s=-0.12; n=164, p-value=0.13). Electricity prices varied from 3.8 US cents per kilowatt-hour to 37.1 US cents per kilowatt-hour in African countries with low shares of fuel exports in total merchandise. Tariffs also ranged from 4.5 US cents to 26 US cents in countries with 50% annual fuel exports or greater. This relationship is not statistically significant.

Figure 4.1: Fuel exports and access to electricity, 1990-2019



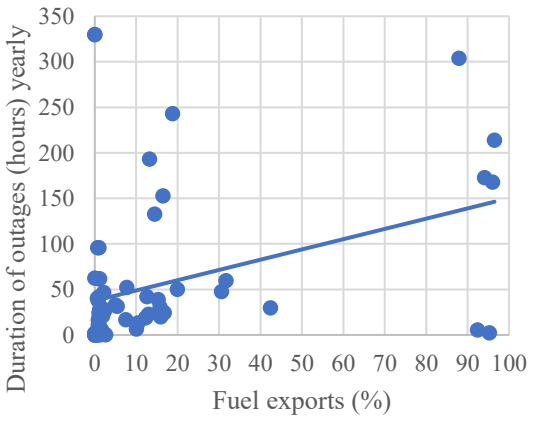
African countries=43 N=842 Rho=0.14
t-stat=4.09 p-value<0.001

Figure 4.2: Fuel exports and outage frequency, 2015-2019



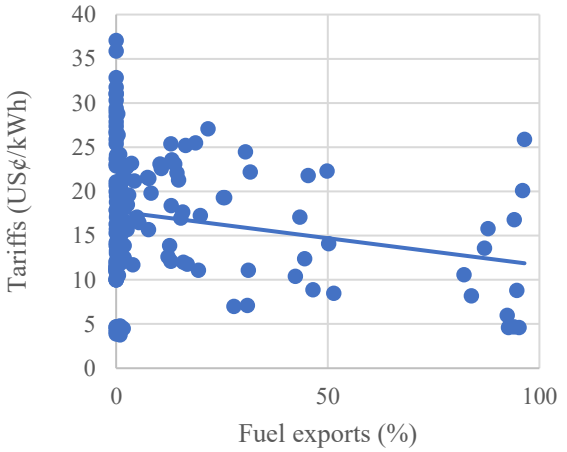
African countries=21 N=68 Rho=0.33
t-stat=2.79 p-value=0.007

Figure 4.3: Fuel exports and outage duration, 2015-2019



African countries=21 N=67 Rho=0.41
t-stat= 3.62 p-value= 0.0006

Figure 4.4: Fuel exports and electricity prices, 2015-2019



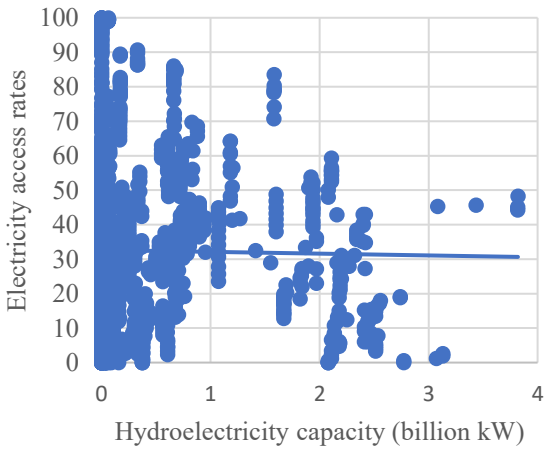
African countries=36 N=164 Rho=-0.12
t-stat= -1.54 p-value= 0.13

Last, as indicated earlier in this section, I conducted an alternative analysis by operationalizing natural resource endowments as hydro capacity (billions kW). The findings of Spearman's correlation analysis for hydro capacity do not change much from the results for fossil fuels. They show a weak positive and statistically significant relationship between hydro

capacity and electricity access during 1990-2019 (r_s=0.08; n=1,436, p-value<0.01, Figure 4.1A). They further suggest a moderate positive and statistically significant link between hydro capacity and the frequency of outages in 25 African countries during 2015-2019 (r_s=0.26; n=84, p-value=0.02, Figure 4.2A). I found that hydro capacity and the duration of power outages have a statistically negligible correlation in 25 African countries in 2015-2019 (r_s=0.07; n=83, p-value=0.53, Figure 4.3A). The analysis of data from 43 African countries also intimates a strong negative and statistically significant relationship between hydro capacity and electricity prices during 2015-2019 (r_s=-0.62; n=215, p-value<0.01, Figure 4.4A).

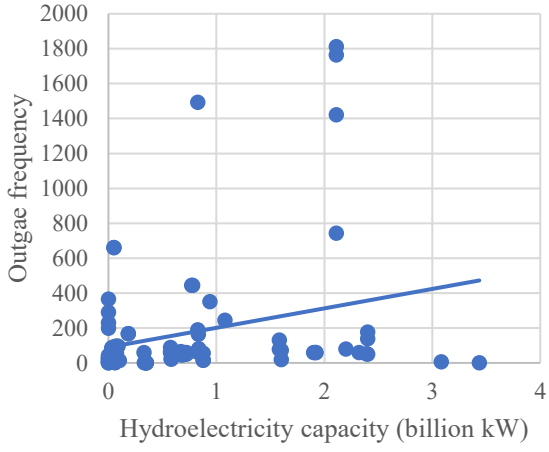
In a nutshell, fuel exports and different indicators of sectoral performance have associations of varying strength and direction. There is a weak positive but statistically significant relationship between fuel exports and electricity access, a moderate positive and statistically significant link between fuel exports and electricity outages, and a weak negative and statistically insignificant correlation between fuel exports and electricity prices. Similarly, hydro capacity relates with different dimensions of electricity sector performance differently. There exists a weak positive and statistically significant connection between hydro capacity and electricity access, a moderate positive and statistically significant relationship between hydro capacity and outage frequency, a weak positive and statistically significant correlation between hydro capacity and outage duration, and a strong negative and statistically significant relationship between hydro capacity and electricity prices. This evidence confirms the expectation that countries with abundant natural resources (fossil fuels/hydro) may have higher electricity access rates. It contradicts the expectation that a higher natural resource endowment (fossil fuels/hydro) can lead to a more reliable electricity supply and thus supports the natural resource curse hypothesis. The results, especially for electricity reliability, intimate that some analysts may have inferred general relationships based on the experience of prominent outliers. The findings suggest that countries with abundant natural resources may not use them domestically to produce electricity. For example, Nigeria lacks a refinery capacity and exports its oil. Nevertheless, the analysis reveals considerable unexplained variation in sectoral performance and thus the need for a qualitative analysis.

Figure 4.1A: Hydro capacity and access to electricity, 1990-2019



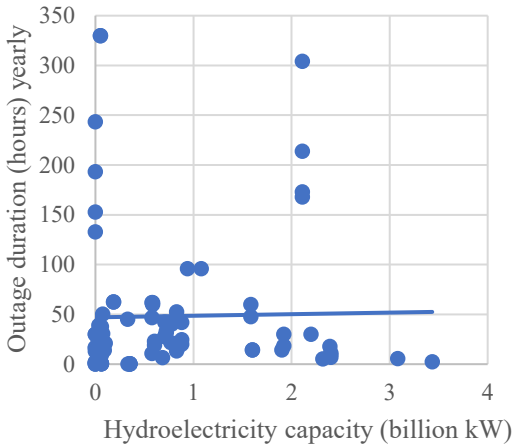
N=1436 Rho=0.08
t-stat=2.92 p-value<0.01

Figure 4.2A: Hydro capacity and outage frequency, 2015-2019



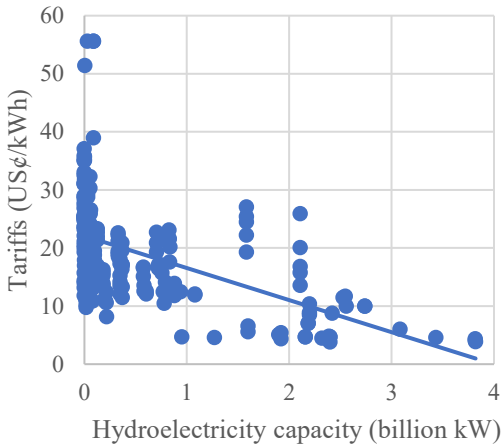
N=84 Rho=0.26
t-stat=2.43 p-value=0.02

Figure 4.3A: Hydro capacity and outage duration, 2015-2019



N=83 Rho=0.07
t-stat=0.63 p-value=0.53

Figure 4.4A: Hydro capacity and electricity prices, 2015-2019



N=215 Rho=-0.62
t-stat=-11.67 p-value<0.01

4.3 Economic Shocks

Economic shocks, including commodity booms and busts and financial crises, can affect economic growth, investments in infrastructure and consumer spending by increasing or decreasing resources available to governments and citizens (Collier 2008; Harvey et al. 2017; Feler and Senses 2017). Based on the detailed literature review of economic shocks in Chapter 1, negative macroeconomic shocks are expected to lead to lower electricity access by depleting revenues and then curtailing investments in generation capacity and access and undermining citizens' capacity to pay for electricity. Similarly, the literature assumes that negative economic shocks can reduce the reliability of electricity supply by hindering repairs and maintenance of the grid and the expansion of generation capacity through low revenues. For countries that depend on commodity imports, high electricity tariffs may result from increases in global prices for commodities. In contrast, positive economic shocks are anticipated to engender improvements in electricity access and power supply as well as low electricity tariffs by spurring investments in electricity infrastructure and boosting citizens' demand for electricity.

I analyzed these predicted associations using changes in GDP per capita growth (yearly %), given that macroeconomic shocks can increase or depress economic growth. Annual GDP per capita growth accounts for not only economic growth but also variation in population sizes (refer to Appendix 1 for operationalization). The World Bank's World Development Indicators present data on yearly GDP per capita growth and annual access rates from 48 countries in Sub-Saharan Africa over the period of 1990-2019. I accessed data on the annual frequency and duration of power cuts from the World Bank's Doing Business database. These data cover the 2015-2019 period, and the number of observations varies across countries. I count as a shock an increase or decrease of at least 2 (+2/-2) in a country's yearly GDP per capita growth rate. One (1) represents years with positive shocks, -1 denotes negative shock years, and 0 signifies non-shock years. The indicators of sectoral performance have continuous data. I assumed that shocks would affect indicators of sectoral performance within the same year by increasing or decreasing prices of goods and services and incomes of governments and consumers nearly immediately. Alternatively, the effects of shocks on sectoral performance can delay for a year or more.

Pearson's and Spearman's correlations are inappropriate for analyzing the trichotomous data on the values of economic shocks. Pearson's correlation assumes linear relationships between the independent and the dependent variables with no outliers and requires continuous data (Schober et al. 2018). By contrast, Spearman's correlation assumes monotonic and non-linear connections between two variables (Schober et al. 2018). The boxplots (Figures 4.5 – 4.8)[17] suggest a violation of these assumptions and further indicate that the data are not normally distributed. The Kruskal-Wallis test offers a more appropriate technique for analyzing relationships between economic shocks and indicators of sectoral performance. A non-parametric version of One-Way ANOVA (Analysis of Variance), the Kruskal-Wallis test is used to find out whether there is a statistically significant difference among three or more measures of the independent variable (Hecke 2012). In a Kruskal-Wallis analysis, researchers conventionally reject the null hypotheses (H_0) (i.e., there is no statistically significant relationship) if the Kruskal-Wallis test statistic (H) is greater than the critical chi-square value. I consider the relationship statistically significant if the probability value is less than 0.05. Conversely, researchers accept the null hypotheses if the Kruskal-Wallis test statistic (H) is less than the critical chi-square value. I used the Kruskal-Wallis test to examine the following null hypotheses:

H_0 1: Access rate is identical across all the three values of economic shocks.
H_0 2: The frequency and duration of power outages are the same for the three values of economic shocks.
H_0 3: Electricity tariffs do not differ during years of negative shocks, positive shocks, and no shock.

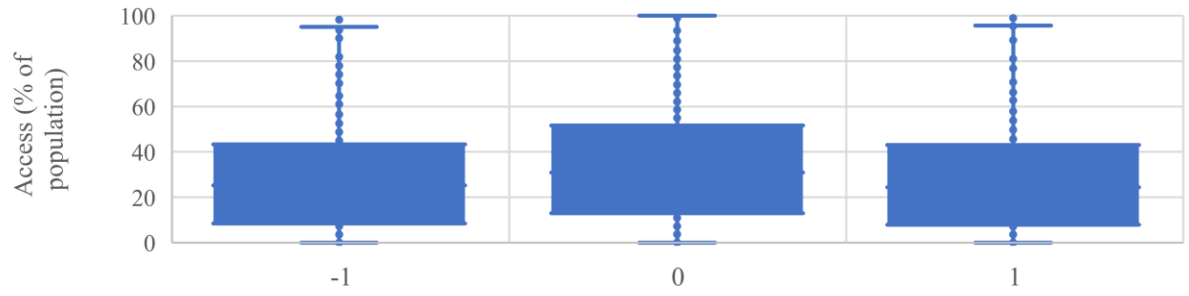
The Kruskal-Wallis analysis, however, reveals little or nothing about how exactly different types of economic shocks (positive shocks, negative shocks, and no shocks) relate to the indicators of sectoral performance. I used the point-biserial correlation to analyze the strength and direction of associations between the values of economic shocks and sectoral performance. The point biserial correlation is used to examine relationships between a variable that involves dichotomous measures and continuous data (LeBlanc and Cox 2017). Thus, for this analysis, I recoded the data to create a series of dichotomous variables as follows: no shock (0) and any shock (1), whether positive or negative; no negative shock (0) (i.e., data initially coded as 0 or 1) and negative shock (1); and no positive shock (i.e., data previously coded as 0 and -1) and positive shock (1). Like the Pearson's and the Spearman's correlation, the point-biserial correlation coefficient takes on values from negative one (-1) to positive one (1), with minus one representing a perfectly negative association, zero indicating a lack of relationship, and plus one showing a perfectly positive connection. In this study, a correlation coefficient (positive/negative) of 0.00 – 0.24 means a weak association, 0.25 – 0.49 suggests a moderate relationship, 0.50 – 0.74 signifies a strong link, and 0.75 – 1.00 indicates a very strong connection.

Figure 4.5 shows the analysis and summary statistics for economic shocks and access. The Kruskal-Wallis test found a statistically significant difference in electricity access rates among

[17] In this chapter, bottom whiskers represent the lowest data points (the lower 25% of the data), upper whiskers indicate the highest data points (the upper 25% of the data), the boxes show the middle 50% of the data points (i.e., the range between the 25th and the 75th percentile), X signifies the mean, and the dots outside the bottom and the upper whiskers depict outliers.

the three values of economic shocks during 1990-2019 (H=19.5; chi-square=5.99; p-value<0.01). The Kruskal-Wallis test statistic of 19.5, the chi-square value of 5.99 and the probability value of close to zero suggest a large statistical significance. Figure 4.5 shows that electricity access rates were lower during negative and positive shock years than in no-shock years. Figures 4.6 – 4.8 illustrate the Kruskal-Wallis analyses for outages and tariffs. The results show a statistically significant difference among the values of economic shocks for the frequency of power cuts (H=6.03, chi-square=5.99, p-value=0.05) and for the duration of outages (H=7.65, chi-square=5.99, p-value=0.02) during 2015-2019. With a Kruskal-Wallis test statistic (H) of 2.73, chi-square equals to 5.99, and a probability value of 0.3, the values of economic shocks and electricity prices lack a statistically significant relationship. As Figure 4.8 reveals, on average, positive shock years had pricier tariffs than non-shock years and negative shock years. Put together, the results for the Kruskal-Wallis analyses indicate a lot of unexplained variation in sectoral performance.

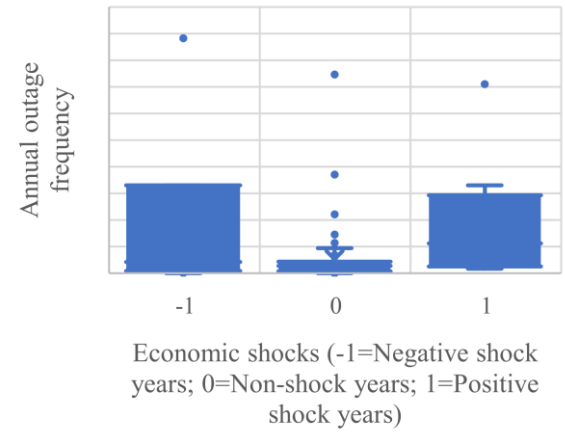
Figure 4.5: Economic shocks and access (%), 1990-2019



N=1359
Kruskal-Wallis test statistic (H)=19.5
Chi-square=5.99
p-value<0.01

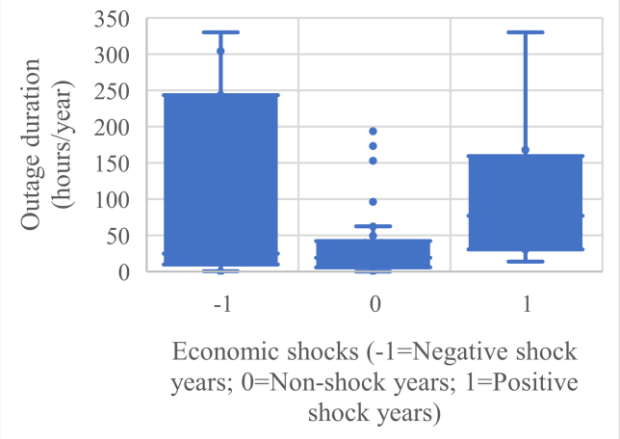
Mean of access rates when x=-1: 29.5
Mean of access rates when x=0: 35.3
Mean of access rates when x=1: 30.1

Figure 4.6: Economic shocks and outage frequency, 2015-2019



Countries=25 N=84
Kruskal-Wallis test statistic (H)= 6.03

Figure 4.7: Economic shocks and outage duration, 2015-2019

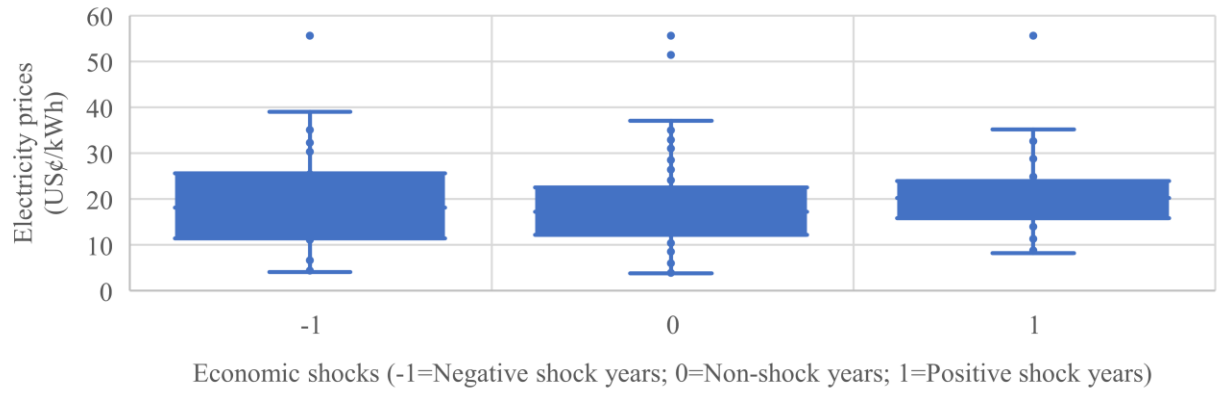


Countries=25 N=83
Kruskal-Wallis test statistic (H)= 7.65

Chi-square= 5.99
p-value=0.05
Mean of outage frequency when x=-1: 434.4
Mean of outage frequency when x=0: 105.4
Mean of outage frequency when x=1: 379.4

Chi-square= 5.99
p-value=0.02
Mean of outage duration when x=-1: 110.6
Mean of outage duration when x=0: 31.2
Mean of outage duration when x=1: 107.6

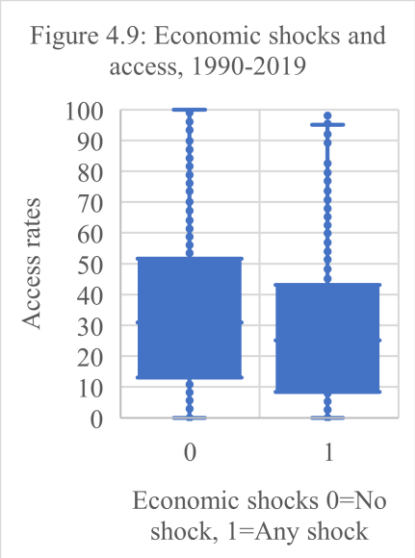
Figure 4.8: Economic shocks and electricity prices, 2015-2019



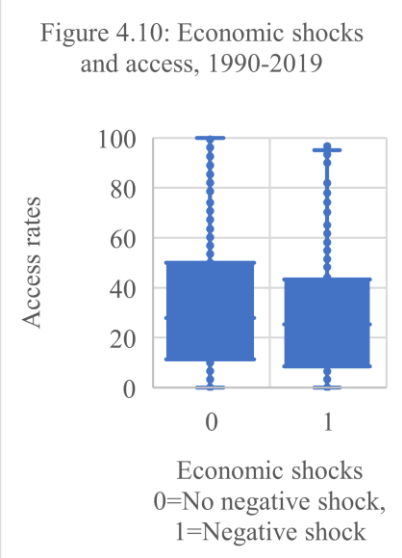
Countries=43 N=215
Kruskal-Wallis test statistic (H)=2.73
Chi-square=5.99
p-value=0.26

Mean of electricity tariffs when x=-1: US¢19.1/kWh
Mean of electricity tariffs when x=0: US¢18.2/kWh
Mean of electricity tariffs when x=1: US¢21.1/kWh

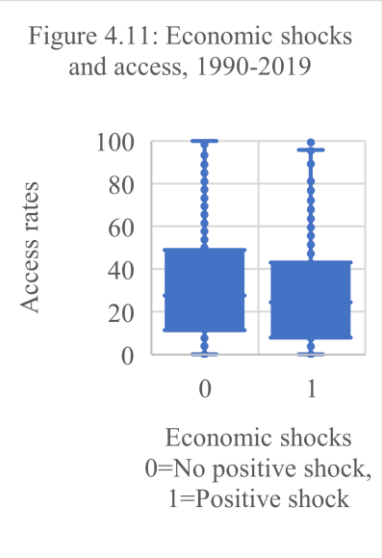
As mentioned on page 58, the Kruskal-Wallis test does not tell anything about how each value of economic shocks relates to the indicators of sectoral performance. I thus conducted a point biserial correlation analysis to understand the strength and direction of the associations by re-coding the measures of the independent variable into binary variables (see page 58 for details on the point biserial correlation). The dichotomous variables are no shock (0) and any shock (1), whether positive or negative; no negative shock (0) (data initially coded as 0 or 1) and negative shock (1); and no positive shock (data previously coded as 0 and -1) and positive shock (1). The results intimate that economic shocks and electricity access have a weak negative and statistically significant relationship when comparing periods of no shock to those with any shock (r_{pb}=-0.11, n=1359, p-value<0.01, see Figure 4.9). In addition, the results suggest a weak negative connection between economic shocks and electricity access when comparing no negative shock with negative shock years (r_{pb}=-0.07, n=1359, p-value=0.01). With a probability value of 0.01, this association is statistically significant (see Figure 4:10). As Figure 4.11 displays, the point-biserial analysis found a weak negative and statistically significant correlation between economic shocks and electricity access rates when comparing years of positive shocks with no positive shock years (r_{pb}=-0.05, n=1359, p-value=0.05). These results imply that any shocks and negative shocks have expected strength and direction. In other words, access tends to be lower in country years with any shocks, whether positive or negative, and in country years with negative shocks. Positive shocks lack expected effects.



N=1359 r_{pb}=-0.11 t-stat=-3.92 p-value<0.01
Mean of y when x=0: 35.3
Mean of y when x=1: 29.8



N=1359 r_{pb}=-0.07 t-stat=-2.49 p-value=0.01
Mean of y when x=0: 33.5
Mean of y when x=1: 29.5

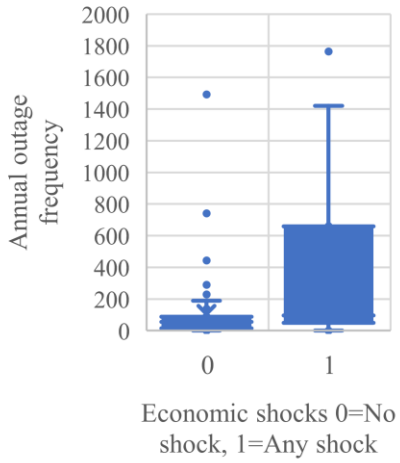


N=1359 r_{pb}=-0.05 t-stat=-1.93 p-value=0.05
Mean of y when x=0: 33.2
Mean of y when x=1: 30.2

Figures 4.12 – 4.14 depict the relationships for the point-biserial analysis for economic shocks and annual frequency of power cuts. The results show a moderate positive and statistically significant connection between economic shocks and frequency of blackouts when comparing times of no shock with any shock (r_{pb}=0.36, n=84, p-value<0.01). Economic shocks and outage frequency have a moderate positive and statistically significant relationship when comparing no negative shock years with negative shock years (r_{pb}=0.28, n=84, p-value<0.01). The results reveal a weak positive but statistically insignificant association between economic shocks and frequency of outages when comparing no positive shock years with positive shock years (r_{pb}=0.19, n=84, p-value=0.09). Table 4.2 summarizes these results. The findings mean that any shocks and negative shocks have expected effects. Outages tend to be more frequent during country years with any shocks and negative shocks. Positive shocks have opposite direction and lack statistical significance.

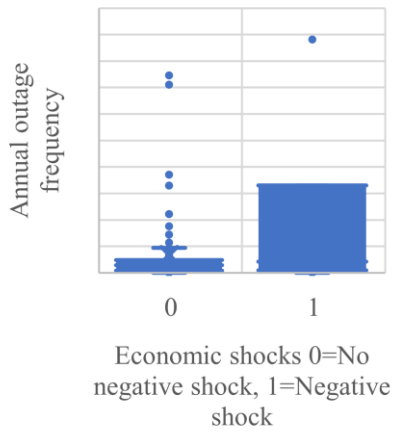
In addition, the point-biserial correlation analysis of 83 data points from 25 countries in Africa for 2015-2019 indicates that economic shocks and outage duration have a moderate positive and statistically significant correlation when comparing years of no shock with any shock years (r_{pb}=0.45, n=83, p-value<0.01, see Figure 4.15). With a point-biserial correlation coefficient equals to 0.33 and a probability value of nearly zero, the results suggest a moderate positive and statistically significant link between negative economic shocks and the duration of blackouts relative to years with no negative shock. Figure 4.16 illustrates that users experienced more hours of power cuts on average in negative shock years (110.6 hours) than in no negative shock years (39.7 hours) during 2015-2019. The results intimate a moderate positive and statistically significant correlation between economic shocks and blackout duration when comparing times of no positive shock with positive shock years (r_{pb}=0.26, n=83, p-value=0.02, Figure 4.17). The findings mean that any shocks and negative shocks have expected effects, but positive shocks have opposite direction and lack anticipated effects (see Table 4.2). That is, power outages tend to be longer during country years with any shocks and negative shocks.

Figure 4.12: Economic shocks and outage frequency, 2015-2019



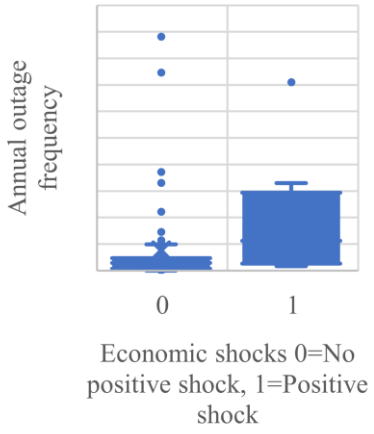
N=84 r_{pb}=0.36 t-stat=3.47
p-value<0.01
Mean of y when x=0: 105.4
Mean of y when x=1: 411.3

Figure 4.13: Economic shocks and outage frequency, 2015-2019



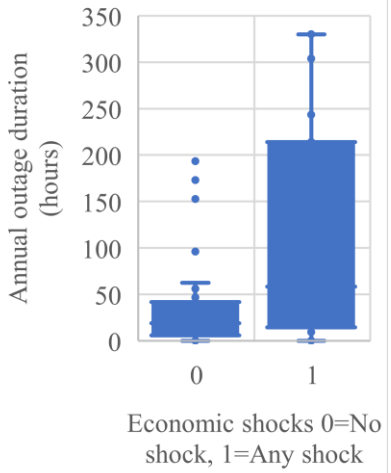
N=84 r_{pb}=0.28 t-stat=2.66
p-value<0.01
Mean of y when x=0: 135.4
Mean of y when x=1: 434.4

Figure 4.14: Economic shocks and outage frequency, 2015-2019



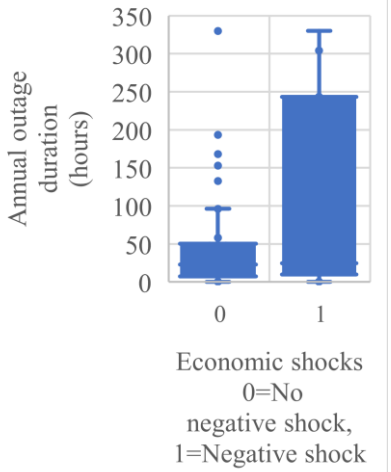
N=84 r_{pb}=0.19 t-stat=0.09
p-value=0.09
Mean of y when x=0: 153
Mean of y when x=1: 379.4

Figure 4.15: Economic shocks and outage duration, 2015-2019



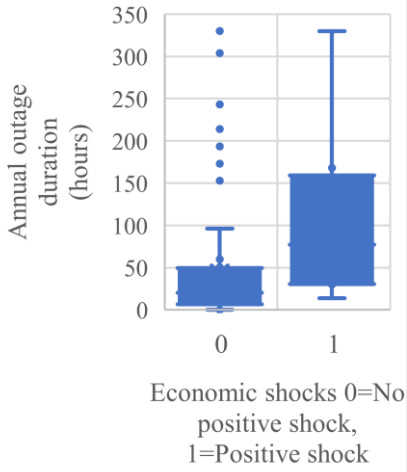
N=83 r_{pb}=0.45 t-stat=4.57
p-value<0.01
Mean of y when x=0: 31.2
Mean of y when x=1: 109.3

Figure 4.16: Economic shocks and outage duration, 2015-2019



N=83 r_{pb}=0.33 t-stat=3.17
p-value<0.01
Mean of y when x=0: 39.7
Mean of y when x=1: 110.6

Figure 4.17: Economic shocks and outage duration, 2015-2019



N=83 r_{pb}=0.26 t-stat=2.46
p-value=0.02
Mean of y when x=0: 42.9
Mean of y when x=1: 107.6

The point biserial correlation analysis of evidence from 43 countries in Africa for this period reveals a weak positive but statistically insignificant relationship between economic shocks and electricity prices when comparing years of no shock with any shock years (r_{pb}=0.09, n=215, p-value=0.17, see Figure 4.18). This means that any economic shock, whether positive or negative, is associated with higher tariffs, but there is a lot of unexplained variation. The point-biserial correlation coefficient of nearly zero (0.01) and the probability value of 0.83 suggest a statistically negligible relationship when comparing no negative shock years with negative shock

years. Figure 4.19 presents this connection. Last, the analysis found a weak positive but statistically insignificant link between economic shocks and electricity prices when comparing no positive shock years with positive shock years (r_{pb}=0.11, n=215, p-value=0.12, see Figure 4.20). These findings imply that any shocks, negative shocks, and positive shocks have expected direction but lack statistical significance.

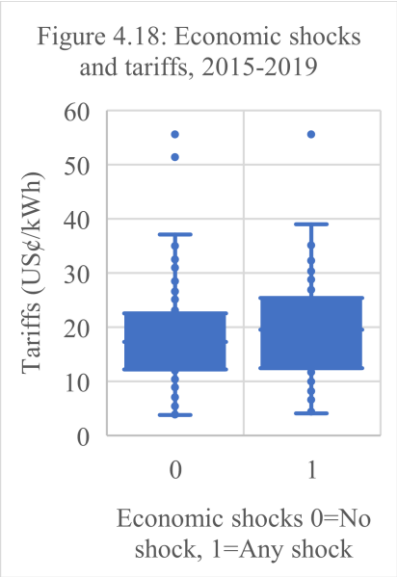


Figure 4.18: Economic shocks and tariffs, 2015-2019

N=215 r_{pb}=0.09 t-stat=1.37 p-value=0.17
Mean of y when x=0: 18
Mean of y when x=1: 20

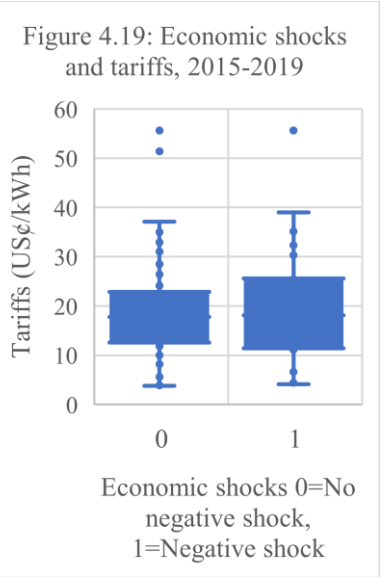


Figure 4.19: Economic shocks and tariffs, 2015-2019

N=215 r_{pb}=0.01 t-stat=0.21 p-value=0.83
Mean of y when x=0: 18.8
Mean of y when x=1: 19.1

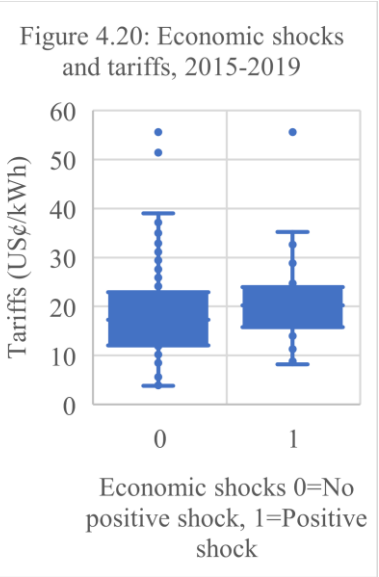
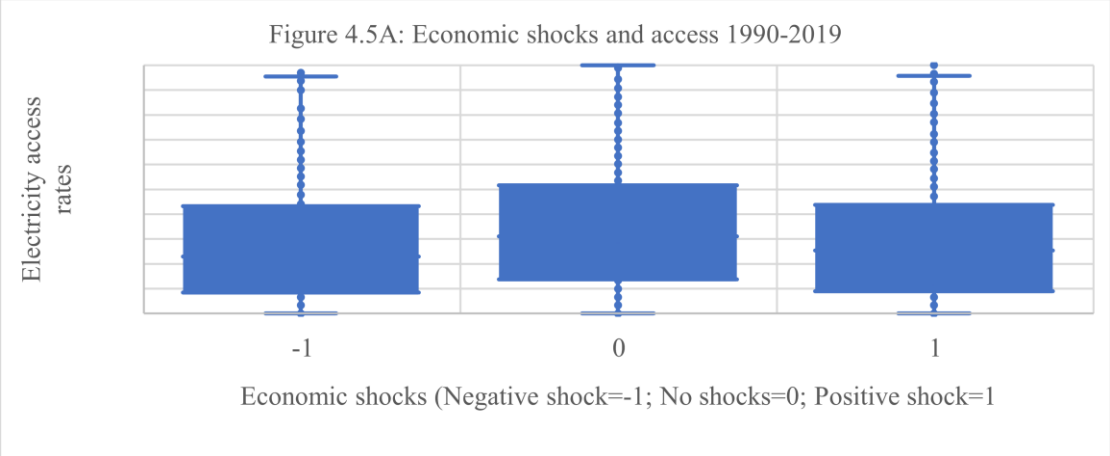


Figure 4.20: Economic shocks and tariffs, 2015-2019

N=215 r_{pb}=0.11 t-stat=1.56 p-value=0.12
Mean of y when x=0: 18.4
Mean of y when x=1: 21.1

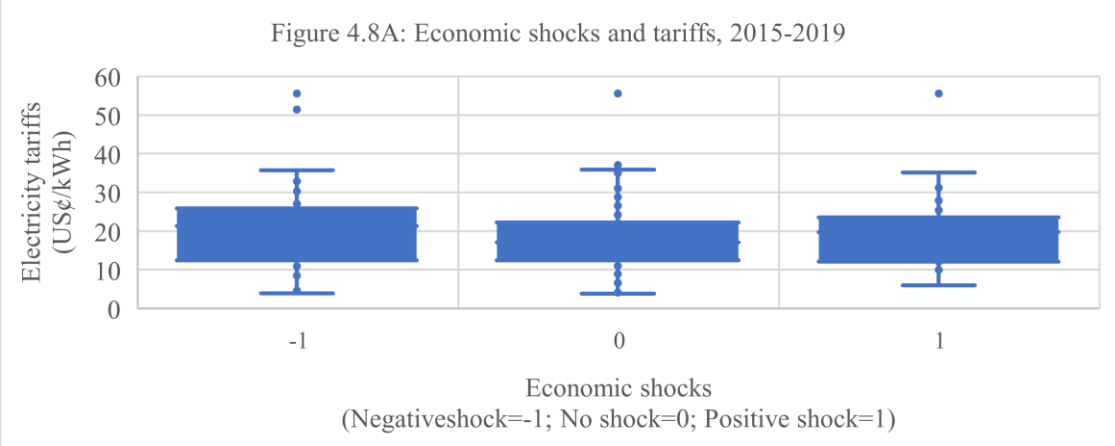
I further conducted alternative analyses that account for lag effects on electricity access and prices. Missing data made lags impossible for the analysis for power outages. Figures 4.5A and 4.8A display the findings. They show that the results did not change much. The Kruskal-Wallis analysis with one year lag found a statistically significant association between economic shocks and electricity access (H=20.7, chi-square=5.99, p-value<0.01).[18] The results suggest that the values of economic shocks and electricity prices do not have a statistically significant relationship (H=4.1, chi-square=5.99, p-value=0.13).

[18] Missing data account for the drop in the total number of data points from 1359 to 1260. I eliminated countries with missing data to allow for lagging.



1 year lag N=1260
Kruskal-Wallis test statistic (H)=20.7
Chi-square=5.99
p-value<0.01

Mean of access rates when x=-1: 29.2
Mean of access rates when x=0: 35.9
Mean of access rates when x=1: 31.1



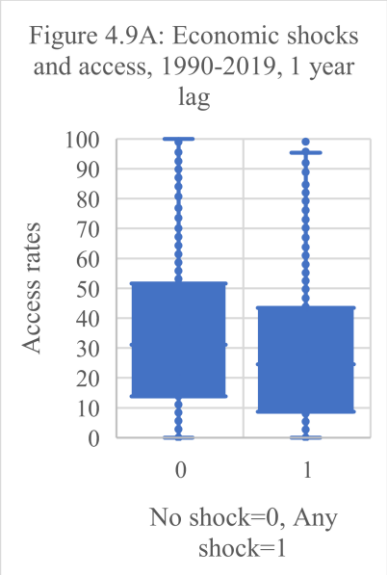
1 year lag N=215
Kruskal-Wallis test statistic (H)=4.1
Chi-square=5.99
p-value<0.13

Mean of tariffs when x=-1: US¢21.1/kWh
Mean of tariffs when x=0: US¢17.8/kWh
Mean of tariffs when x=1: US¢20.1/kWh

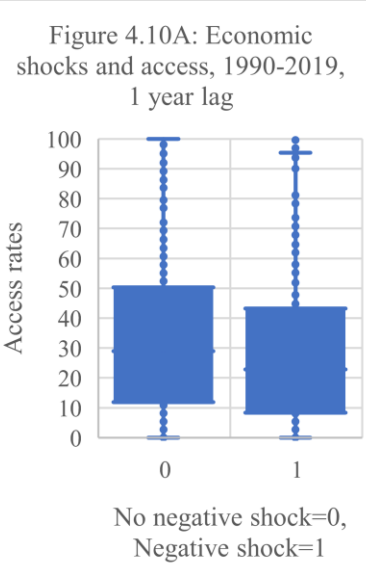
Figures 4.9A – 4.11A present the point-biserial correlation analysis for shocks and access with one year lag during 1990-2019. The findings indicate a weak negative and statistically significant correlation between economic shocks and access when comparing no shock years to any shock years (r_{pb}=-0.11, n=1260, p-value<0.01, Figure 4.9A). The analysis reveals a weak negative relationship between economic shocks and electricity access when comparing no negative shock years and negative shock years (r_{pb}=-0.08, n=1260, p-value<0.01, Figure 4.10A). There is a weak negative and statistically insignificant association between economic shocks and electricity access when comparing positive shock years with no positive shock years (r_{pb}=-0.03, n=1260, p-value=0.22, Figure 4.11A).

Figures 4.18A – 4.20A show the point-biserial analysis for electricity tariffs with one year lag during 2015-2019. The correlation between shocks and tariffs strengthens, the direction remains the same, and the relationship changes from statistically insignificant to statistically significant when comparing no shock years with any shock years (r_{pb}=0.15, n=215, p-

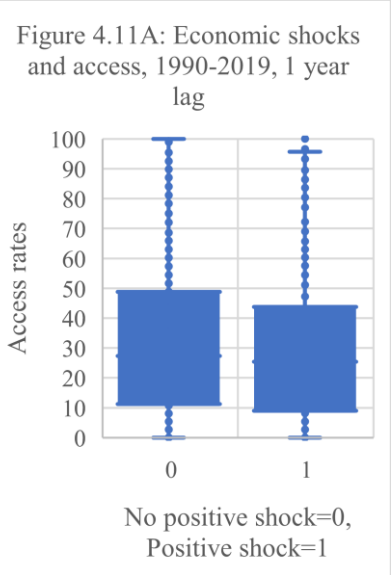
value=0.03, Figure 4.18A). Moreover, the results show that the connection between shocks and tariffs strengthens but remains statistically insignificant when comparing no negative shock years with negative shock years (r_{pb}=0.12, n=215, p-value=0.07, Figure 4.19A). The findings suggest that the association between shocks and electricity prices weakens and remains statistically insignificant when comparing no positive shock years with positive shock years (r_{pb}=0.06, n=215, p-value=0.35, Figure 4.20A).



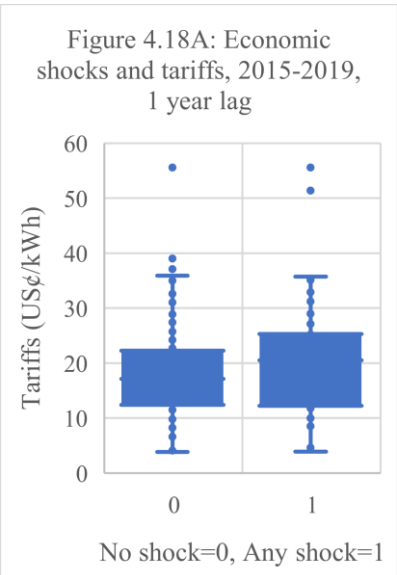
N=1260 r_{pb}=-0.11 t-stat=-3.86 p-value<0.01
Mean of y when x=0: 35.9
Mean of y when x=1: 30.1



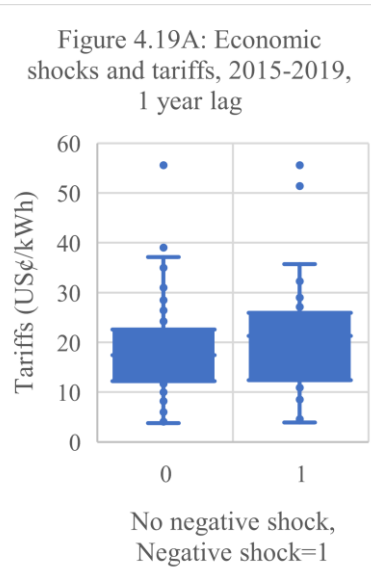
N=1260 r_{pb}=-0.08 t-stat=-3.0 p-value=0.01
Mean of y when x=0: 34.2
Mean of y when x=1: 29.2



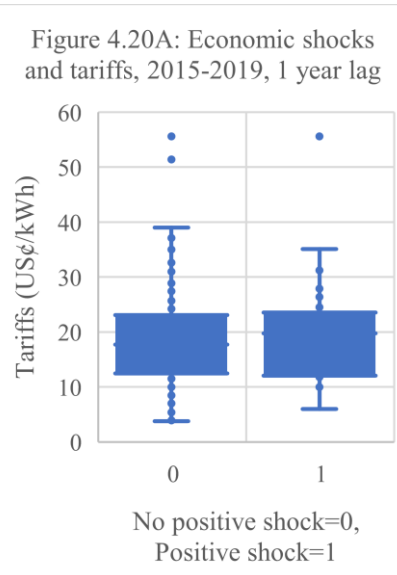
N=1260 r_{pb}=-0.03 t-stat=-1.23 p-value=0.21
Mean of y when x=0: 33.3
Mean of y when x=1: 31.1



N=215 r_{pb}=0.15 t-stat=2.25 p-value=0.03
Mean of y when x=0: 17.8
Mean of y when x=1: 20.7



N=215 r_{pb}=0.12 t-stat=1.83 p-value=0.07
Mean of y when x=0: 18.3
Mean of y when x=1: 21.1



N=215 r_{pb}=0.06 t-stat=0.94 p-value=0.35
Mean of y when x=0: 18.6
Mean of y when x=1: 20.2

To sum up, the Kruskal-Wallis analysis indicates a statistically significant association between economic shocks and electricity access and electricity outages. It suggests a statistically insignificant relationship between economic shocks and tariffs. Table 4.2 summarizes the expectations and findings for the point biserial analysis. Consistent with expectations in the literature, the results imply a statistically significant relationship between access and any shock, negative shocks, and positive shocks. The results reveal that any shocks and negative shocks have expected effects on the frequency and duration of power cuts. The relationship between positive shocks and outage frequency has expected direction but lacks statistical significance. Table 4.2 intimates statistically insignificant associations between tariffs and economic shocks, whether any shocks, positive shocks, or negative shocks. Negative shocks are more consistently related to sectoral performance (access and outages) than positive shocks. The relationships reflect considerable unexplained variation and call for a qualitative analysis.

Table 4.2: Summary of the point biserial analysis for economic shocks

Indicators of sectoral performance	Types of economic shocks	Sign	Strength	Statistically significant
Access	Any shock	–	Weak	Yes
Access	Negative shock	–	Weak	Yes
Access	Positive shock	–	Weak	Yes
Outage frequency	Any shock	+	Moderate	Yes
Outage frequency	Negative shock	+	Moderate	Yes
Outage frequency	Positive shock	+	Weak	No
Outage duration	Any shock	+	Moderate	Yes
Outage duration	Negative shock	+	Moderate	Yes
Outage duration	Positive shock	+	Moderate	Yes
Tariffs	Any shock	+	Weak	No
Tariffs	Negative shock	+	Weak	No
Tariffs	Positive shock	+	Weak	No

4.4 Investment Climate

Investment climate is vital for market-oriented electricity reforms because it influences private investors' decisions. The electricity sector reforms promoted by the World Bank (1994) assume that privatization will improve sectoral performance because it will lead to competition among private investors and the investors will respond to competition by improving efficiency and quality of service (e.g., reliability) and lowering costs. If the investment climate is poor, however, the electricity sector might not attract enough interest from private investors to drive competition and then sectoral performance.

To analyze these claims, I first operationalized investment climate as credit ratings and then employed the ease of doing business scores as an alternative indicator of investment climate. I used Moody's credit ratings, which signify a country's creditworthiness, to measure investment climate. This follows Eberhard and co-authors who used credit ratings to examine the nexus between investment climate and sectoral performance in Africa (e.g., Gratwick and Eberhard 2008a; Eberhard et al. 2016, 2017). Investors consider many factors, including credit ratings or the likelihood of default. The likelihood of default seems especially pertinent when investing in public utilities, given the known problem of African governments neither paying their own utility bills nor meeting their financial commitments to existing utilities. Moreover, public sector creditworthiness matters for private investments in the electricity sector because private investors usually have African governments and state-owned electricity companies as counterparties. For example, in many African countries, an independent power production (IPP)

contract is signed between a private player and an offtaker (buyer), typically a government or state-owned power utility. As a counterparty, a government lacking credit worthiness may struggle to get IPPs and thus rely on the World Bank and sovereign guarantees to attract them.

Moody's divides its credit ratings into two categories: investment and non-investment grades. According to Moody's (2018), countries with investment grade ratings will honor their financial obligations. Investment grades comprise Aaa, Aa1, Aa2, Aa3, A1, A2, A3, Baa1, Baa2, and Baa3 (Moody's 2018). Aaa stands for the highest investment grade whereas Baa3 denotes the lowest investment grade. On the other hand, countries with non-investment grade ratings present high credit risks – a low probability of recouping principal investments or interests (Moody's 2018). Credit ratings of Ba1, Ba2, Ba3, B1, B2, B3, Caa1, Caa2, Caa3, Ca, and C constitute non-investment grades (Moody's 2018). Moody's assigns WR – Withdrawn Rating – to countries whose investment climate it has stopped assessing (Moody's 2021c). It ascribes NR – Not Rated – to countries it does not rate for lack of adequate and reliable information about their creditworthiness (Moody's 2021c).

I accessed and analyzed Moody's credit ratings for 2010-2019 from the agency's website and "Sovereign Ratings History" obtained from its Analytics Client Service. Table 4.3 shows the rarity of investment grade ratings in Africa. The number of countries with investment grades decreased over time. In 2010, four countries had investment grade ratings: Botswana, Mauritius, Namibia, and South Africa. In 2017 (i.e., after 7 years), Moody's downgraded Namibia and the number of countries with investment grade ratings fell to three. Thus, only three countries (Botswana, Mauritius, and South Africa) had investment grade ratings throughout this 10-year period. This represents 12% of rated Sub-Saharan African countries and 6.25% of the 48 African countries covered in this study. Table 4.3 further reveals that 21 Sub-Saharan African countries had non-investment grades. This number indicates 84% of rated Sub-Saharan African countries and 43.75% of this study's sample. Given the paucity of investment grades in Africa, it would be expected that public utilities may not attract enough interest from private investors. The lack of private-sector interest may undercut privatization reforms and possibly undermine sectoral performance. This outcome may contradict advocates' expectation that privatization would improve sectoral performance through competition and efficiency.

Table 4.3: Sub-Saharan African (SSA) countries with Investment Grade Credit Ratings, 2010-2019

Number of years, 2010-2019	SSA countries with investment grade ratings, 2010-2019		
	Number	% of rated SSA countries	% of 48 SSA countries
10	3	12	6.25
9	0	0	0
8	0	0	0
7	1	4	2.08
0-6	21	84	43.75
Total rated	25	100	52.08
Not rated	23	NA	47.92
TOTAL	48	NA	100

Source: Data from Moody's

To enable statistical analysis, I converted Moody's alphabet ratings – from Aaa to C – into a numerical grading scale of 21 to 1, where 21 represents an investment climate rated to be of the highest quality (i.e., Aaa) and 1 indicates the lowest quality (i.e., C). I treated WR and NR as missing data. The bivariate analysis of the connections between investment climate and indicators of sectoral performance proceeds in two steps. The first involves all African countries for which data are available and the second considers only African countries that have privatized at least part of the electricity sector. This offers insights into whether the inclusion in the analysis of countries in which parastatals control all aspects of the sector obscures relationships between investment climate and indicators of sectoral performance. The World Bank's (2021d) Private Participation in Infrastructure database provides information about African countries with sectoral private investments. Chapter 3 lists African countries (33) that had private investments in the electricity sector by the end of 2020.[19]

I used Spearman's correlation to probe the links between investment climate and indicators of sectoral performance because the former has ranked data and the latter involves continuous data. The analysis for 25 African countries, comprising those for which credit ratings and access data are available, whether with or without private investments, intimates a moderate positive relationship between investment climate and access to electricity during 2010-2019 (rho=0.44, n=156, p-value<0.001). The probability value of nearly zero signifies a statistically significant relationship. Access rates might increase with improvements in investment climate. As Figure 4.21 displays, no country with an investment rating of 15 (A3) or better had an access rate of less than 50%.[20] Access rates stood below 50% in countries with investment ratings of less than five (Caa1). The Spearman's correlation analysis for 21 African countries with private investments in the electricity sector corroborates this association (rho=0.41, n=144, p-value<0.001; see Figure 4.22). These results support the expectation that countries with more favorable investment climate tend to have higher electricity access rates.

The analysis for 51 observations from 17 African countries with data on investment ratings and outages found a moderate negative association between investment climate and yearly frequency of power cuts during 2015-2019 (rho=-0.41, p-value=0.003). The probability value of 0.003 suggests that credit ratings and outage frequency have a statistically significant link. Figure 4.23 illustrates that the incidence of outages decreases with improvements in investment climates. Blackouts occurred less than seven times yearly in countries with an investment rating of 10 (Ba2) or higher. But many African countries with poor investment ratings (9 [Ba3] or lower) had a low frequency of power cuts per year. As Figure 4.24 shows, the results of the analysis for 15 African countries that had private investments in the electricity sector and for which data on the frequency of outages are available confirms this moderate negative association (rho=-0.42, n=47, p-value=0.003). I found a moderate negative and statistically significant correlation between investment climate and the duration of power cuts in 17 African countries during 2015-2019 (rho=-0.48, n=51, p-value<0.001). The analysis for 16 countries in Africa, which had sectoral private investments and data on blackouts, confirmed this connection (rho=-0.49, n=48, p-value<0.001). Figure 4.25 and Figure 4.26 show that country years with high investment ratings tend to have shorter outages, whereas those with low

[19] These data vary by the number of projects and project year, with some countries having only one data point and others having more than one by end of 2020.

[20] As stated earlier in this section, 21 indicates the most favorable investment climate and 1 represents the least favorable investment climate.

investment ratings might have longer outages. Power cuts are consistently low in countries with scores of 10 (Ba2) or higher, but very heterogenous for those with lower investment ratings.

Figures 4.23 – 4.26 depict outliers with extremely frequent outages but middling credit ratings (6 [B3] to 9 [Ba3]). The outliers shown in Figure 4.23 represent Nigeria (2015-2018) and Niger (2019) and those in Figure 4.24 are Nigeria (2015-2018). Nigeria during 2015-2018 and Kenya in 2015 constitute the outliers revealed in Figures 4.25 – 4.26. I conducted sensitivity analyses to find out if these outliers influenced the correlation by excluding them and re-examining the models. Appendix 2 presents details for the sensitivity analyses. The re-analyses confirmed the direction, strength, and statistical significance of the relationships. If anything, with the outliers dropped, the associations were stronger and marginally more statistically significant.

Twenty-five African countries have data on investment ratings and electricity prices during 2015-2019. With a rho of 0.18, investment climate and tariffs have a weak positive correlation (rho=0.18, n= 102, p-value=0.06). The probability value of 0.06 signifies a statistically insignificant association between the two variables. The analysis for African countries with sectoral private investments and data on electricity tariffs (21) found a marginally weaker correlation and increased statistical insignificance (rho=0.14, n=92, p-value<0.18). In both relationships, electricity prices ranged from 3.8 US cents per kilowatt-hour to 27.1 US cents per kilowatt-hour in country years with ratings less than 10. Figure 4.27 and Figure 4.28 portray that no country with a rating of 4 or lower had electricity tariffs greater than 13 US cents per kilowatt-hour. No country with an investment rating of 14 or higher sold electricity below 10 US cents per kilowatt-hour.

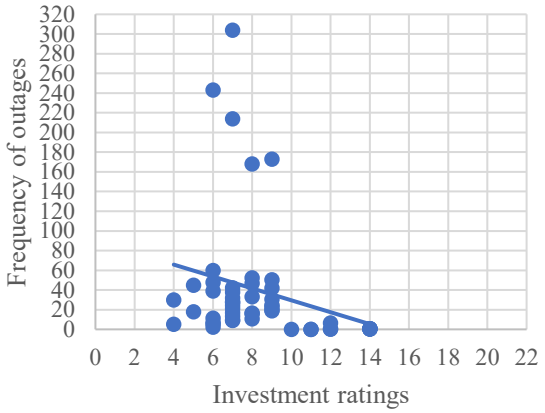
Figure 4.21: Credit ratings and access, 2010-2019

N=156 Countries=25 rho=0.44
t-stat=6.04 p-value<0.001

Figure 4.22: Credit ratings and access for African countries with private investments in the electricity sector, 2010-2019

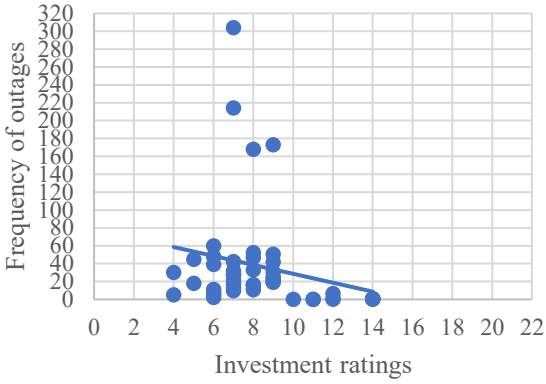
N=144 Countries=21 rho=0.41
t-stat=5.28 p-value<0.001

Figure 4.23: Credit ratings and outage frequency, 2015-2019



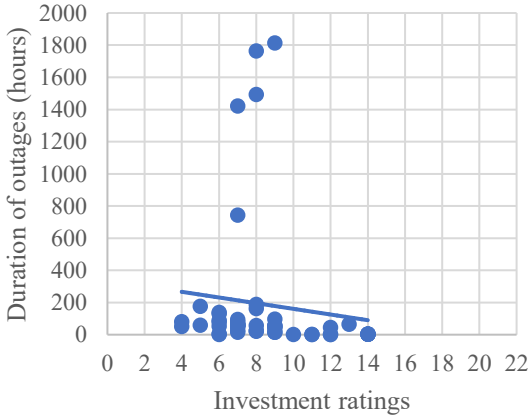
N=51 Countries=17 rho=-0.41
t-stat=-3.18 p-value=0.003

Figure 4.24: Credit ratings and outage frequency in African countries with sectoral private investments, 2015-2019



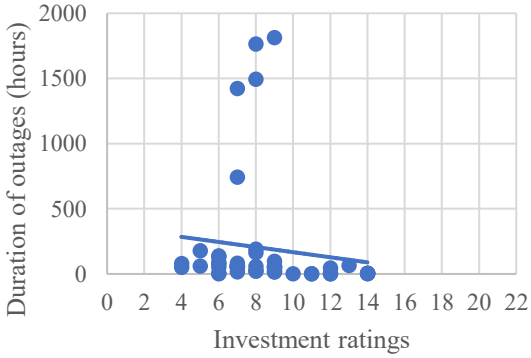
N=47 Countries=15 rho=-0.42
t-stat=-3.09 p-value=0.003

Figure 4.25: Credit ratings and outage duration, 2015-2019



N=51 Countries=17 rho=-0.48
t-stat=-3.81 p-value<0.001

Figure 4.26: Credit ratings and outage duration in African countries with sectoral private investments, 2015-2019



N=48 Countries=16 rho=-0.49
t-stat=-3.86 p-value<0.001

Figure 4.27: Credit ratings and tariffs, 2015-2019

N=102 Countries=25 rho=0.18
t-stat=1.88 p-value=0.06

Figure 4.28: Credit ratings and tariffs in African countries with private investments in the power sector, 2015-2019

N=92 Countries=21 rho=0.14
t-stat=1.34 p-value=0.18

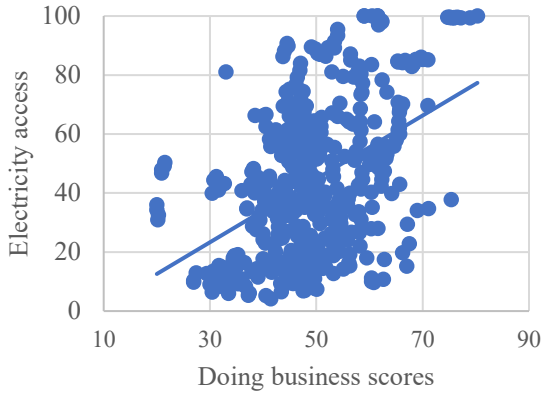
When doing the alternative analysis, I used the Word Bank's ease of doing business score to measure investment climate. The ease of doing business scores refer to the average scores for all the elements of the Doing Business Index, which assesses business regulations and their effects on starting a business and firm operations across the globe yearly (World Bank 2023). The elements of Doing Business comprise starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts, and resolving insolvency (World Bank 2023). The World Bank discontinued the Doing Business Index in 2021 because of a data-manipulation scandal that received international attention (Kelley 2021; Shalal 2021). The ease of doing business scores also raise an endogeneity problem because getting reliable and affordable electricity – two dimensions of sectoral performance analyzed in this chapter – is a major component of the Doing Business Index.

The results for the ease of doing business support those of credit ratings. They suggest a moderate positive and statistically significant correlation between the ease of doing business scores and electricity access during 2010-2019 (rho=0.38, n=470, p-value<0.01, Figure 4.21A). The ease of doing business scores and annual frequency of outages have a moderate negative and statistically significant relationship during 2015-2019 (rho=-0.46, n=84, p-value<0.01, Figure 4.23A). The correlation strengthens for the ease of doing business scores and the duration of power outages during 2015-2019 (rho=-0.52, n=83, p-value<0.01, Figure 4.25A). Finally, the analysis intimates a statistically negligible connection between the ease of doing business scores and electricity prices during 2015-2019 (rho=0.02, n=215, p-value=0.79, Figure 4.27A).

In sum, the analyses of credit ratings and the ease of doing business show that investment climate and sectoral performance are related. The results for credit ratings suggest a moderate positive and statistically significant link between investment climate and electricity access, a moderate negative (and statistically significant) connection between investment climate and electricity outages and a statistically insignificant association between investment climate and electricity prices. The findings for access and outages uphold the expectation that a better investment climate can attract more private investments, ensure competition among utility providers, foster efficient allocation of resources, and ultimately result in a better sectoral

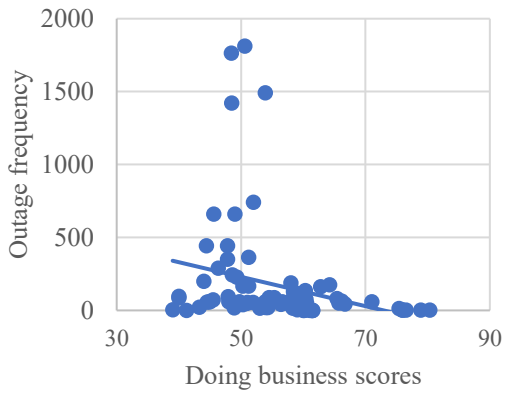
performance. Improvements occur even with credit ratings that are not considered investment grades. Better ratings correlate with better sectoral performance, even if investment grades are rare in Africa. Similarly, the analysis for the ease of doing business scores shows that electricity access and reliability tend to improve with improvements in investment climate. Nevertheless, the relationship between investment climate (credit ratings/ease of doing business scores) and electricity prices lacks statistical significance. The results in this section reveal a lot of unexplained variation in sectoral performance.

Figure 4.21A: Doing business scores and access (%), 2010-2019



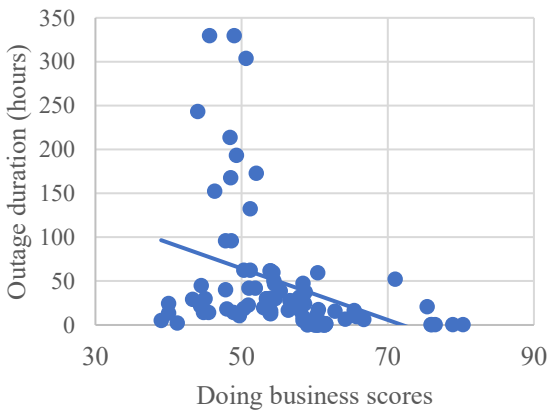
N=470 rho=0.38 T-stat=8.91 p-value<0.01

Figure 4.23A: Doing business scores and outage frequency, 2015-2019



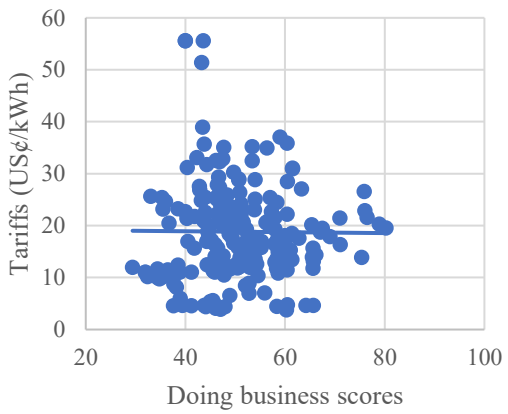
N=84 rho=-0.46 T-stat=-4.66 p-value<0.01

Figure 4.25A: Doing business scores and outage duration, 2015-2019



N=83 rho=-0.52 T-stat=-5.45 p-value<0.01

Figure 4.27A: Doing business scores and tariffs, 2015-2019



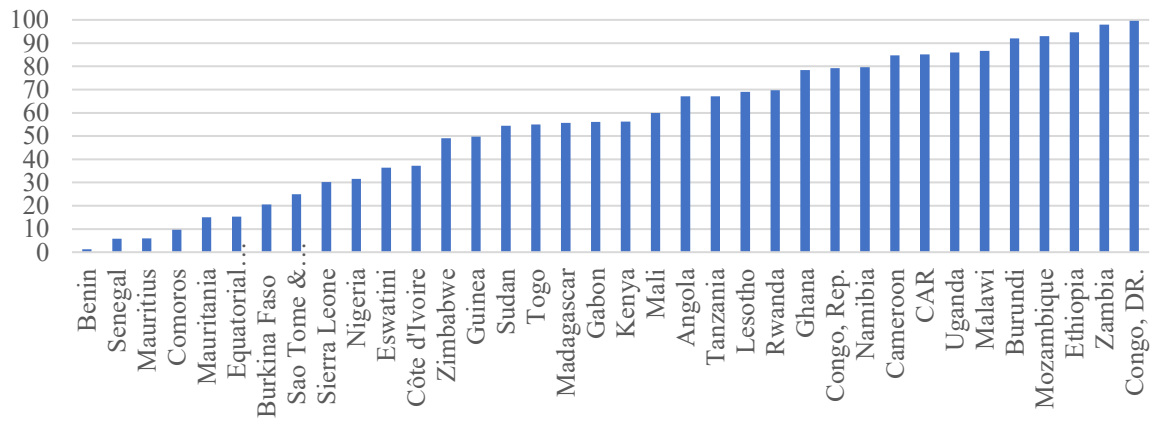
N=215 rho=0.02 T-stat=0.27 p-value=0.79

4.5 Droughts

Droughts recur frequently in Africa, with damaging implications for countries with significant hydroelectric capacity (Ackah et al. 2014; Gannon and Conway 2018; Bhaga et al. 2020). By depleting water levels in hydro dams, droughts reduce their generation capacity. This can lead to electricity shortages and power cuts as well as limit access by stifling electricity expansion projects that depend on hydro sources. Tariffs may remain low because hydroelectricity is cheap. Nonetheless, electricity prices can rise if power producers switch from hydropower sources to a more expensive thermal-based generation because of droughts.

I explored these claims by drawing on the US Energy Information Administration's (EIA) data on the share of hydropower (billion kW) in each country's generation mix. Using these data, I calculated the annual percentage of electricity generated from hydro and then the mean percentage of hydroelectricity for 1990-2018 – the period for which data on hydropower were available (see Figure 4.29). The averages show the prevalence of hydropower but also highlight variation in the dependence on hydropower and thus the vulnerability to droughts across Africa. Figure 4.29 displays the average share of hydropower in African countries' generation mix during 1990-2018. It illustrates that hydro sources constituted 9.6% or greater proportion of the generation mix of most Sub-Saharan African countries (33) during this period. Twelve of these countries obtained more than 75% of their electricity from hydro. On the other hand, hydropower represented 1.3% of electricity sources in Benin, 5.8% in Senegal and 6% in Mauritius. I excluded Somalia (0.1%) and South Africa (0.6%) because they had less than 1% of hydroelectricity in their generation mix. I also eliminated 10 countries – Botswana, Cabo Verde, Chad, Djibouti, Eritrea, Gambia, Guinea-Bissau, Liberia, Niger, and Seychelles – because they had no hydropower installation during 1990-2018 (EIA 2021).

Figure 4.29: Mean of hydro sources (%) in African countries' generation mix, 1990-2018



Source: EIA (2021). The chart only includes countries where hydro accounts, on average, for at least 1% of the energy mix during 1990-2018.

I probed the drought-performance association for all countries with hydropower installations because of the claim in the literature that droughts undermine hydroelectricity production by reducing water levels in dams (e.g., Bhaga et al. 2020). I included country years with an average of at least 1% hydropower in the generation mix during this period.

Vulnerability to droughts undoubtedly increases with the share of hydro in the energy mix, but there is no obvious threshold that distinguishes vulnerable from non-vulnerable countries. Thus, I considered two specifications. Because countries where hydro accounts for a small share of the energy mix are less vulnerable to droughts, I analyzed the associations between droughts and sectoral performance for country years with 10% or more hydropower in the generation mix.[21] I then evaluated country years with 30% or higher shares of hydroelectricity during 1990-2018. I considered that a loss of 10% hydroelectricity due to droughts should be enough to contribute to disruptions in power supply. A 30% reduction in hydroelectricity should cause greater power supply interruptions. I additionally conducted an alternative analysis that classifies African countries into low, medium, and high hydro-generation capacity based on the share of hydro in their generation mix. These stratified analyses enable me to account for variation in hydropower generation capacity. I assumed that droughts lower water levels of dams and undermine hydro generation capacity within the same year they occur (Bhaga et al. 2020; Africanews 2021b). On the other hand, hydro generation may improve nearly immediately with the onset of rains.

Bhaga et al. (2020) offer data on drought years in Africa. According to them, hydrological droughts occur when water levels of reservoirs and rivers fall below the amount needed for their planned purposes (Bhaga et al. 2020). From the data, as presented in Table 4.4, I constructed a dichotomous measure of drought, with one indicating a drought year and zero indicating a non-drought year. The binary measure makes the point-biserial correlation an appropriate technique for analyzing the drought-performance relationship (see discussions on this correlation technique in Section 4.3).

Table 4.4: Drought years in Sub-Saharan Africa, 1990-2020

Country	Drought years	Country	Drought years
Angola	2004-2006; 2012-2013; 2019	Liberia	1991-1992; 2019
Benin	1992; 2010-2013; 2017-2019	Madagascar	2000-2002; 2005-2007; 2010-2012; 2015-2020
Botswana	1990; 2005; 2012-2013; 2014-2020	Malawi	1991-1992; 2001-2002; 2005-2007; 2012; 2016-2017
Burkina Faso	1995; 1998; 2001; 2011; 2015-2019	Mali	2001; 2005-2006; 2010-2011; 2017-2019
Burundi	1999; 2003-2005; 2008-2010	Mauritania	1993-1997; 2010-2012; 2017-2019
Cameroon	1990; 2001; 2005; 2011-2015	Mauritius	1999; 2011-2013
Cabo Verde	1998; 2002; 2015-2019	Mozambique	1991-1992; 2001-2003; 2005-2007; 2016-2019
Central African Rep.	Nil	Namibia	1990; 1995; 1998; 2001; 2002; 2013; 2015-2020
Chad	1993-1997; 2001-2005; 2012-2013; 2017-2018	Niger	1990; 1997; 2001; 2005-2007; 2009; 2010-2012
Comoros	2011-2012	Nigeria	2007; 2011
Côte d'Ivoire	1990-1993; 2000-2005; 2006-2010; 2015-2019	Rwanda	1996; 1999; 2003; 2016-2019
Djibouti	1996-1999; 2005; 2008-2014	Sao Tome & Principe	Nil
DRC	2017-2020	Senegal	2002; 2011; 2014; 2017-2018

[21] I included Comoros in this analysis by rounding its 9.6% to 10%.

Table 4.4: Drought years in Sub-Saharan Africa, 1990-2020 (continued)

Country	Drought years	Country	Drought years
Eritrea	1993; 1998-1999; 2000-2004; 2008	Seychelles	1998-1999; 2010-2011
Eswatini	1990; 2001; 2007; 2014-2020	Somalia	1999; 2004; 2005; 2008; 2010-2020
Ethiopia	1997-1999; 2005; 2008-2009; 2015-2020	South Africa	1990; 1995; 2004; 2015-2020
Gambia	2012; 2016-2019	Sudan	1990-1993; 2008-2009; 2011-2012; 2017-2019
Ghana	1997-1998; 2006-2007; 2010-2012	Tanzania	1996; 1999-2002; 2004-2006; 2011; 2016-2019
Guinea	1998; 2015-2016; 2018-2019	Togo	Nil
Guinea-Bissau	2002; 2004-2006	Uganda	1998-1999; 2005; 2008; 2010-2011; 2014-2019
Kenya	1994-1996; 1999-2000; 2004-2006; 2008-2012; 2016-2020	Zambia	1990-1995; 1999-2002; 2004-2005; 2015-2020
Lesotho	1990; 2002; 2007; 2011; 2015-2020	Zimbabwe	1991-1992; 2010-2011; 2015-2020

Source: Bhaga et al. (2020, 7-11). No data are available for Equatorial Guinea, Gabon, Sierra Leone, and Republic of Congo (Bhaga et al. 2020).

The point biserial correlation between droughts and access rates for 960 observations from 32 countries with hydroelectricity in their generation mix as well as data on droughts and access during 1990-2019 is 0.07 and the probability value equals to 0.03. These values signify a weak positive and statistically significant association between droughts and electricity access. Figure 4.30 reveals that the share of population with access to electricity is higher during drought years. The difference (4%) between the mean access rate of 28% during non-drought years and the mean access rate of 32% in drought years confirms this small correlation. The results of the analysis for the 29 African countries with 10% or greater hydroelectricity in their generation mix and for which data on access are available show a weak positive and statistically significant relationship (r_{pb}=0.13, n=870, p-value<0.001, see Figure 4.31). For the 25 African countries having at least 30% hydropower and data, droughts and electricity access have a weak positive relationship (r_{pb}=0.21, n=750, p-value<0.001). Figure 4.32 reveals that electricity access tends to be higher during drought years than non-drought years. This relationship contradicts expectations in the literature. It is possible that not all droughts disrupt electrification projects and household connection programs. Access is a slow-changing process, which might not be linked to meteorological conditions. So, access will not change with droughts. However, having electricity connection does not guarantee having reliable power. In addition, some countries such as Côte d'Ivoire may recover from droughts with the onset of rains within the same year (AFP 2021; Africanews 2021b). Others like Ghana may extend access even in the face of droughts because of political pressures. I will explore these and other contextual factors and their consequences for sectoral performance in the case study chapters.

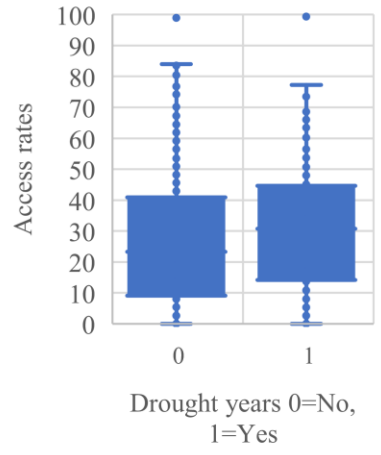
Droughts have a moderate negative link with the frequency of power cuts in 19 African countries with at least 1% hydro electricity in the generation mix and for which outage data are available during 2015-2019 ($r_{pb=}$-0.41, n=64, p-value<0.001). As Figure 4.33 shows, more power cuts occurred during non-drought years than drought years. Users experienced outages 428.6 times on average in non-drought years as compared to an average of 86.2 times in drought years over the 2015-2019 period. The results indicate a strong negative relationship for 17 African countries with at least 10% hydroelectricity in their generation mix during 2015-2019 (r_{pb}=-0.54,

n=57, p-value<0.001, see Figure 4.34). Besides, I found a moderate negative association between droughts and the duration of blackouts in countries with a minimum of 1% hydro generation capacity during 2015-2019 (r_{pb}=-0.42, n=64, p-value<0.001). Figure 4.35 depicts that power cuts tend to last longer during non-drought years than drought years. The average duration of power outages during non-drought years (90.3 hours) and those of drought years (25.3 hours) support this association. The analysis intimates a strong negative correlation for the 17 countries with 10% or more hydropower in their generation mix (r_{pb}=-0.54, n=57, p-value<0.001, see Figure 4.36). I did not analyze the relationship between droughts and the measures of electricity reliability for countries having 30% or more hydropower in their generation mix, given that these countries are the same as those with 10% or more hydroelectricity.

These results are counter-intuitive and opposite expectations in the literature. The frequency and duration of power cuts might increase in non-drought years because some outages result from factors other than droughts, including equipment breakdown and financial challenges. For example, Ghana's national electricity transmitter blamed blackouts in many areas of the country in May 2022 on a defective electricity grid (Arhinful 2022). A report by a media outlet in Accra, Ghana, attributed those power outages to gas shortages (Joy Business 2022). I will revisit these factors in subsequent chapters. Besides, not all droughts result in power shortages and load shedding. Some droughts might not be intense enough to disrupt hydropower production. Furthermore, some countries may resort to emergency power – short-term agreements with private providers to quickly install power plants – to shore up their electricity generation during drought-related shortages. It is also possible that the sample for the frequency and duration of outages, which is considerably smaller than for access and prices, may not be representative.

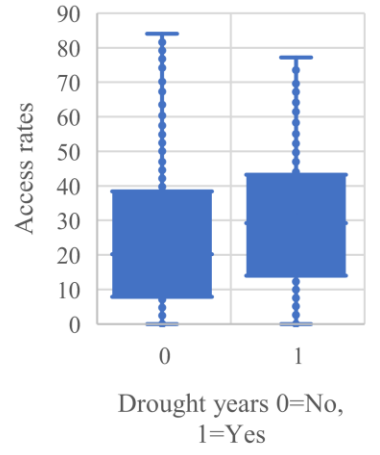
The results additionally reveal that droughts and electricity prices have a moderate negative correlation for 31 countries with at least 1% hydroelectricity generation capacity and data on tariffs (r_{pb}=-0.26, n=155, p-value=0.001, see Figure 4.37). For countries with a minimum of 10% hydropower in their energy portfolio, the results suggest a weak negative and statistically insignificant connection between droughts and power prices during 2015-2019 (r_{pb}=-0.16, n=135, p-value=0.06). Figure 4.38 displays that, on average, electricity users paid 2.21 US cents more for electricity during non-drought years than drought years over this period. As Figure 4.39 presents, the results remain unchanged for countries with 30% or greater hydroelectricity (r_{pb}=-0.16, n=120, p-value=0.07).

Figure 4.30: Droughts and access rates in countries with at least 1% hydro capacity, 1990-2019



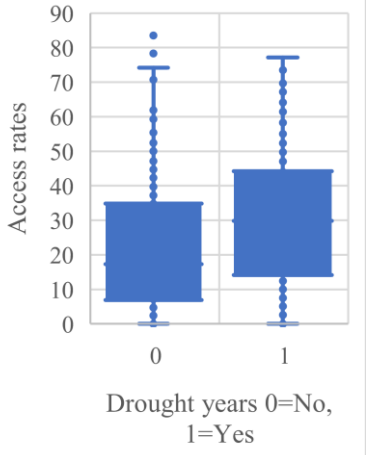
Countries=32 N=960 r_{pb}=0.07
t-stat=2.23 p-value=0.03
Mean access rates when x=0: 27.94
Mean access rates when x=1: 31.61

Figure 4.31: Droughts and access rates in countries with ≥10% hydro capacity, 1990-2019



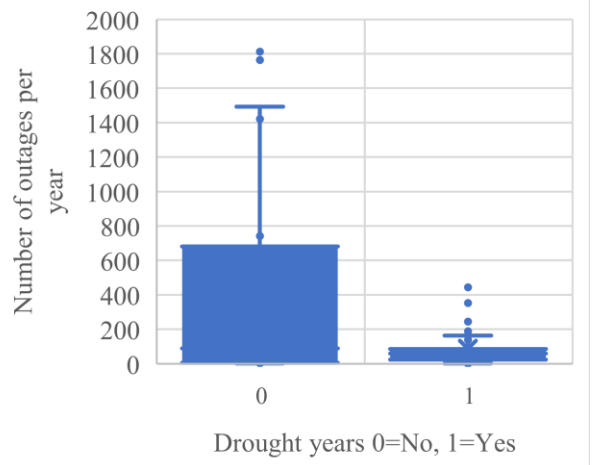
Countries=29 N=870 r_{pb}=0.13
t-stat=3.73 p-value<0.001
Mean access rates when x=0: 24.56
Mean access rates when x=1: 29.96

Figure 4.32: Droughts and access rates in countries with ≥30% hydro capacity, 1990-2019



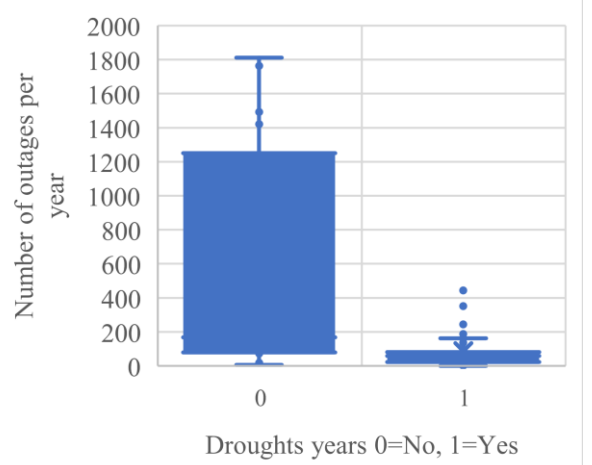
Countries=25 N=750 r_{pb}=0.21
t-stat=5.85 p-value<0.001
Mean access rates when x=0:22.03
Mean access rates when x=1:30.42

Figure 4.33: Droughts and outage frequency in countries with at least 1% hydro, 2015-2019



Countries= 19 N=64 r_{pb}=-0.41 t-stat=-3.49
p-value<0.001
Mean of y when x=0: 428.6
Mean of y when x=1: 86.2

Figure 4.34: Droughts and outage frequency in countries with ≥10% hydro, 2015-2019



Countries= 17 N=57 r_{pb}=-0.54 t-stat=-4.70
p-value<0.001
Mean of y when x=0: 585.4
Mean of y when x=1: 86

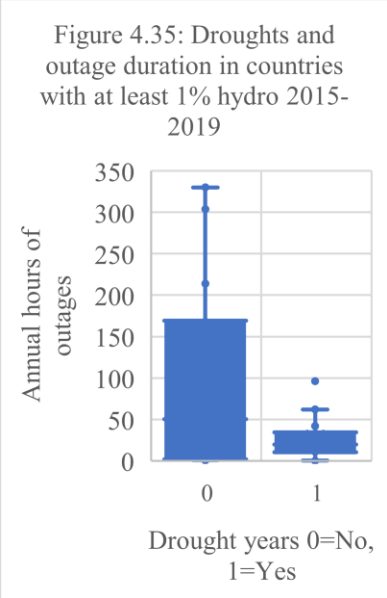


Figure 4.35: Droughts and outage duration in countries with at least 1% hydro 2015-2019

Countries=19 N=64
r_{pb}=-0.42 t-stat=-3.68
p-value<0.001
Mean of y when x=0: 90.33
Mean of y when x=1: 25.31

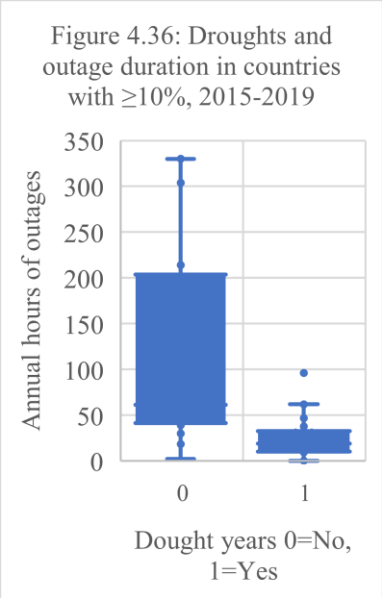


Figure 4.36: Droughts and outage duration in countries with ≥10%, 2015-2019

Countries=17 N=57
r_{pb}=-0.58 t-stat=-5.24
p-value<0.001
Mean of y when x=0: 122.1
Mean of y when x=1: 24.7

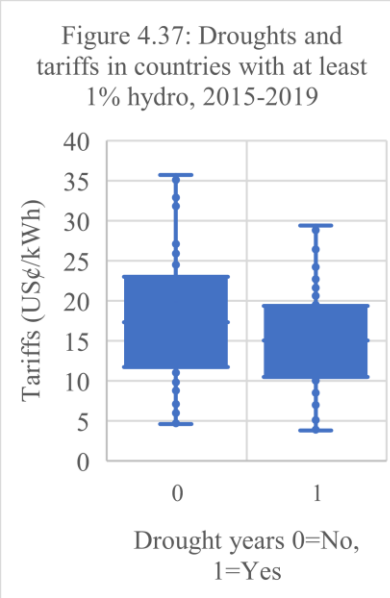


Figure 4.37: Droughts and tariffs in countries with at least 1% hydro, 2015-2019

Countries=31 N=155
r_{pb}=-0.26 t-stat=-3-31
p-value=0.001
Mean of y when x=0:18.17
Mean of y when x=1:14.55

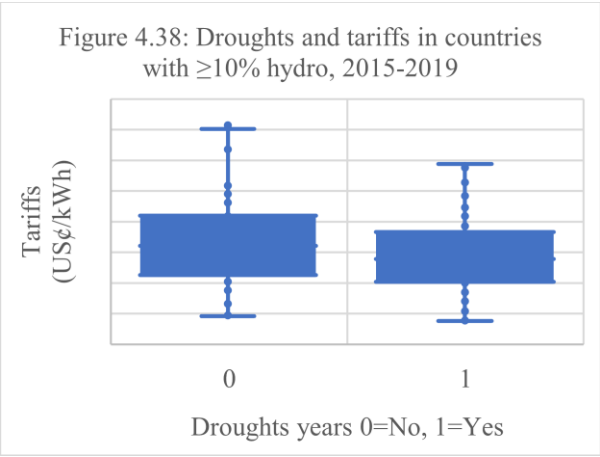


Figure 4.38: Droughts and tariffs in countries with ≥10% hydro, 2015-2019

Countries=27 N=135 r_{pb}=-0.16 t-stat=-1.92
p-value=0.06
Mean of y when x=0: 16.40
Mean of y when x=1: 14.19

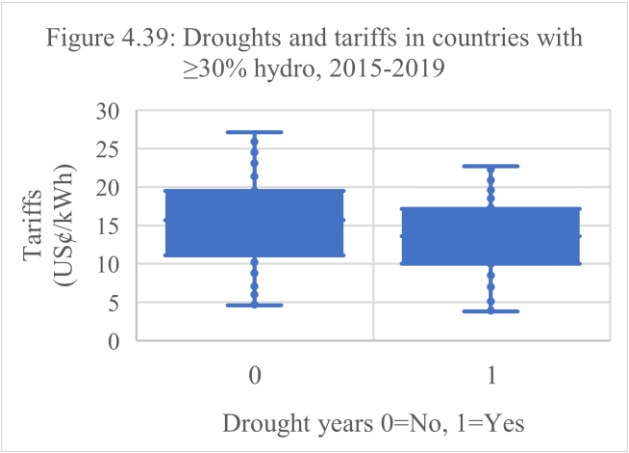


Figure 4.39: Droughts and tariffs in countries with ≥30% hydro, 2015-2019

Countries=24 N=120 r_{pb}=-0.16 t-stat=-1.80
p-value=0.07
Mean of y when x=0: 15.03
Mean of y when x=1: 13.14

When conducting the alternative analysis, I grouped countries into low, medium, and high hydro-generation capacity based on the percentage of electricity generated from hydro sources. Figure 4.29 shows low hydro capacity (1-40%) in the generation mix of 12 African countries – Benin, Senegal, Mauritius, Comoros, Mauritania, Equatorial Guinea, Burkina Faso, Sao Tome and Principe, Sierra Leone, Nigeria, Eswatini, and Côte d'Ivoire. Another 12 African countries – Zimbabwe, Guinea, Sudan, Togo, Madagascar, Gabon, Kenya, Mali, Angola, Tanzania, Lesotho, and Rwanda – had a medium hydro-generation capacity (41-70%). Figure 4.29 further depicts that hydro sources constituted a high proportion of the generation mix of 12

African countries – Ghana, Republic of Congo, Namibia, Cameroon, Central African Republic (CAR), Uganda, Malawi, Burundi, Mozambique, Ethiopia, Zambia, and DRC – during 1990-2018. I excluded Somalia (0.1%) and South Africa (0.6%) because they had less than 1% of hydroelectricity in their generation mix. I also removed 10 countries – Botswana, Cabo Verde, Chad, Djibouti, Eritrea, Gambia, Guinea-Bissau, Liberia, Niger, and Seychelles – from the analysis because they had no hydropower installation during 1990-2018 (EIA 2021).

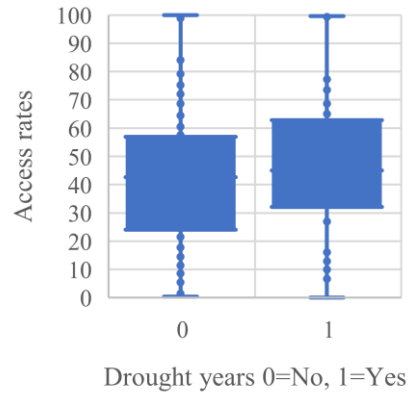
I examined the association between droughts and sectoral performance for (1) countries with a low hydro-generation capacity (1-40%), (2) medium hydro-generation capacity (41-70%), and high hydro-generation capacity (70-100%) in their electricity generation mix. Figures 4.40 – 4.45 display the analyses. The findings did not change significantly and remain counter-intuitive. The results for 300 observations from the 10 African countries with low hydroelectricity (1-40%) in their generation mix and data on droughts and access during 1990-2019 suggest a statistically negligible relationship between droughts and access (r_{pb}=0.02, n=300, p-value=0.74, Figure 4.40). The analysis for the 11 African countries with medium hydro-generation capacity (41-70%) in their generation mix and for which data on droughts and access are available show a moderate positive and statistically significant relationship (r_{pb}=0.25, n=330, p-value<0.01, Figure 4.41).[22] I found a weak positive relationship (r_{pb}=0.14, n=330, p-value=0.01, Figure 4.42)[23] between droughts and electricity access for the 11 African countries having a high share of hydropower (71-100%) and data on droughts and access.

There is a strong negative and statistically significant relationship between droughts and electricity tariffs for the eight African countries that had a low hydro-generation capacity and for which data on droughts and electricity prices are available (r_{pb}=-0.61, n=40, p-value<0.01, Figure 4.43). Droughts and tariffs have a weak negative and statistically insignificant connection for the 12 African countries with a medium hydro capacity and data on droughts and tariffs (r_{pb}=-0.09, n=60, p-value=0.48, Figure 4.44). The results show a weak negative and statistically insignificant corelation between droughts and tariffs for the 11 African countries with a high hydro capacity (r_{pb}=-0.18, n=55, p-value=0.18, Figure 4.45). I did not evaluate low, medium, and high hydro capacity for power outages because the data on droughts and outages are available for only 18 countries and and break down as follows: Low hydro capacity = 5 countries (n=19); medium hydro capacity = 8 countries (n=25) and high hydro capacity = 6 (n=20). These data points are too few for this kind of stratified analysis.

In a nutshell, these findings contrast with expectations in the literature. Rather than being associated with worse sectoral performance, drought years correlate with better performance: higher access, fewer and shorter outages, and lower tariffs. The connections are weak for access and tariffs, and strong for power cuts, where data limitations raised questions about potential selection bias. These results mean that droughts might not automatically undermine sectoral performance and we really need to look elsewhere than the weather to explain variation in sectoral performance. Several factors, including financial challenges, underinvestments, policymakers' decisions, and politics of tariffs analyzed in subsequent chapters, may offer insights into sectoral performance during drought years and non-drought years.

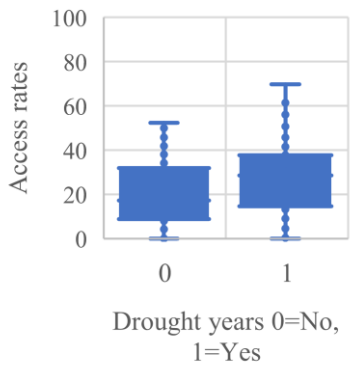
[22] No data on droughts are available for Gabon.
[23] Data on droughts are not available for Republic of Congo.

Figure 4.40: Droughts and access in African countries with a low hydro capacity, 1990-2019



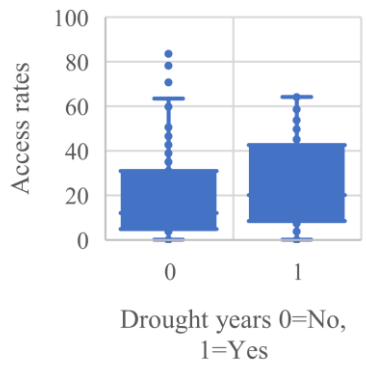
Countries=10 N=300 r_{pb}=0.02
t-stat=0.33 p-value=0.74
Mean access rates when x=0: 44.3
Mean access rates when x=1: 45.5

Figure 4.41: Droughts and access in African countries with a medium hydro capacity, 1990-2019



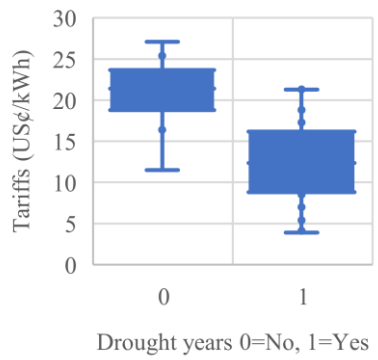
Countries=11 N=330 r_{pb}=0.25
t-stat=4.59 p-value<0.01
Mean access rates when x=0: 19.9
Mean access rates when x=1: 27.6

Figure 4.42: Droughts and access in African countries with a high hydro capacity, 1990-2019



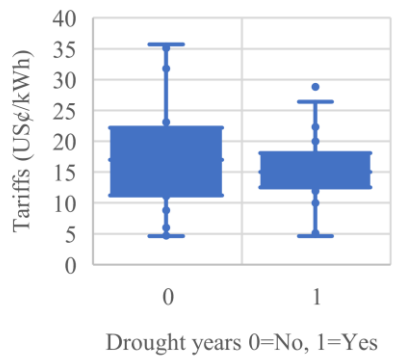
Countries=11 N=330 r_{pb}=0.14
t-stat=2.65 p-value=0.01
Mean access rates when x=0: 19.7
Mean access rates when x=1: 25.7

Figure 4.43: Droughts and tariffs in African countries with a low hydro capacity, 2015-2019



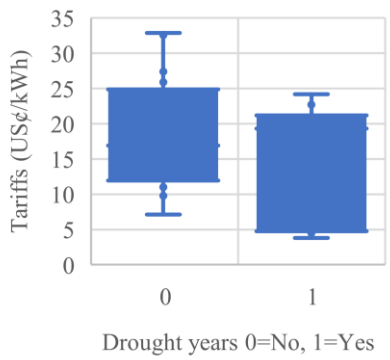
N=40 r_{pb}=-0.61
t-stat=-4.71 p-value<0.01
Mean tariffs when x=0: 20.9
Mean tariffs when x=1: 12.4

Figure 4.44: Droughts and tariffs in African countries with a medium hydro capacity, 2015-2019



N=60 r_{pb}=-0.09
t-stat=-0.71 p-value=0.48
Mean tariffs when x=0: 17
Mean tariffs when x=1: 15.7

Figure: 4.45: Droughts and tariffs in African countries with a high hydro capacity, 2015-2019



N=55 r_{pb}=-0.18
t-stat=-1.34 p-value=0.18
Mean tariffs when x=0: 18.4
Mean tariffs when x=1: 15.8

4.6 Civil Wars

Scholarly views on the associations between civil wars and socioeconomic development differ. Some researchers argue that civil wars devastate resources and infrastructure (Yepes et al. 2009; Fardoun et al. 2012). They can reduce a government's ability to provide public utilities as it channels public funds into regime and state security. This understanding yields the expectations that countries that have experienced civil wars may have lower rates of electricity access, more frequent power cuts, longer blackouts, and higher electricity prices than peaceful countries because wars can damage power infrastructure and drain resources for investments in them.

The claim that civil wars hamper development by destroying infrastructure contrasts with the understanding that civil wars can foster socioeconomic development by bringing investment-minded coalitions to power while reducing the power of rent-seekers (Olson 1982; Koubi 2005). In line with this literature, civil wars are expected to change the balance of power of social groups and the patterns of political alliances by increasing or decreasing the power of pro-investment coalitions. If investment-oriented coalitions ascend to power, they may promote sectoral policy initiatives and invest in electricity infrastructure during the postwar era. Investments in infrastructure can accelerate access rates, improve power supply reliability, and reduce costs of supply and tariffs. In contrast, rent seekers might stall sectoral investments and institutional changes. Limited data on domestic political processes constrain a large-N study of these political dynamics across Africa. The Ivorian case study in Chapter 8 examines them. There is enough cross-national data to probe the relationship between civil wars and electricity sector performance, which I do in this section.

The Armed Conflict dataset of the Peace Research Institute, Oslo and the Uppsala Conflict Data Program (PRIO/UCDP) (2020) provides civil war years and a list of African countries that have experienced civil wars. The PRIO/UCDP's definition of civil war as an armed conflict between a minimum of two domestic groups (including a state government), which causes at least 25 human deaths in a year, enables me to count both low-scale and large-scale civil wars in Africa (Gleditsch et al. 2002, 617-619; Miguel et al. 2004; Blattman and Miguel 2010). Low-scale civil wars might result in low levels of infrastructure damage and changes in political coalitions. Large-scale civil wars may cause greater damage to infrastructure or decrease a government's capacity to invest in public utilities and services as it diverts funds into maintaining security and may be more likely to alter political coalitions. Table 4.5 presents African countries that have experienced civil wars and war years from 1960 or year of independence to 2019. I coded a civil-war year as 1 and a year with no civil war as 0. With the coding yielding a dichotomous measure of civil wars and the indicators of sectoral performance having continuous data, I used the point biserial correlation coefficient (r_{pb}) to analyze the associations. This technique is appropriate when one variable has dichotomous data.

I assumed that, to the extent that civil wars affect sectoral performance by destroying infrastructure, the effects will be immediate, and they will increase with the duration and scale of the war. Since reconstruction takes time, the effects should continue after the war ends, but should decline with the passage of time. Nonetheless, I do not expect immediate changes to coalitions, given that a ruling coalition will try to maintain power. In the case of Côte d'Ivoire, the incumbent coalition led by President Laurent Gbagbo lost elections after nearly a decade of civil war (2002-2011) and even resisted international and domestic calls to hand over power to the opposition coalition. If coalitional changes occur after the war, I expect coalitional effects, including sectoral reforms and investments, to be long-term, lasting at least throughout the tenure

of the new government. I examined changes to coalitions and their effects on sectoral policy choices and ultimately performance in the case studies.

Table 4.5: African countries that have experienced civil wars between 1960/independence year and 2019

Country	Years	Country	Years
Angola	1975; 1990-2004; 2007; 2009; 2016-2017; 2019	Kenya	2007-2008; 2015-2019
Burkina Faso	1985; 1987; 2018-2019	Liberia	1980; 1989-1990; 2000-2003
Burundi	1991-1992; 1994-2006; 2008; 2014; 2015; 2019	Madagascar	1971
Cameroon	1960; 2015-2019	Mali	1990-1991; 1994; 2007-2009; 2012-2019
CAR	2001; 2002; 2006; 2009-2013; 2018-2019	Mauritania	1975-1978; 2010-2011
Chad	1966-1972; 1976-1984; 1986-1987; 1989-1994; 1997-2003; 2005-2010; 2015; 2017-2018	Mozambique	1977-1992; 2013-2014; 2016; 2018-2019
Comoros	1989; 1997	Niger	1991-1992; 1994-1995; 1997; 2007-2008; 2015-2019
Congo, DR	1960-1962; 1964-1965; 1967; 1977-1978; 1996-2001; 2005-2008; 2011-2014; 2017-2019	Nigeria	1967-1970; 2004; 2009; 2011-2019
Congo, Rep.	1993; 1997-1999; 2002; 2016	Rwanda	1990-1994; 1996-2002; 2009-2012; 2016; 2018-2019
Côte d'Ivoire	2002-2004; 2011	Senegal	1990; 1992-1993; 1995; 1997-1998; 2000-2001; 2003; 2011
Djibouti	1991-1994; 1999	Sierra Leone	1991-2001
Ethiopia	1960-1991; 1993-1996; 1998-2016	Somalia	1982-1984; 1986-1996; 2001-2002; 2006-2019
Eritrea	1997; 1999; 2003	Sudan	1963-1972; 1983-2018
Guinea	2000-2001	Uganda	1971-1972; 1974; 1979-1992; 1994-2011; 2013-2019
Guinea-Bissau	1998-1999	Zimbabwe	1967-1968; 1973-1979

Sources: Data from the UCDP/PRIO Armed Conflict dataset (2020)

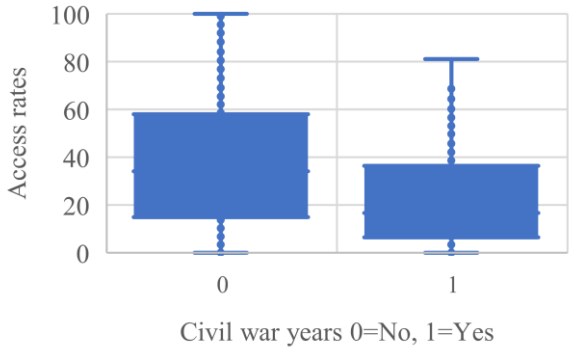
I evaluated the effects of civil wars that took place in any year within a 10-year period to allow for lags. "Any year" refers to a year within the set defined in a logical equation as (t, t-1, …, t-9). It is coded 1 if one or more years within the range defined by the set was a civil war year and 0 if no year within the set was a civil war year. Thus, when analyzing performance indicators between 1990 and 2019, I considered experience with civil wars between 1981 and 2019. I listed the years within the set (t, t-1, …, t-9) for a series of years t, the value for the civil war variable $C_{(t, t-1, \ldots, t-9)}$, and the rationale for the coding for each country in Table A3.1. See Appendix 3 (Table A3.1) for an illustration of the coding for Côte d'Ivoire, Burkina Faso, and Zimbabwe. Côte d'Ivoire is a case study in this dissertation and had civil war during the study period. Burkina Faso provides insights into coding for countries that experienced civil war in the 1980s, so that some years are coded positive for civil war during 1990-2019. Zimbabwe highlights coding for countries that experienced civil war, but only before 1981, resulting in coding of 0 for civil war during the period covered by my analysis. I coded 0 for civil war within 10 years for all years for countries like Ghana that have not experienced civil war.

Model:
$P_t = C_{(t, t-1, \ldots, t-9)}$ Performance in year t is influenced by civil war in any year from year t through t – minus 9 (i.e., that year or any year within 10 years)

Data on access rates cover 1990-2019 and thus permit this analysis. Data limitations make it impossible to evaluate the model as specified above for electricity reliability. Power outages had a lot of missing data during 2015-2019. For example, for blackout duration, 10 countries had five data points each, three countries had four data points apiece, two countries had three data points, five countries had two observations, and five had one each. An analysis of the lag effects of these observations will be dubious and unfeasible. Data on power prices are available for a five-year period – 2015-2019.

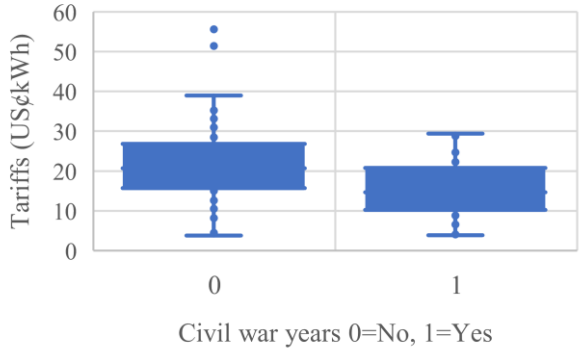
Figures 4.46 – 4.47 present the point-biserial correlation analysis. The findings suggest that a country's experience with civil war in any year within 10 years tends to influence its average electricity access rates during 1990-2019 (r_{pb}=-0.29, n=1440, p-value<0.001, Figure 4.46). They signify that access in countries with civil war experience tends to be lower than in peaceful countries. Yet the analysis reveals considerable unexplained variation. As mentioned above, I did not analyze the model for electricity reliability, given that the lack of outage data for some countries and several missing data points for some years bias the effects of lags. The analysis for the war-prices connection intimates a moderate negative and statistically significant correlation between tariffs during 2015-2019 and civil wars in any year within 10 years between 2006 and 2019 (r_{pb}=-0.38, n=43, p-value<0.001, Figure 4.47). This association appears surprising. Perhaps, some governments and utility providers avoid increases in electricity prices during or shortly after war years as they deal with the existential threats posed by wars and try to avert heightened violence that tariff hikes can trigger. But they may raise tariffs during postwar years to invest in the electricity infrastructure, as Côte d'Ivoire did in 2015 (World Bank 2017b). This may lend credibility to Olson's expectation that civil wars can reshape political coalitions in ways that allow sectoral investments.

Figure 4.46: Civil war in any given year within 10 years (1981-2019) and access (1990-2019)



N=1440 Countries=48 r_{pb}=-0.29
t-stat=-11.58 p-value<0.001
Mean tariff when x=0: 34
Mean tariff when x=1: 19

Figure 4.47: Civil war in a given year within 10 years (2006-2019) and tariffs (2015-2019)



Countries=43 N=215 r_{pb}=-0.38
t-stat=-5.99 p-value<0.001
Mean tariff when x=0: 21.9
Mean tariff when x=1: 14.9

In short, the analysis suggests that civil war and electricity access and tariffs lack a strong linear relationship, with about 70% unexplained variation. Moreover, the results for civil wars in any year within 10 years intimate pricier tariffs in no-civil war years than in civil war years. The findings contradict the expectation that peaceful countries may have cheaper tariffs than countries that experience civil wars. Cheaper electricity prices in civil war years may reflect governments' and utilities' unwillingness to raise tariffs during civil wars because the shocks of tariff increases can exacerbate violence. These findings may reflect limited data and suggest a lot of unexplained variation that calls for a qualitative analysis.

Finally, I acknowledge that perhaps a dichotomous measure of civil war, regardless of intensity, is less than ideal. A measure with at least three values (no civil war, low-level civil war, and high-level civil war) may be needed to evaluate whether the dynamics and implications of civil wars vary with the intensity of civil wars. And, if low- and high-intensity wars do have different implications for sectoral performance, analyses based on a dichotomous measure of civil war may underestimate relationships or even falsely suggest that no relationship exists, depending on whether the opposing dynamics associated with low- and high-intensity conflicts are equally balanced. Alternatively, a more demanding threshold may be used for counting a conflict as a civil war.

4.7 Conclusion

This chapter probed some external factors widely identified as affecting sectoral performance across Sub-Saharan Africa, using descriptive statistics and bivariate analysis. These external factors are natural resource wealth, economic shocks, investment climate, droughts, and civil wars. Natural resource abundance is expected to lead to higher access rates, lower and shorter outages, and lower tariffs. On the other hand, the resource curse literature yields the expectation that resource wealthy countries can perform poorly on electricity access, reliability, and prices. It is expected that negative economic shocks will spawn lower access, more and longer blackouts, and pricier tariffs. Positive economic shocks can result in higher access rates, lower and shorter outages, and lower electricity prices. A better investment climate is expected to foster a better performance on all three dimensions of sectoral performance. The electricity literature suggests that hydro-dependent countries that experience droughts will have lower access rates, more and longer blackouts, and higher tariffs if they shift to more expensive alternative fuels. This literature also claims that civil wars lead to worse sectoral performance. I evaluated these expectations in this chapter. However, civil wars can result in changes in political coalitions. Coalitions that favor growth are expected to implement new policies and invest in infrastructure, including power utilities, after the war. Sectoral investments are likely to foster higher access, improved electricity reliability, and low supply costs and tariffs. Rent-seeking coalitions may obstruct investments in infrastructure.

Table 4.6 summarizes my findings. The results confirm the expectation in the literature that more natural resources can influence higher electricity access and reliability. Fossil fuels and electricity prices have a statistically insignificant association, but hydro capacity and electricity prices have a statistically significant relationship. Negative economic shocks have expected effects for access and outages but not for prices. Positive shocks have expected effects for access but lack expected effects for outages and tariffs. The findings support the expectation that a better investment climate (credit ratings/ease of doing business scores) can attract private capital, which may engender competition and efficiency in resources allocation, and then improve

sectoral performance. The results for droughts are counterintuitive, with drought years correlating with a better performance on the indicators of sectoral performance. This suggests that non-meteorological factors play a significant role in sectoral performance. The findings support the view that civil wars lead to lower access rates. Higher electricity tariffs during years with no civil war suggest that civil wars might change political dynamics, as Olson predicted, but the measure for civil wars does not allow this study to distinguish post-civil war country-years from non-civil war country years in countries that have never experienced civil war, and the analysis does not directly address the mechanisms behind Olson's expectations. I will analyze the expectations about the implications of civil wars for political coalitions and thus for policy and outcomes in Chapter 8.

Put together, the bivariate analysis indicates that natural resource endowments, economic shocks, investment climate, droughts, and civil wars correlate with electricity sector performance. It confirms the relevance of external factors for sectoral performance in Africa. However, the findings mean that, on their own, commonly cited external factors leave a lot of variation to be explained. If external factors seem to influence sectoral performance, they do so alongside and perhaps in interaction with other conditions and processes, including domestic political dynamics. External factors can serve as background conditions in which politicians maneuver in their quest to maintain or obtain power. In their role in defining context, external factors can define opportunity structures for political competition.

Data problems limit the utility of the analyses in this chapter. There was a lot of missing data, especially on the indicators of the outcome variable – sectoral performance. Patchy data on power outages, for instance, prevented an analysis for civil wars and electricity reliability. The available data may not be accurate because African governments and data agencies may use inadequate evidence (Jerven 2013) or may lack resources to gather and evaluate data correctly (Prabhu 2005). The conflation of civil wars of varying intensity may obscure relationships that differ for low, medium and high intensity wars. A trichotomous measure of civil war that accounts for the intensity of civil war may offer better understanding of the war-performance nexus than a dichotomous measure of civil war. Moreover, the model of civil wars did not allow me to distinguish post-civil war country-years from never-civil war country-years.

Even if the descriptive statistics and the bivariate analysis have limitations, they reveal considerable unexplained variation, which calls out for qualitative analysis to make sense of the patterns of relationships. In this regard, the next four chapters use case studies that treat external factors as background conditions and focus on unexplained variation in sectoral performance. Using case studies enables this dissertation to unravel the unique challenges confronting each country, the opportunity sets, and the processes of sectoral policy choices and outcomes. The case comparison of Ghana and Côte d'Ivoire details interconnections between broader socioeconomic and political developments on the one hand and electricity sector management and sectoral performance on the other hand.

Table 4.6: Summary of the relationships between external factors and indicators of sectoral performance

	Relationships				
	Natural resource endowment	**Economic shocks**	**Investment ratings**	**Droughts (for ≥30% hydro capacity)**	**Civil wars**
Access rates	Weak positive, statistically significant, heteroscedastic, *expected*	Weak negative for any shocks, negative shocks, and positive shocks significant, e*xpected*	Moderate positive, statistically significant, heteroscedastic, *expected*	Weak positive, statistically significant, *counterintuitive*	Moderate negative, significant, *expected*
Outages	Moderate positive, statistically significant, heteroscedastic, *expected*	Moderate positive and significant for any shocks and negative shocks, *expected* Weak positive, insignificant for positive shocks	Moderate negative, statistically significant, heteroscedastic, *expected*	Strong negative, statistically significant, *counterintuitive*	Not evaluated
Tariffs	Weak negative for fossil fuels, statistically insignificant, heteroscedastic, *not supported* Strong negative for hydro capacity, statistically significant, heteroscedastic, *supported*	Weak positive, insignificant for any shocks, negative shocks, and positive shocks, *not supported*	Weak positive, statistically insignificant for credit ratings, heteroscedastic, *not supported* Weak negative and statistically insignificant for the ease of doing business scores, *not supported*	Weak negative, statistically insignificant, *not supported*	Moderate negative, significant, *Olson supported*

Chapter 5

Electricity Development in a Historical Context in Ghana

5.1 Introduction

This research offers a comparative analysis of electricity sector policies intended to improve sectoral performance. It draws on the political economy literature that emphasizes the explanatory role of political competition. It argues that differences in the dynamics of political competition contribute to differences in how Ghana and Côte d'Ivoire have managed the electricity sector, which in turn influence sectoral outcomes. In line with the literature review in Chapter 1, I argue in this chapter and the next one that Ghanaian governments face the challenge of balancing macroeconomic management, recurring droughts, and the political economic imperative of expanding access to relatively inexpensive electricity and avoiding power shortages. This chapter focuses on the history of electricity sector development in Ghana. It starts from the colonial period when the British colonial administration began to develop infrastructure, including electricity. It ends during the era of the Provincial National Defense Council (PNDC, 1981-1992) when macroeconomic and electricity crises deepened and then introduced pressures for reforms. Since the struggle for independence, Ghanaian politicians and soldiers have recognized the value of electricity provision for the mobilization of political support and the demobilization of opposition. The management of electricity and sectoral performance over the years have thus reflected the political self-preservation strategies of political elites.

This chapter proceeds as follows: The first section documents strategies of electricity development during the colonial period through 1966 when soldiers removed the first post-independence government from office. Section 2 explains the role of electricity provision in Ghana's political instability from 1966 to 1981 and the implications of these unstable years for electricity development. As this section will show, electricity provision featured in the 1969 elections, it figured prominently in the development agenda of the winner of the elections and played a role in the 1972 coup d'état, which then affected sectoral development during the 1970s. Section 3 highlights disruptions to electricity development strategies in the early 1980s, before turning attention to how political considerations influenced the management of the sector during the late 1980s and early 1990s.

5.2 From Neglect to Expansion: Political and Electricity Developments, 1914-1966

Efforts to expand electricity in Ghana started during the colonial period, with the Gold Coast Railways Administration installing power plants to provide electricity to its facilities and support railway operations in Sekondi in 1914 (Resource Center for Energy Economics and Regulation 2005).[24] In 1920, the colonial administration enacted the Electricity Supply Ordinance, the first institutional framework for electricity provision in the Gold Coast (Kuruk 1989; Obeng et al. 2005). The colonial administration extended electricity to only strategic areas such as colonial dwellings and administrative offices (Botchway 2000; Silver 2016). This is unsurprising because "the colonial administrators were primarily interested in preserving the interests of the colonial masters, so any form of development was to bolster the colonial power" (Damachi 1978, 46; see also Silver 2016, 988-989).

[24] Gold Coast is Ghana's pre-independence name.

Political competition deepened in the Gold Coast colony during the early postwar years. Political reforms, intended to increase local representation in the colonial administration, led to the formation of the first political party, the United Gold Coast Convention (UGCC) in 1947 (Austin 1964; Sekyi 1974; Rooney 2007; Babou 2010; Boakye 2020). The UGCC aimed to obtain independence for the people of the Gold Coast through a gradual approach. It comprised educated elites, professionals, and chiefs of the Akan and Ga ethnic groups in southern Gold Coast (Rooney 2007, 47-48; Biney 2011; Boakye 2020). The UGCC leaders shot to national popularity when the British detained them for instigating riots that resulted in the death of three Gold Coast veterans of the Second World War in 1948 (Boahen 1975; Nkrumah 1957; Rooney 2007; Biney 2011; Boakye 2020).[25] In the following year, Kwame Nkrumah, the general secretary of the UGCC, broke ranks with the party and formed the Convention People's Party (CPP) because he favored immediate independence (Nkrumah 1957; Botwe-Asamoah 2005; Rooney 2007; Apter 2008; Biney 2011). Nkrumah's message of self-government attracted a broad support base consisting of labor unions, market women, unemployed secondary school leavers, small business owners, shop keepers, and farmers (Nkrumah 1957; Sekyi 1974; Botwe-Asamoah 2005; Apter 2008; Biney 2011; Boakye 2020). The colonial administration accused CPP leaders of fomenting unrest in the colony and imprisoned many of them, including Nkrumah, in 1950 (Botwe-Asamoah 2005; Rooney 2007).

The CPP and the UGCC competed in elections in 1951 – the first under universal adult suffrage – toward self-government (Sekyi 1974; Biney 2011). With the CPP winning nearly 90% of the legislative seats (34 of 38), the colonial governor released Nkrumah from prison to lead government business and appointed some CPP leaders as ministers (Botwe-Asamoah 2005, 104; Apter 2008; Frempong 2012, 33).[26] Constitutional reforms in 1952 expanded the number of seats in the legislature (Rooney 2007). Elections to choose representatives for this legislature occurred in 1954. Eight new political parties, mostly ethno-regional and religious, 81 CPP dissidents who accused the party of dictatorship and corruption, and Nkrumah's CPP competed for 104 legislative seats (Botwe-Asamoah 2005, 109; Rooney 2007; Biney 2011). The CPP won 72 seats, while all the opposition parties together obtained 32 seats (Botwe-Asamoah 2005, 110; Rooney 2007, 116). Within a few months of this election, a new party, the National Liberation Movement (NLM), formed to challenge Nkrumah's vision of a unitary government in post-independence Gold Coast. The NLM proposed a federal system that would enable the Ashanti region to protect its interests, such as control over mineral and cocoa revenues (Austin 1964; Botwe-Asamoah 2005; Apter 2008; Biney 2011; Boakye 2020). The NLM allied with other ethno-regional parties that supported federalism (Austin 1964; Biney 2011; Frempong 2012). To resolve this constitutional issue, the colonial administration organized legislative polls in 1956. The CPP's victory (71 of 104 seats) in this election ushered the Gold Coast into independence in 1957 with a unitary system of government and made Nkrumah the first prime minister of independent Ghana (Biney 2011, 75; Frempong 2012, 35).

At independence, Ghana had rudimentary infrastructure, a primary commodity reliant economy, little industrialization, pervasive joblessness, and widespread poverty. Politicians presented contrasting strategies to address these socioeconomic challenges. Nkrumah favored state-led development and rallied his supporters around the left (Sekyi 1974; Svanikier 2007; Silver 2016). In mobilizing political support, he made electrifying statements such as the widely

[25] J. Boakye Dankwah, Ako Adjei, Edward Akufo-Addo, Kwame Nkrumah, Obetsebi Lamptey, and William Ofori Atta formed the leadership of the UGCC. Ghanaians affectionately call these leaders 'The Big Six'.
[26] Nkrumah and his ministers had no executive powers (Botwe-Asamoah 2005, 104-105).

known “Seek ye first the political kingdom and all else shall be added onto you” to underscore his point that independence would enable his government to provide public goods and benefits to improve the welfare of citizens. On the other hand, the opposition, led by Joseph Danquah (and later Kofi Busia), preferred a market-friendly approach and organized followers around the right of the ideological spectrum (Svanikier 2007). These two ideologies have shaped Ghana’s political cleavages up to this day.

Nkrumah took steps to contain political opposition during the first few years after independence. His Avoidance of Discrimination Act of December 1957 banned ethnic, religious, and regional groupings created for political ends (Austin 1964; Boahen 1975). This law encouraged all the ethno-regional and religious parties to coalesce into the United Party (UP). The Preventive Detention Act of 1958 enabled the CPP to incarcerate without prosecution persons suspected of endangering national security (Austin 1964; Finlay 1968; Jallow 2014). Nkrumah proscribed formal opposition in 1964, making Ghana a one-party state and the CPP the only officially recognized political party (Twumasi 1968; Haynes 1992). Like many postcolonial African leaders, Nkrumah thought multiparty democracy slowed decision-making and hindered the national unity needed to tackle Ghana’s socioeconomic problems quickly and effectively (Young 2012). By outlawing opposition parties, the CPP hoped to engender national unity and strengthen the government to accelerate the development of a newly independent state (Austin 1964; Botwe-Asamoah 2005). Last, Nkrumah and his partisans argued that the one-party system resembled precolonial chieftaincy that had no formal opposition (Boakye 2020). According to them, precolonial African society recognized no formal division and acted communally and consensually (Austin 1964; Young 2012). Clearly, these measures were intended to squelch opposition to the CPP government and consolidate Nkrumah’s hold on power.

Nkrumah adopted strategies to decolonize the economy and alleviate Ghana’s socioeconomic problems, including rising levels of unemployment, mounting prices of consumer goods, falling real wages, and growing external debts, in 1961 (Damachi 1978; Killick 1978; Rimmer 1988; Ingham 1989). Under Nkrumah’s state-led development approach, he created a slew of state-owned enterprises (Esseks 1975; Rimmer 1988).[27] His import substitution industrialization policy sought to reduce the country’s reliance on imports by replacing them with locally produced goods (Steel 1972). By relying on state interventions, Nkrumah put the internationally dominant development paradigm during the immediate post-independence era into practice (Killick 1978; Haynes 1992; Aryeetey and Goldstein 2000; Ndulu 2008; Opoku 2010; Young 2012). To achieve desirable social and economic development outcomes, many development economists argued at the time, states must take over the commanding heights of the economy. Moreover, the Ghanaian economy lacked a local capitalist base that might play a leading role in economic development at that time. Even if a capitalist base existed, Nkrumah might not have relied on it because he distrusted capitalism (Haynes 1992; Opoku 2010). In his judgement, international capital contributed to European imperialism and exploitation of Africa. He thus used state interventions to prevent foreign capitalist control of the Ghanaian economy (Haynes 1992; Opoku 2010). Finally, state intervention aligned with Nkrumah’s socialism and his push to create a socialist state that would have a “complete ownership of the economy” (Killick 1978, 38; Young 2012).

Nkrumah viewed electricity as the cornerstone of the country’s modernization and industrialization (Konings 1978; Biney 2011; Miescher and Tsikata 2011; Gocking 2021) and

[27] Between 1961 and 1965, the number of state-owned factories rose from 23 to 38 and the construction of 26 others started (Esseks 1975).

framed electricity provision in terms of state-building and economic independence (Gore et al. 2019). In a speech titled "Building a Socialist State," Nkrumah articulated his view of the role of electricity:[28]

> Energy is an indispensable element in industrialization. Without energy – without coal, oil, or hydro-electricity – it is idle to talk of industrialization. Without energy, we cannot lay the foundations of industrialization. Industrialization presupposes electrification. Indeed, it is our lack of vital sources of energy that has been preventing us from carrying into effect so many of our ideas and plans for our national reconstruction. We could not even talk about a steel plant until we could envisage energy for working it. (Nkrumah 1997 [1961], 71)

To industrialize and achieve the goals of development, Nkrumah pushed the Volta River Project (VRP). The VRP involved the construction of dams at Akosombo, Kpong, and Bui and an aluminum smelter (Nkrumah 1997 [1961]). The VRP, Nkrumah anticipated, would provide electricity for industrialization and social development, and water for irrigation farming (Nkrumah 1997 [1961]; Killick 1978). As he emphasized, the VRP is "a gigantic project for the industrial development of our country – a scheme that can change the face of our land and bring wealth and a higher standard of living to our people" (quoted in Miescher and Tsikata 2011, 19). In short, the project encapsulated Nkrumah's vision of development and was dear to him (Hart 1978; Miescher 2014).[29]

Nkrumah took advantage of Cold War dynamics by negotiating with western donors for financial assistance for the construction of the Akosombo dam and conferring with the Soviet Union for help for the Bui dam (Miescher and Tsikata 2011; Boakye 2020). In 1960, Nkrumah obtained technical and financial assistance for the Bui dam. In 1961, Ghana contracted a Soviet company to study the Bui project and make recommendations for its execution (Miescher and Tsikata 2011). That same year, the CPP government passed the Volta River Development Act, Act 46, and formed the Volta River Authority (VRA) (Kemausuor et al. 2011). The Volta River Development Act charged the VRA "… with the duties of generating electricity by means of the water of the river Volta, and by other means, and of supplying electricity through a transmission system" (Republic of Ghana 1961, 3). The VRA also had responsibility for building the Akosombo dam and a power station near Akosombo (Republic of Ghana 1961). It commenced the construction of the dam in 1962, with funding from western donors, including the US and the World Bank (Malgas 2008b; Miescher 2014).

To be viable, the project needed an industry that would buy and use a large amount of electricity because Ghana's industrial and domestic consumption was too low at the time (Konings 1978, 70). Valco, an aluminum smelting plant, fulfilled this need. Kaiser Aluminum and Reynolds Aluminum, both American multinational companies, incorporated Valco in Ghana in 1962.[30] It signed a power supply agreement with Ghana and became the VRA's primary electricity consumer. The agreement guaranteed low electricity tariffs for Valco's operations.

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[28] Nkrumah initially described his version of socialist ideology as African socialism, later as Nkrumahism and finally as consciencism (Boahen 1975, 207). In Nkrumah's words, "…our approach … shall be a socialist pattern of society and it shall be based entirely on Ghanaian conditions and circumstances" (quoted in Boahen 1975, 207).

[29] According to Miescher (2014, 342), in 1962, the Co-Operator newspaper described the Volta River Project as Nkrumah's "dearest dream" and the Daily Graphic, Ghana's most popular newspaper, referred to the Akosombo dam as "Nkrumah's Baby."

[30] Kaiser Aluminum owned 90%, with 10% going to Reynolds Aluminum (USAID 1999). The aluminum smelting process requires a large amount of electricity (Hart 1978).

Views on Valco's tariffs are divided. Supporters of the agreement postulate that the concessionary tariff granted to Valco was useful at the time for two reasons. First, it constituted a strategy for seducing Kaiser to establish Valco in Ghana and to use the excess capacity for which the country had no other market (Interview with Nketia, Accra, 9 June 2019). Kwaku Asante (2003, 7), a member of Nkrumah's government, noted that a host of stakeholders, including government officials and investors, thought that "without a major consumer of electricity, Akosombo was not viable and Valco, therefore, made Akosombo possible." Valco's bulk purchases would "guarantee regular payments to the World Bank and other investors" in the Akosombo project (Asante 2003, 7). As Nkrumah anticipated, Valco used nearly half (44%) of the electricity produced by Akosombo when it operated at full capacity (USAID 1999). Second, Ghanaian authorities reasoned that Valco's presence in Ghana on the back of concessionary tariffs was enough to convince the American government to invest in the dam project (Interview with Nketia, Accra, 9 June 2019).

Critics, on the other hand, argue that Valco accessed electricity at a ludicrously cheap price (Boakye 2017). Williams and Ghanadan (2006, 828) described the electricity tariff as a "sweetheart deal." As Koning (1978, 70) observed, "Power was to be sold to Valco at 2.65 mills per [one kilowatt] hour (almost at cost price), a price reputed to be among the lowest in the world and fixed for 30 years." In the end, the strategy of using low tariffs to attract investors proved effective. Nkrumah obtained the much-needed funding from the US and the World Bank for the construction of the Akosombo dam – a symbol of Ghana's pride – and enticed Valco to operate in Ghana.

Challenges to the Nkrumah administration mounted in the early 1960s. Public discontent over shortages of goods like food and medicines, falling producer prices of cocoa, inflationary pressures, and declining real wages, among other challenges, manifested in a string of protests and strikes in 1962 and 1963 (Rimmer 1988; Ingham 1989). With students, farmers, and labor movements leading these demonstrations, Nkrumah and the CPP understood that their political base was crumbling (Chazan 1988; Ingham 1989). In response, Nkrumah inaugurated the Seven-Year Development Plan in 1964 "as a commitment to a socialist pattern of society" (Ingham 1989, 48; see also Killick 1978; Damachi 1978; Rimmer 1988; Aryeetey and Goldstein 2000). The plan sought to increase state investments in education, industrialization, and agriculture. Besides, he survived a number of assassination attempts between 1962 and 1964 (Baynham 1985; Biney 2011). In reaction, the Nkrumah government detained political opponents on the suspicion that they had masterminded the attacks.

The VRA completed the construction of the Akosombo dam in 1965 with a generation capacity of 912 megawatts (Malgas 2008b).[31] But Nkrumah had little time to execute his electrification agenda. In the middle of political repression and increasing economic hardships, a group of military and police officers removed him from office in February 1966, barely one year after the inauguration of the dam (see e.g., Afrifa 1966; Fitch and Oppenheimer 1966; Austin 1975 on the coup). Political and economic events following Nkrumah's overthrow have cast a long shadow over the electricity sector and therefore deserve attention.

5.3 Electricity Provision in Unstable Years, 1966-1981

The National Liberation Council (NLC) that toppled the CPP government in 1966 inherited economic deterioration, which they attributed to Nkrumah's mismanagement (Afrifa 1966; Dowse 1975). Ghanaians experienced inflationary pressures, joblessness, and shortages of

[31] A retrofit in 2004 increased the dam's capacity to 1180 megawatts (Malgas 2008b).

essential consumer goods. The annual gross domestic product (GDP) growth rate fell from 4.4% in 1963 to 2.2% in 1964 and 1.2% in 1965 (World Bank 2021a). According to Dowse (1975, 20), Ghana was one of the most indebted countries globally on a per capita basis at the time of the coup. With the country on the brink of insolvency, the coup makers averred "the need for a radical rethinking of economic and financial policies" (Dowse 1975, 17).

Immediately after the coup, the NLC banned all political activities, publicly declared a move toward a market-based economy and vowed to review the scope and operations of parastatals (Fitch and Oppenheimer 1966, 7; Austin 1975, 14; Haynes 1992, 45-46). The NLC turned to western donors, in particular the IMF and the World Bank, for help. It appealed to them to reschedule the payment of Ghana's debt to make foreign exchange available for imports, which the country needed badly because of falling prices of cocoa, shortages of essential goods, and prohibitively high prices for consumer goods (Boahen 1975; Esseks 1975). The Bretton Woods agencies deferred the country's debt repayment on the condition that the NLC reverse Nkrumah's state-led economic strategies. The NLC thus cancelled the Seven-Year Development Plan and stopped all ""prestige" projects" to reduce public spending (Fitch and Oppenheimer 1966, 6-7). The new military government reorganized and cut down ministries and departments (Opoku 2010). It attempted to privatize some parastatals in 1967, but public outcry compelled it to halt the process (Young 1991; Opoku 2010).

The NCL's market orientation and public sector downsizing impacted electricity development. First, the NLC immediately stopped the Bui hydro dam project (Miescher and Tsikata 2011).[32] Second, it halted Nkrumah's universal electrification drive. Third, it dissolved the Electricity Department, which had responsibility for electrification projects (Resource Center for Energy Economics and Regulation 2005). The military government replaced it with the Electricity Corporation of Ghana (ECG), created under the ECG Decree of 1967 (NLC Decree 125) (Resource Center for Energy Economics and Regulation 2005). The regime tasked the ECG to distribute hydroelectricity generated by the Volta River Authority and to manage the diesel plants already in operation.

The dissolution of the Electricity Department occurred in the context of the restructuring of state agencies to lessen public expenditure and ensure administrative efficiency (Dowse 1975). This agreed with the IMF's recommendations and the NLC's own ideological predilections. It is also consistent with liberalization reforms detailed in Chapter 3. Finally, the NLC's decision may be understood as a move to eliminate Nkrumah's hold on the agency. The regime deemed public agencies as politicized by Nkrumah (Dowse 1975; Apter 2008; Opoku 2010). To strengthen his grip on political power, Nkrumah rewarded party activists by recruiting them into public agencies and promoted public servants loyal to him (Apter 2008; Opoku 2010; Boakye 2020).

The NLC's termination of such popular programs as universal electrification is easy to explain. Economically, it inherited a country on the brink of bankruptcy (Boahen 1975). It lacked funds to import even basic consumer goods like sugar and milk, let alone inputs for capital-intensive electrification projects. Politically, as Dowse (1975) claimed, the regime did not aim to mobilize the masses behind it in power. Instead, it intended to solve Ghana's socioeconomic problems by reversing Nkrumah's socialist and interventionist policies.

[32] The NLC deported 130 Soviet technicians within two weeks of the coup (Fitch and Oppenheimer 1966, 7). Although Fitch and Oppenheimer (1966) do not specify their work in Ghana, some of these technicians possibly worked on the Bui project.

The NLC paved the way for multiparty elections and a return to civilian rule. Adu Boahen (1975) identified several factors that shaped the military government's decision to install multiparty democracy. First, the mastermind behind the coup, General Kotoka, died in a failed countercoup in 1967. Since Kotoka had united the police and military factions within the NLC, his death undermined the ruling coalition's unity. Second, intellectuals and politicians, including those of the Danquah-Busia tradition serving in the NLC administration, pushed for the restoration of constitutional rule. Third, the chairman of the NLC, Major-General Ankrah, resigned because of allegations of corruption in March 1969. Given these political developments, some observers found it unsurprising when the NLC authorized the formation of political parties and partisan activities in May 1969 and held multiparty elections in October of the same year (Boahen 1975).

The election was a two-horse race between the Progress Party (PP) – a center-right party – and the National Alliance of Liberals (NAL), a center-left party (Twumasi 1975; Chazan 1983). Although these parties claimed to espouse different ideologies, they presented similar messages to the electorate at campaign rallies. They promised to transform rural areas, develop infrastructure, including hospitals, roads, and electricity, promote domestic private enterprise, and encourage foreign investments (Twumasi 1975). Both parties rejected the state interventionist approach of the Nkrumah era. Most Ghanaian voters elected the PP, which obtained 59% of popular votes and 105 of the 140 legislative seats, representing 75% of the seats (Twumasi 1975, 140-141; Boahen 1975). Although the PP won massively across the nation, a breakdown of the election results depicts the regional and ethnic support base of competing parties, which influenced the allocation of development projects. The PP derived an overwhelming support from Akan regions, comprising Ashanti, Brong-Ahafo, Central, Western, and Eastern regions. It won all seats in Ashanti, Brong-Ahafo, and Central regions, and most seats in Eastern and Western regions (Twumasi 1975, 141). In the Volta region, the NAL got 14 of 16 seats, while the PP obtained just two seats (Twumasi 1975, 141). In other regions, the PP won the majority of seats, but the NAL performed well.

The NLC handed over political power, but also the economic problems it had inherited from the Nkrumah days to Kofi Busia's PP. Busia faced additional economic constraints because the deferment of debt settlement, which the IMF and the World Bank had granted the NLC, would end in the early 1970s. Busia's finance minister summarized the economic problems as involving "food shortages, unemployment, and the adverse balance of payments" (Esseks 1975, 54). To address these challenges, the PP continued the liberalization policies of the NLC and approached western donors for assistance (Gyimah-Boadi and Jeffries 2000, 33).

The economic conditions at the time and Busia's market-oriented economic management affected electricity policy. The PP sought external markets for profitable sales of the country's electricity surplus by negotiating deals with neighboring countries, including Benin, Togo, and Côte d'Ivoire (Resource Center for Energy Economics and Regulation 2005).

Busia carried out an ambitious rural development program, which belied the government's emphasis on rolling back the state (Killick 1978; Gyimah-Boadi and Jeffries 2000; Sackeyfio 2018). For the first time in Ghana's history, the PP established a ministry of local government and rural development to execute its rural development agenda and introduced a national development levy of 5% in 1971 (Esseks 1975, 54; Aryeetey and Goldstein 2000). Under the rural development program, the government invested in infrastructure, including electricity, water, roads, and housing in rural constituencies, particularly in Ashanti and Brong-Ahafo regions (Aryeetey and Goldstein 2000; Gyimah-Boadi and Jeffries 2000). It connected at

least 100 rural communities to the electricity grid in less than two years (Sackeyfio 2018, 100). Aryeetey and Goldstein (2000) argued that, despite the country's balance of payment difficulties at the time, no Ghanaian government prior to the 1990s paid more attention to the development of rural infrastructure than Busia did.

Busia's decision to provide electricity and other amenities in rural areas in the face of budgetary constraints might seem baffling on the surface. Electrification projects are typically capital intensive, with low loads and low revenues in rural areas constituting disincentives to power utilities. Upon closer inspection, however, the strategy had both economic and political drivers. Economically, the government intended to use basic amenities to boost agricultural production in the hinterlands and to solve the problem of rising unemployment. As Beckman (1981, 153) captured it, "By the provision of clean water and electricity for the villages, the youth, now deserting agriculture and adding to urban unemployment, would be encouraged to stay back and cultivate the land."

Electoral considerations also motivated Busia's commitment to rural electrification. First, by rolling out electrification projects, the PP fulfilled its campaign promises to develop rural infrastructure and transform rural areas (Twumasi 1975). The incumbent understood that electors may reward or punish a party in power depending on whether it implemented election pledges. Second, by targeting electrification projects to rural communities in the PP's electoral base, especially Ashanti and Brong-Ahafo regions where it won all the legislative seats, the government rewarded its loyal voters (Chazan 1983; Gyimah-Boadi and Jeffries 2000). This interpretation is consistent with the observation by researchers such as Riedl (2014) that politicians may distribute public goods and services to reward dependable voters. Finally, Busia's support for rural electrification may be understood as an attempt to increase his party's prospects in future elections. The PP had an eye on elections scheduled for 1974 (Austin 1985).

In response to persistent economic hardships and in line with the conditionalities of western lenders, the PP introduced austerity measures in July 1971. It eliminated a car maintenance allowance for civil servants and army officers and introduced fees on health services (Bennett 1975; Esseks 1975). The PP ended the free supply of water and electricity to army officers, cut their telephone allowance, raised officers' rents from 7.5% to 15% of their salaries, and abolished import controls (Bennett 1975, 302). Busia devalued the local currency by 44% in December 1971 (Bennett 1975, 302). The devaluation aggravated the country's economic challenges, as prices of imported consumer goods and raw materials increased by as much as 80-90% (Damachi 1978, 52).

In January 1972, a few days after Busia announced the devaluation, a section of the Ghanaian army toppled him (Austin 1975; Chazan 1983; Herbst 1993). Reacting to his overthrow, Busia explained that the military intervention constituted "an officers amenities coup arising from their grievances at my efforts to save money" (quoted in Bennett 1975, 302; Goldsworthy 1973, 8). The leader of the coup, Colonel Ignatius Acheampong, confirmed Busia's account: the PP "started taking from us the few amenities and facilities that we in the armed forces and the police enjoyed even under the Nkrumah regime" (quoted in Bennett 1975, 308).

Acheampong's government, the National Redemption Council (NRC), renamed as the Supreme Military Council (SMC) in 1975, reversed most of the policies of the PP (Bennett 1975; Austin 1985). The NRC revalued the local currency and cancelled the country's foreign debt, which it deemed tainted by corruption. It shifted policy direction by returning to the Nkrumah years of state-led development. Acheampong announced that

> The political frame of reference which has guided … actions and … advice in the past two years [of the Busia administration] must be cast into the rubbish heap of history. This means a departure from the laissez-faire so-called free market economy and the institution of effective planning in the allocation and utilization of resources. (Quoted in Bennett 1975, 309)

Accordingly, the NRC promulgated a decree that sought to take over the commanding heights of the Ghanaian economy, especially mining, industry, and energy (Owusu 1975; Herbst 1993). It additionally stopped publishing data on the economy possibly to deny the west the ability to assess the effects of Ghana's policy shift (Beckman 1981, 154; Rimmer 1988, 122). As a result, western donors withdrew their support, exacerbating the country's financial challenges.

The NRC turned to self-reliance policies. In 1972, it instituted the Operation Feed Yourself (OFY) policy and announced the 1972-1974 period as "Agricultural Years" (Owusu 1975, 39; Rothchild 1980). Operation Feed Yourself aimed to increase local food production and to reduce Ghana's high food import bill (Owusu 1975; Rothchild 1980; Ahiakpor 1985; Aryeetey and Goldstein 2000). The policy further intended to supply raw materials, including pineapple, oil palm, mango, and sugar cane, to domestic industries (Owusu 1975). Local manufacturing, the NRC hoped, would lessen Ghana's dependence on foreign goods. Moreover, under Operation Feed Yourself, the NRC encouraged farmers to diversify into and increase non-traditional agricultural exports to earn more foreign exchange (Owusu 1975). Besides these declared intentions, the self-sufficiency policies were populist, designed to achieve the support of the public, especially those on the left of the Ghanaian ideological divide (Rothchild 1977; Ahiakpor 1985).

In the electricity sector, the NRC concluded negotiations with Ghana's neighbors over electricity exports, a process the PP had initiated. In 1972, the Volta River Authority started to export excess capacity to Togo and Benin (Resource Center for Energy Economics and Regulation 2005; Miescher and Tsikata 2011). This decision generated a new source of foreign exchange that could partly compensate for the loss of support from western donors.

The NRC began the construction of a hydro dam at Kpong in 1975 (Resource Center for Energy Economics and Regulation 2005). The economic motivation for expanding generation capacity related to the NRC's state-led industrialization drive under the Operation Feed Yourself policy. The government anticipated that, with industrialization, demand for electricity would grow so rapidly that it would outstrip existing supply. Politically, stakeholders such as Valco reportedly lobbied the government to construct the Kpong dam (Miescher and Tsikata 2011, 28). Valco believed that a dam at Kpong would enable it to get access to a more reliable supply of inexpensive electricity (Miescher and Tsikata 2011, 28). Kaiser Engineers, the proprietor of Valco (Kaiser Industries), had studied the Kpong river in 1971 and concluded that it had a more stable flow of water than the river at Akosombo (Miescher and Tsikata 2011, 28). What is more, for Acheampong, who presented himself as the one who would return Ghana to the Nkrumah days and complete his development agenda (Owusu 1975; Gyimah-Boadi and Jeffries 2000), the construction of the Kpong dam would fulfill Nkrumah's vision. Acheampong pledged to continue Nkrumah's "illustrious work," which included the Volta River Project (quoted in Miescher and Tsikata 2011, 29). Recall from section 5.2 that Nkrumah aimed at building a dam at Akosombo, Kpong, and Bui under the Volta River Project. While he completed and commissioned the Akosombo dam in 1965, the 1966 coup halted works at Kpong and Bui.

Pressures against pervasive corruption and economic mismanagement and calls for the re-establishment of multiparty democracy intensified during 1975-1978. A students-led protest in May 1976 began a string of clashes between security forces and civilians (Chazan 1983). In

September 1976, Acheampong reacted by introducing the notion of a 'union government', a ruling arrangement comprising non-party civilian representatives, the police, and the military, and scheduling a referendum on this political system for March 1978 (Chazan 1983). Prominent politicians banded together under the banner of the People's Movement for Freedom and Justice (PMFJ) and campaigned against the union government on the grounds that it would entrench Acheampong' rule. The PMFJ rejected the referendum results – 54% for and 46% against union government – and took to the streets to protest them (Gyimah-Boadi and Jeffries 2000, 39).

As the wave of demonstrations rolled over the country, a group of soldiers in the SMC removed Acheampong from office in July 1978 on allegations of political exclusion and worsening economic woes (Harris 1980; Austin 1985). This launched a period marked by extreme political uncertainty and governance paralysis in Ghana. Military-military-civilian-military alternations occurred in rapid succession – within three years – against a backdrop of financial mismanagement, economic hardships, corruption, and civil unrest. Jerry Rawlings' Armed Forces Revolutionary Council (AFRC) overthrew the SMC on 4 June 1979 (Austin 1985; Shillington 1992). The AFRC handed over power to a civilian government led by Dr. Hilla Limann in September 1979, after about four months in power (Shillington 1992).

Like the two military regimes before it, the civilian government carried out no major policies in the electricity sector during the 1979-1981 period (Sackeyfio 2018). A poor economy and internal political competition crippled the government. Past economic mismanagement and corruption deprived Limann of much-needed funds for providing public services such as electricity (Shillington 1992, 71). Limann took over an economy in shambles. Moreover, internal divisions in the Limann government between "the socialist hardliners, the old guard CPP patronage politicians, and the new guard of younger parliamentarians calling for a more technocratic orientation" boiled over publicly (Gyimah-Boadi and Jeffries 2000, 41; Chazan 1983, 307-308). This division resulted in policy inertia, as Limann failed to get parliamentary approval for his budget in July 1981 (Tsikata 1999, 11). In this situation of political and economic uncertainty, Rawlings returned, toppling Limann on 31 December 1981 and establishing the Provisional National Defense Council (PNDC). This new military regime lasted for about a decade.

5.4 Electricity and the Politics of Conciliation under the PNDC, 1982-1992

This section examines the economic and environmental crises under the PNDC and the regime's responses to them. It demonstrates that the PNDC executed macroeconomic reforms but failed to implement deep structural reforms in the electricity sector, and that the nature of political competition in the 1980s into the early 1990s influenced the PNDC's choices regarding the power sector. The first subsection looks at interactions between the economic crisis, the droughts, and the political dynamics of reforms of the 1980s. The second subsection discusses how the PNDC used electricity provision to build political support, following its embrace of the Structural Adjustment Program (SAP) in 1983. It shows that the PNDC relied on electricity provision as a resource in the politics of conciliation, given the adverse effects of the SAP on the Ghanaian economy and society.

5.4.1 Macro-level Crises and the Politics of Reforms

When Rawlings took over the helm of the country, the economy was on the cusp of collapse, following several years of mismanagement and corruption in public life – factors that contributed to the coup d'état on 31 December 1981 (Parfitt 1995; Konadu-Agyemang 2000). From 1970 to

1982, income per head declined by 30%, real wages dropped by 80%, and the fiscal deficit grew from 0.4 to 14.6% of GDP (Boafo-Arthur 1999, 48; see also Loxley 1990). Ghana's economic woes worsened by 1983 (Ahiakpor 1991; Aryeetey and Goldstein 2000; Sowa 2002). For example, hyperinflation and shortages of raw materials and consumer goods became the norm. Cocoa exports fell, foreign exchange earnings plunged, debts mounted, and unemployment rose. An interplay of the regime's leftist discourses, natural disasters, Nigeria's expulsion of Ghanaians, electricity shortages, and global economic shocks exacerbated Ghana's economic dire straits.

The PNDC initially (from 1982 to early 1983) used radical rhetoric and adopted populist policies to deal with the economic problems it had inherited (Ahiakpor 1991). The regime attacked capitalist interests and western imperialism and threatened to take control of foreign companies (Boafo-Arthur 1993). Western creditors with whom the Limann government had negotiated economic aid suspended their disbursements because of the regime's anti-imperialist discourse (Shillington 1992; Boafo-Arthur 1993). As Shillington (1992, 98) explained, western donors "hesitated to risk their capital in such a volatile situation." Multilateral financial agencies paused aid disbursement, worsening the country's already ailing fiscal health (Kraus 1985).

A combination of a historic drought and bushfires during the 1982-1983 period aggravated the economic problems. As happened in many African countries in the 1980s, a severe drought tore through Ghana, with some areas having annual rainfall deficiencies of more than 60% relative to the average for the period 1931-1960 (Ofori-Sarpong 1986; Tan and Rockmore 2018). The drought facilitated the spread of bushfires nationally, devastating crops and livestock (Boafo-Arthur 1999). This resulted in a nationwide famine and reduced cocoa production. The decline in cocoa output coincided with a slump in the global price for cocoa (Edjekumhene and Dubash 2002). Since cocoa contributed the lion's share of the country's foreign revenues, the combination of low production and the international price collapse exacerbated balance of payment difficulties and foreign exchange shortages. Moreover, sharp increases in the international prices for oil, especially in the late 1970s, had resulted in global inflation and spiking interest rates that contributed to the debt crisis (Eastwood 1992).

The drought and the economic downturn hit the electricity sector hard, which in turn accelerated the economic deterioration. The drought destroyed hydroelectric capacity, which constituted 99% of the generation mix (Kuruk 1989, 520; Boafo-Arthur 1999).[33] Water levels in the dams dropped significantly because of extremely low rainfall, thereby undermining the dams' generation capacity.[34] Data from the Energy Information Administration (2021) show that Ghana's hydro-generation capacity decreased from 4.941 billion kilowatt-hours in 1982 to 1.799 billion kilowatt-hours in 1984, representing a reduction of 64%. Generation shortfalls culminated in the first ever nationwide load shedding, as power utilities – the VRA and the ECG – rationed electricity (Interview with bureaucrat 1 at the Energy Commission, Accra, 10 May 2019). With the load-shedding exercise, per capita consumption of electricity slumped. Figure 5.1 reveals fluctuations in the per capita consumption of electricity over time and how they became more marked in the 1980s. Consumption per capita plunged from about 370.6 kilowatt-hours in 1982 to 163.7

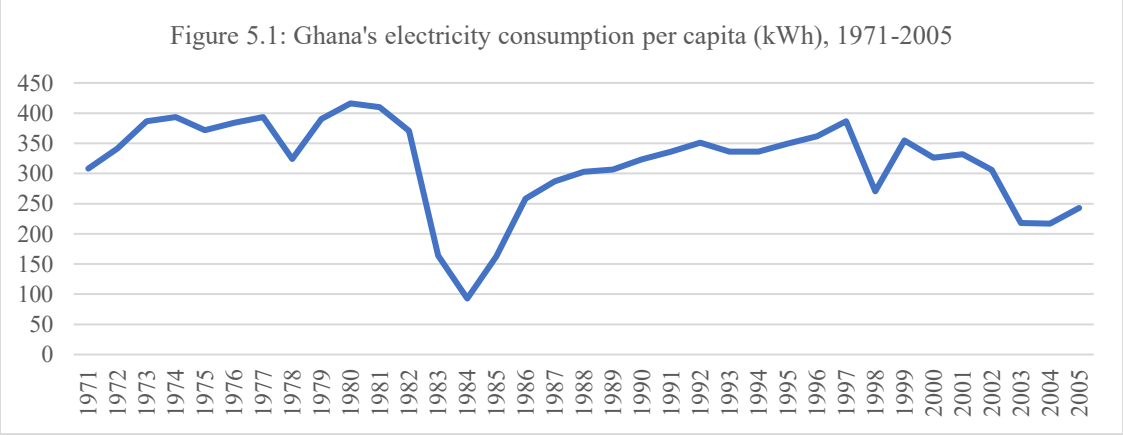
[33] Hydro sources constituted almost 100% but for a few diesel-fueled plants that existed in the northern parts of Ghana.

[34] The Akosombo dam recorded one of the lowest water levels in 1983. As Ofori-Sarpong (1986, 125) noted, "The maximum operating water level for electricity is 82.8m and the minimum level is 74.4m. By August 1983, the water level of the Dam had fallen below the minimum level to 70.5m."

kilowatt-hours in 1983 – showing a decrease of 55.8% – and dropped further to 92.8 kilowatt-hours in 1984.

The economic decay undercut the government's ability to invest in electricity and run public utilities (Edjekumhene and Dubash 2002). Much-needed foreign exchange to purchase spare parts and equipment dried up. The lack of power in turn drove the country's economic decline. It compelled Valco to shut down, reducing tax revenues and foreign exchange the government received from the aluminum smelter (Kraus 1985). Foreign exchange shortages curtailed oil imports, constraining industrial production and transportation (Kraus 1985). Besides, the VRA failed to meet contractual obligations for electricity export, a source of foreign exchange. The utility cut power supply to Benin and Togo. The VRA could not sell power to Côte d'Ivoire, although Ghana and Côte d'Ivoire had constructed a new transmission line in early 1983 for electricity exchange (Resource Center for Energy Economics and Regulation 2005). In sum, the promise of electricity during the Nkrumah years – access, industrialization, economic growth, and rapid development – had failed to materialize in the early-1980s.

Nigeria rubbed salt into the wound by abruptly deporting about 1.2 million Ghanaians in 1983 (Tsikata 1999, 18; see also Freedom House 1990; Bawumia 1998).[35] This figure represented 10% of Ghana's domestic population and meant that the PNDC had additional mouths to feed when droughts and bushfires had destroyed crops and livestock (Tsikata 1999, 18). 1983 was really a calamitous year for Ghana (Herbst 1993, 29).



Source: Data from World Bank (2020b), World Development Indicators

The PNDC reacted to the crises by, first, seeking aid from communist regimes (Ahiakpor 1985; Boafo-Arthur 1993, 1999). It sent envoys to Libya, China, Cuba, and the Soviet Union. These regimes failed to provide the Ghanaian government with the much-needed financial help, narrowing the PNDC's options (Boafo-Arthur 1999). Given the communist regimes' failure to assist Ghana and the threats that the socioeconomic and climatic crises posed to the PNDC regime's survival, Rawlings decided to embrace neoliberal policies in return for loans (Clark and Manuh 1991; Boafo-Arthur 1999). As seen in section 5.3, economic crises had contributed to military takeovers in Ghana in the past, including the PDNC coup d'état. The PNDC had hoped that the loans would enable it to salvage the economy and ensure its political self-preservation (Ahiapkor 1985; Jebuni 1995; Oquaye 1995; Bawumia 1998; Boafo-Arthur 1999).

[35] Some scholars like Sowa (2002) attributed Nigeria's deportation of Ghanaians in 1983 to that country's economic decline caused by the collapse of global oil prices.

In April 1983, the PNDC changed policy direction by launching a Structural Adjustment Program (SAP) aimed at stabilizing the Ghanaian economy between 1983 and 1986 and promoting economic growth during 1987-1990 (Bawumia 1998, 54; Nikoi 2015, 4). In line with the SAP, the Rawlings government liberalized import and export rules, decontrolled prices, removed subsidies, introduced user charges on some public services, and raised fees on others by between 100 and 300% (Shillington 1992, 110; Konadu-Agyemang 2000). It devalued the local currency, put 300 state enterprises up for sale, liquidated 12 parastatals, and privatized 5 (Gyimah-Boadi 1990; Tsikata 1999; Konadu-Agyemang 2000). The PNDC listed 18 parastatals, including public utilities, as strategic and therefore closed to privatization (Rothchild 1991).

For some supporters of the left, the regime committed ideological suicide and betrayed the 'revolution' by approaching the Bretton Woods institutions and embracing economic liberalization (Graham 1985; Gyimah-Boadi 1990). For others, given the socioeconomic realities on the ground in the country, the PNDC's U-turn was "an act of pragmatism rather than ideological conversion" (Gyimah-Boadi and Jeffries 2000, 44). Pragmatism became evident in statements by some leading figures of the regime not least the Chairman of the PNDC, Jerry Rawlings, and the Secretary of Finance and Economic Planning, Dr Kwesi Botchwey. Rawlings remarked that it was time to drop "empty theories" (quoted in Ahiakpor 1985, 550) and the "ideological nonsense" (quoted in Ahiakpor 1991, 590). He urged Ghanaians to see the economic reforms "as an integral part of the new wave of realism cutting across geographic and ideological boundaries the world over" (quoted in Herbst 1993, 34). The Secretary of Finance, an avowed Marxist during his teaching days at the University of Ghana, explained that "the real question is what should a Marxist do, faced with the real situation in Ghana … the objective of feeding the people … not from the point of view of any ideal condition existing in one's head…" (quoted in Ahiakpor 1991, 590).

Discussions between officials of the PNDC and the World Bank about measures to address the electricity shortage and challenges of state-owned electricity companies occurred alongside deliberations on wider economic reforms in the 1980s (Bawumia 1998). Electricity is indispensable to industrial production and economic growth, but it was in short supply (Rimmer 1988; Gyimah-Boadi 1993, 2; Bawumia 1998). The government thus had to improve electricity provision. To this end, the World Bank advised the Ghanaian authorities to implement deep structural reforms in line with adjustment policies, which included privatization, removal of subsidies and cost recovery, and independent power production (Interview with bureaucrat 1 at the Energy Commission, Accra, 10 May 2019; Essandoh nd). It proposed to the PNDC to diversify the country's electricity generation mix by introducing thermal power (Interview with bureaucrat 1 at the Energy Commission, Accra, 10 May 2019).

Yet the PNDC failed to move forward with the neoliberal electricity sector reforms (Miescher and Tsikata 2011; Interview with bureaucrat 1 at the Energy Commission, Accra, 10 May 2019). One wonders why it was able to implement macroeconomic reforms but failed to carry out neoliberal reforms in the electricity sector. The nature of political competition during the 1980s and the early 1990s offers insights into the government's behavior. Lacking the political support of major social forces, the regime's very survival was at stake. First, by embracing structural adjustment, the PNDC destroyed its initial left-wing support base. Second, the PNDC lacked the support of the urban middle class. Third, the regime alienated traditional and religious leaders. I discuss these challenges to regime survival below.

Economic liberalization estranged the left-leaning constituencies of the PNDC (Gyimah-Boadi 1990; Herbst 1993; Jebuni 1995; Gyimah-Boadi and Jeffries 2000). As Gyimah-Boadi

(1993, 8) observed, the austerity measures and adverse ideological implications of the SAPs "caused considerable disaffection among the working class, students, and radical intelligentsia who … formed the original support base of the regime" (see also Gyimah-Boadi 1990, 330; Adedeji 2001; Kraus 1991; Ofuatey-Kodjoe 1999). Opposition to structural adjustment by the PNDC's leftist functionaries started from July 1982 – before its incorporation into the budget of April 1983 – at a meeting organized by the PNDC's Economic Review Committee to discuss the need for economic liberalization (Kraus 1991; Shillington 1992; Ofuatey-Kodjoe 1999). The meeting ended inconclusively as some leading leftists of the regime remonstrated, with devaluation as the sticking point (Graham 1985; Shillington 1992; Ofuatey-Kodjoe 1999). For the radical leftists, devaluation would betray the socialist basis of the regime and would constitute a "sell-out to the neo-colonial dictates of" western donors (Shillington 1992, 103; Kraus 1991). Devaluation, they also thought, would prompt high prices of goods, adding hardships to the already suffering Ghanaians (Graham 1985; Ofuatey-Kodjoe 1999). Last, recall from Section 5.3 that the Busia government had scarcely devalued the local currency when soldiers removed it from power in January 1972.

In the judgment of the leftists, removing Rawlings would reverse the proposal to embrace structural adjustment (Shillington 1992, 104). After the July 1982 meeting, reports of botched coup attempts by leftist elements proliferated. The government foiled a coup plot on 28 October 1982 and an actual coup attempt on 23 November 1982 (Graham 1985; Shillington 1992; Ninsin 1993; Ofuatey-Kodjoe 1999). Following the 23 November coup attempt, the PNDC removed some of the leaders of the radical left from government agencies, it arrested others, and a few went into exile (Graham 1985). Coup attempts occurred after the PNDC officially announced the adjustment package in the 1983 budget (Graham 1985; Kraus 1991; Ninsin 1993). In total, there were four coup attempts from November 1982 to June 1983 (Graham 1985, 56). The PNDC regime reconstituted its organizational structures in 1984 "to suppress further radical political activities and also bring them firmly under its control" (Ninsin 1993, 103; see also Emiljanowicz and Ibhawoh 2021).

If embracing neoliberal economic reforms destroyed the PNDC's initial leftist support base, the effects of austerity measures exacerbated the alienation (Gyimah-Boadi 1990; Gyimah-Boadi and Jeffries 2000). Labor downsizing caused disaffection among the working-class base of the regime, who were casualties of retrenchment in many state-owned enterprises. The elimination of subsidies, the introduction of cost recovery, and the devaluation of the local currency pushed prices of such basic public services as health and education beyond the means of the average worker (Gyimah-Boadi 1990; Boafo-Arthur 1999).

In addition, the urban-based middle class detested the PNDC not just because the regime abolished constitutional rule and abused human rights, but because it also inflicted economic difficulties on them under the SAP. The regime had a hostile relationship with the urban middle class – comprising businesspersons and professionals such as doctors, lawyers, and accountants – because of their disdain for the PNDC (Ninsin 1993). The coup d'état had truncated the development of constitutionalism, a principle many of them cherished (Ninsin 1993; Ofuatey-Kodjoe 1999). Members of the urban middle class were among the most vocal and politically active and criticized the regime (Gyimah-Boadi 1993; Adedeji 2001). The PNDC arbitrarily arrested, detained without trial, and meted out various cruel punishments to urban-based professionals and businesspersons. Examples of such penalties included flogging supposed wrongdoers in public or forcing them to carry human feces (Gyimah-Boadi 1990). In some instances, the regime killed real and perceived opponents, while others disappeared. The murder

of three high court judges and a former army officer by the PNDC in June 1982 is a classic example (Shillington 1992).

The costs of structural adjustment for middle class groups worsened their frosty relationship with the PNDC (Gyimah-Boadi 1990, 332; 1993, 7). The government retrenched some bureaucrats, managers, and other professionals (Rothchild 1991; Jeffries 1992; Boafo-Arthur 1999). The removal of subsidies and the introduction of cost-recovery fees on education, health, and other public services, as well as devaluation, resulted in higher prices for consumer goods and services (Kraus 1985; Clark and Manuh 1991; Bawumia 1998). Bawumia (1998, 59) found that "… over the 1983-92 period, urban prices increased faster than rural prices, with the ratio of urban to rural consumer prices increasing from 0.83 in 1983 to 1.02 by 1991…." The urban populace experienced more rapid rises in the prices of consumer goods than rural dwellers partly because the PNDC removed subsidies on imported goods and taxes on rural farmers (Jebuni 1995). Jeffries' (1992, 212) research about popular attitudes toward economic liberalization under PNDC rule in three urban locations in Ghana – Accra, Kumasi, and Sekondi-Takoradi – found that "Nearly all respondents employed in the formal sector felt that they were economically worse off than they had been five years previously [1987]." In sum, economic hardships caused by structural adjustment contributed to discontent among urban residents.

One might expect that, in the face of this political disgruntlement, the PNDC would turn to traditional leaders, widely respected because of customs and one of the few remaining possible sources of political support. But the PNDC could not count on the backing of traditional rulers. As Ray (1996, 191) noted, hostility between the PNDC and traditional rulers marked the early period of the regime – 1982-1985. The PNDC initially vilified them "as 'neo-colonial' and 'regressive' social forces that had to be eliminated" (Gyimah-Boadi 1993, 7). It considered chiefs as parallel authorities and antagonistic to the government (Awortwi 2011). Their elimination or control would enable the regime to strengthen its hold on power. Traditional leaders in return resented the regime (Gyimah-Boadi 1993).

In short, the launch of liberalization policies disrupted the original coalition of the PNDC, battering its leftist political core. While the regime's brutalities caused disaffection among professionals, businesspersons, and chiefs, the austerity measures deepened their alienation from the PNDC. As Gyimah-Boadi (1990, 333) succinctly captured it, structural adjustment

> has caused a serious erosion in the PNDC's original support base (the workers, students, and radical intelligentsia) and has not yet produced a viable alternative support base to replace the old one. Simply stated, the PNDC has lost the support of the left, does not command the support of the right and does not appear to have a center to hold on to. The legitimacy crisis that has gripped the regime since 1983 [when the PNDC made an about-face over economic policy by adopting structural adjustment] derives not only from its origin as a quasi-military regime but also from its alienation of key support groups and its failure to gain broad middle-class acceptance.

This means that the PNDC regime veered from a crisis of the economy to a crisis of legitimacy. The legitimacy crisis then influenced the regime's strategies. In the early days of the SAP, the military government dealt with opposition from social forces through coercion (Kraus 1991; Jebuni 1995; Boafo-Arthur 1999; Adedeji 2001). But popular opposition – by students, lawyers, churches, organized labor, and university professors, among other groups – to PNDC's austerity policies persisted (Kraus 1985, 1991; Emiljanowicz and Ibhawoh 2021). From the mid-1980s, the regime resorted to the politics of conciliation to seek broader support. The next subsection details the PNDC's strategies, which included electrification, for mobilizing political support to ensure the regime's political self-preservation.

5.4.2 The Instrumentalization of Electricity Provision in the Search for Political Support

The past subsection demonstrated the legitimacy crisis the PNDC faced following the introduction of austerity measures. First, the PNDC destroyed its own political base by implementing structural adjustment, a move many radical leftists deemed a betrayal of the December 1981 coup d'état. Second, socioeconomic hardships inflicted by the austerity measures associated with the SAP on the urban-based middle class worsened their already unfriendly relationship with the PNDC. Last, the PNDC lacked the support of chiefs, whom the regime's revolutionaries had attacked.

This subsection shows that the PNDC failed to move forward with the standard model of electricity sector reforms and instead instituted the national electrification scheme (and other electrification programs) partly because of the regime's quest for political support in the face of the political and economic fallout from the implementation of the austerity measures. The survival of the PNDC regime depended on building a broad and viable political base involving the rural populace not merely because it lacked the support of key social groups, but also because it had devastated its political constituency on the left by embracing structural adjustment (Gyimah-Boadi 1990, 1993; Shillington 1992). This legitimacy crisis, coupled with the immediate socioeconomic hardships resulting from the austerity policies, conditioned the PNDC's coalition building tactics (Emiljanowicz and Ibhawoh 2021). Electrification became part of a range of strategies the PNDC used to manage opposition to the SAPs, cultivate legitimacy for the regime, and consolidate Rawlings' hold on power. As elaborated below, it reached out to a variety of groups for political support through strategies like cooptation and redistribution of national resources. Redistributive policies included the Program of Action to Mitigate the Social Costs of Adjustment (PAMSCAD) (e.g., Gayi 1995), a non-partisan local government system (e.g., Awortwi 2011), and infrastructure development (e.g., Nugent 1999). The launch and implementation of these measures coincided with heightened domestic and donor pressures for multiparty elections. These pressures then created incentives for Rawlings to carry out projects in the hope of future electoral successes.

The PNDC extended an olive branch to a range of powerful social forces. It wooed traditional rulers, the clergy, lawyers, and other professionals with appointments to key government positions. In 1986, the regime began to view chiefs as a means to reach the rural populace and to enable them to overcome popular opposition (Ray 1996; Adedeji 2001). The clergy could help the government to overcome anti-PNDC sentiments by influencing the beliefs and values of their congregants through sermons. It courted professionals and the middle class because, as the most outspoken groups against the regime, their involvement in the PNDC would reduce popular resistance to it. Some members of these groups accepted state appointments. Gyimah-Boadi (1994, 82) observed that they had become vulnerable to cooptation because they were looking for economic opportunities in the private and public sectors as, for example, consultants and contractors for government projects during the late 1980s.

The PNDC launched the PAMSCAD in 1987, after the United Nations International Children's Emergency Fund (UNICEF) had discussed its findings on the side effects of SAPs with the Ghanaian authorities and donors in 1985 and the World Bank had held a multi-agency meeting on funding for a social protection program in 1986 (Sowa 2002, 21; see also Loxley 1990; Gayi 1995; Boafo-Arthur 1999). With structural adjustment aggravating existing socioeconomic hardships and creating new ones, officials of the Ghanaian government, the World Bank, the IMF, UNICEF and the like recognized the need to shield the poor and helpless groups against the adverse effects of the neoliberal policies (Sowa 2002). The PAMSCAD aimed

to alleviate poverty in rural areas and among the jobless and underemployed workers in urban centers by distributing food, farming inputs, school supplies, and essential medications, and by providing skills training to retrenched workers, poor urban households, and subsistence farmers, among other target groups (Clark and Manuh 1991; Barimah 1993; Gayi 1995; Sowa 2002).

The PNDC introduced a decentralization policy under the Local Government Law – PNDC Law 207 – in 1987 (Gyimah-Boadi 1993; Antwi-Boasiako 2010; Awortwi 2011). It restructured existing local governments into 110 district assemblies intended to promote popular local participation and to make the regime responsive to grassroots needs (Antwi-Boasiako 2010, 170). It set up 10 regional councils to coordinate the affairs of local governments. The Local Government Law of 1987 authorized the government to appoint the chief executive officer of each district assembly. According to the law, 70% of councilors of each district assembly would be elected in non-partisan local elections and the government would appoint the remaining 30% every four years. The PNDC justified the government's appointment of 30% of assembly members on the grounds that the district assemblies needed experts and esteemed individuals, who would not put themselves up for elections (Ayee 1997; Awortwi 2011). But their appointment served a political purpose. It enabled the PNDC to select its supporters and to construct a grassroots base in anticipation of future multiparty elections (Ayee 1997; Awortwi 2011). The PNDC started public education on the decentralization in 1987, culminating in staggered no-party local government elections from November 1988 to February 1989 (Gyimah-Boadi and Jeffries 2000; Boafo-Arthur 2007). Appointees and elected councilors, some of whom tasted power and its perquisites for the first time, were probably grateful to the PNDC.

In addition, the regime developed infrastructure, targeting water, roads, and electrification, among other projects, to rural areas during the late 1980s (e.g., Bawumia 1998; Nugent 1999). In economic terms, the PNDC intended to use roads to boost agricultural production and spur growth. Bad rural roads hindered the transportation of agricultural produce to urban markets not only for consumption but also for export. They contributed to post-harvest losses, which undermined farmers' incomes and reduced foreign exchange earnings. Low incomes of farmers discouraged the youth from venturing into agriculture and contributed to the high rate of youth joblessness.

The PNDC introduced policies in the late 1980s to address low electricity access (Interview with bureaucrat 1 at the Energy Commission, Accra, 10 May 2019; Interview with Nketia, 9 June 2019). I have no data on electricity access in Ghana in 1987, when the PNDC instituted the electrification policy discussed below, but the available data show that 64 out of the country's 110 districts lacked electricity in 1988 (Bawumia 1998). Only major cities in southern Ghana had access to the grid. Lack of access was worse in rural areas, home to more than 70% of the country's population at the time (Ministry of Energy 2018, 1). Just 15% of the total Ghanaian population had access, with less than 5% of rural residents connected to the electricity grid in 1989 (Ministry of Energy 2018, 1; Interview with bureaucrat 1 at the Energy Commission, Accra, 10 May 2019; Interview with Nketia, Accra, 9 June 2019).

In 1987, the PNDC mandated the VRA to extend access and to directly distribute electricity to domestic consumers in the northern regions, which were less urbanized and unconnected to the national grid (Botchway 2000; Malgas 2008b).[36] It formed the Northern Electricity Department (NED) as a subsidiary of the VRA to carry out this electrification project.

[36] The national grid was limited to the southern areas of Ghana until 1987. Only a few areas in Tamale, the largest city in northern Ghana, had electricity connections through isolated, diesel-based plants (Interview with bureaucrat 1 at the Energy Commission, Accra, 10 May 2019; Interview with Nketia, Accra, 9 June 2019).

The decision to let the VRA take charge of electrification in northern Ghana stemmed from the VRA's creditworthiness versus the ECG's poor financial health. The VRA's solvency at the time meant that the government could use it to obtain loans for electrification projects (Interview with bureaucrat 1 at the Energy Commission, Accra, 10 May 2019). That same year (1987), the VRA started to extend the national transmission grid to northern Ghana (Bawumia 1998). This project would enable the VRA to send electricity to those regions.

The PNDC instituted the National Electrification Scheme (NES) two years later (1989) with the objective of achieving universal access to electricity by 2020 (Ministry of Energy 2018). The NES represents a broad electrification blueprint and sets out targets to be accomplished over a 30-year period (Ministry of Energy 2018; see also Kumi 2017).[37] The NES has the trapping of a programmatic policy: explicit criteria for selecting communities for electrification projects. First, the VRA and the ECG would connect all unelectrified regional and district capitals to the national grid by 2000 (Ministry of Energy 2010, 2018). Second, as their original and current goal, the utilities should extend electricity access to all communities with a population of 500 people or more. The government referred to these two aspects of the NES as the National Electrification Project (NEP). The implementation of the NEP took off in 1990 (Ministry of Energy 2018). Another component of the NES is the Self-Help Electrification Program (SHEP), which focuses on providing electricity to rural communities. As the Ministry of Energy (Ministry of Energy 2010, 1) describes it,

> Under [the] SHEP, communities within … 20km from an existing medium voltage (MV) network (i.e., 11kV and 34.5kV) and which took the initiative to provide the low voltage (LV) poles required for their communities, [are] assisted by the Government to advance their connection to the national electricity grid ahead of their scheduled connection time….

The SHEP would ensure villages not captured under the NEP due to the government's financial limitations as well as those that demonstrated need for electricity were not left out (Interview with Nketia, Accra, 9 June 2019).

Government officials framed the electrification scheme as a means of achieving various socioeconomic goals. Extending electricity to all communities in the country would help reduce poverty and raise standards of living (Ministry of Energy 2018). Moreover, the PNDC envisaged that the provision of electricity would trigger commercial and industrial activities on a small and medium scale in rural areas (Ministry of Energy 2018). Furthermore, electricity access, government officials thought, would "be one of the most powerful means to" bridge the development gap between Ghana's southern and northern regions (Interview with Nketia, Accra, 9 June 2019). Successive governments had historically marginalized the northern parts of the country in the provision of public services and the allocation of development projects. Proponents expected that the electrification policy would be a useful tool to correct this inequity in the distribution of the national cake. Additionally, the policy aimed to reverse urban bias. By inducing commercial activities and transforming the quality of social life in rural areas, the national electrification project would contribute to closing inequalities between urban and rural areas and stemming the tide of rural-urban migration (Interview with Nketia, Accra, 9 June 2019). The attainment of these objectives would accelerate the overall socioeconomic development of the country (Ministry of Energy 2018).

[37] The NES is an ongoing program. The Akufo-Addo administration has extended the end date of the NES from 2020 to 2030 in line with Sustainable Development Goal 7, which strives to attain universal access to reliable, sustainable, and affordable energy by 2030.

The World Bank agreed to these development goals and provided funding for infrastructure projects, including electrification (World Bank 2020d). At first glance, the World Bank's move to offer loans to the PNDC for public spending on electrification seems to contradict the former's adjustment conditionality of cutting public expenditure. Yet the World Bank had economic and political incentives to support these initiatives. Economically, officials of the agency and Ghanaian authorities converged on the notion that the economic objectives of electrification aligned with the intent of structural adjustment: economic growth that would benefit the poor and rural residents and not only urban residents (see e.g., Konadu-Agyemang 2002). Among other things, the adjustment program emphasized addressing infrastructure needs to ramp up agricultural and industrial production (Bawumia 1998). Rural electrification, roads, and potable water would contribute to achieving this objective. The availability of such amenities as electricity would encourage rural residents to stay in their local communities, contribute to agricultural production, and engage in commercial activities, instead of migrating to urban areas in search of non-existent jobs.

Notwithstanding these programmatic goals, political motivations also lay behind the electrification policies as well as other infrastructure projects. Given the regime's lack of support among key urban groups and with its political core shattered by the embrace of structural adjustment, the need to build a support base involving the rural populace to ensure the regime's political survival was particularly pressing (Ayee 1997; Nugent 1999; Antwi-Boasiako 2010; Awortwi 2011; Interview with an academic at the University of Ghana Business School, Accra, 26 April 2019). As Gyimah-Boadi and Jeffries (2000, 46) put it, the PNDC penetrated villages with infrastructure such as electricity and roads "to tap the latent support it believed it had in those areas."

The regime's quest to enhance its political popularity occurred against the backdrop of rising pressures for political liberalization in the late 1980s. By 1989, a section of Ghanaian society had intensified calls on the PNDC for a return to multiparty democracy. Determined to address political impediments to development, donors became less tolerant of the military regime and tied political liberalization to economic aid (Oquaye 1995; Bawumia 1998; Boafo-Arthur 1999). Besides, the end of the Cold War meant that donors could dispense with dictators. Authoritarian regimes – like the PNDC – dependent on them became vulnerable. Moreover, a wave of democratization rolled over the continent from 1989 into the early 1990s and had demonstration effects for both protesters and incumbent rulers (e.g., Riley 1992). Rawlings feared similar protests would happen in Ghana, with anti-PNDC forces learning lessons and taking inspiration from them. It viewed the pro-democracy protests as a threat to its political survival (Oquaye 1995). Given these broader considerations, the World Bank supported the PNDC's agenda for expanded electrification and other social interventions. The pro-poor and pro-rural policies further presented an opportunity for the World Bank to tackle persistent critiques about the implications of structural adjustment for poverty and socioeconomic well-being (e.g., Gayi 1995).

In short, in the context of pressures for political liberalization, the PNDC anticipated that rural electrification and other development projects would boost its chances of political survival, including its success in future elections. As the next chapter shows, rural voters did reward the National Democratic Congress (NDC) in the 1992 elections and they remain enthusiastic supporters of the party up to this day (Interview with an academic at the University of Ghana Business School, Accra, 26 April 2019).

5.5 Conclusion

This chapter has examined electricity development in Ghana and put it in historical context. It has shown that Ghanaian politics and electricity provision interacted in significant ways from independence in 1957 to the last military regime that ended in 1992. Specifically, politicians in Ghana had to perform a politically difficult balancing act between managing climatic and macroeconomic volatilities and meeting political economic pressures to increase access to cheap electricity. Macroeconomic instability and failures to maintain low-cost access to public services such as electricity can quickly generate opposition mobilization that threatens regime survival.

For Nkrumah, large-scale investments in hydro-electric dams were part and parcel of his general commitment to state-led development. The failure of these initiatives to generate sustained growth led to his ouster and to a step away from massive state investments in the electricity sector. Busia's short-lived regime demonstrated the political risks of curtailing the military's preferential access to electricity and other public services, and the more general political limits of neglecting state investments in generation and expanded access to electricity. Acheampong's new investments in electricity represented a return to the Nkrumah era state-led development. Nonetheless, they were not enough to fend off instability, as economic turmoil encouraged a series of coups d'état and political uncertainty. Instead of solving, the PNDC's first burst of anti-capitalist initiatives exacerbated the economic deterioration it had inherited. Other socialist regimes failed to provide support, while the regime risked isolation by the west. These challenges contributed to the regime's about-turn on macroeconomic policies. The PNDC highlighted the tension between implementing market reforms and the political economic imperative of improving access to low-cost electricity by combining neoliberal macroeconomic management with state investments in the electricity sector. Although neoliberal reforms can lead to a reliable supply of electricity, they can impede the expansion of access to inexpensive electricity. This can incite opposition mobilization and popular backlash and thus endanger regime survival.

The implementation of electrification projects and social policies coincided with calls at home for multiparty democracy, donor's insistence on political liberalization and the wave of democratization that had rolled over Africa in the late 1980s and early 1990s. Given this broader political context, the PNDC used the pro-rural and pro-poor initiatives to mend fences and mobilize support in anticipation of future electoral successes. The next chapter turns attention to interactions between political competition and electricity sector management and thus sectoral performance since Ghana's democratic transition in 1992.

Chapter 6

Electoral Competition and Electricity Provision in Ghana, 1992-2021

6.1 Introduction

The previous chapter documented the history of electricity sector management and sectoral performance in Ghana from the colonial era to 1992. It demonstrated that, notwithstanding the explicit programmatic goals of electrification schemes, both military and civilian governments extended access in the hope of building political support. Chapter 6 examines interactions between the dynamics of elections and developments in the electricity sector since Ghana returned to multiparty democracy in 1992. It argues that high electoral competition plays an important role in politicians' management of the electricity sector and, ultimately, sectoral performance. The narratives in this chapter will show the following: First, politicians make short-term decisions in response to popular aspirations and demands because of competitive elections. Second, electricity provision serves as a salient instrument to mobilize votes and thus features prominently in elections in Ghana. Third, there are multiple forms of political competition and Ghanaian politicians must address all of them to survive in office. These include bottom-up pressures for access and reliable supply of power at low prices. Finally, this chapter highlights the tension between competing goals and time horizons, and the balancing act politicians must perform to survive politically. They need to avoid electricity shortages resulting from underinvestment, political crises over electricity prices, and the threat of potential job losses in the sector.

This chapter focuses on presidencies since 1992 (see Table 6.2). It highlights interactions between electricity and electoral dynamics under Jerry Rawlings (1992-2001), John Kufuor (2001-2009), Atta Mills and John Mahama (2009 to 2017),[38] and Nana Akufo-Addo (2017-2021). The chapter concludes that Ghanaian politicians face incentives to interfere in the management of the electricity sector because elections are intensely competitive. Faced with uncertain electoral outcomes in close races between two political parties that have taken turns to govern, politicians try to avoid antagonizing voters by being responsive to popular aspirations for access to reliable electricity at low prices.

6.2 Democratic Transition, Electoral Turnover, and Electricity Development, 1992-2001

This section focuses on interactions between electricity and elections from 1992 to the first peaceful political alternation in 2001. It demonstrates that electoral incentives conditioned politicians' electricity strategies amid uncertain electoral outcomes. It further shows that Rawlings' electoral victories during the 1990s resulted in part from his pro-poor and pro-rural policies, including electrification.

In 1991, the military government conceded to pro-democracy pressures from domestic social forces and western donors by announcing a roadmap to political liberalization (Boafo-Arthur 2007). With the ban on political parties lifted and multiparty elections scheduled for 1992, old ideological battle lines in Ghanaian politics resurfaced (Morrison 2004; Lindberg and Morrison 2005). Rawlings' PNDC transformed into the National Democratic Congress (NDC), trumpeting many of the ideas of Nkrumah (Morrison 2004). Besides, minor parties claiming to represent Nkrumah's vision formed on the left of Ghana's political aisle. Adherents of the

[38] With Mills dying in office of natural causes in July 2012, Vice President Mahama completed his term of office in accordance with Ghana's constitution. Mahama retained power in the 2012 presidential election.

Danquah-Busia tradition reassembled on the right under the New Patriotic Party (NPP), with Dr Adu Boahen as their presidential candidate (Jeffries and Thomas 1993; Morrison 2004). The NPP had the support of most local businesspersons and professionals (Jeffries and Thomas 1993; Ayee 2008).

The NDC claimed credit for the PNDC's accomplishments and campaigned on promises to continue ongoing pro-rural strategies (Gyimah-Boadi 1994). The party did not merely make promises at campaign rallies. It also delivered development projects during the election period, supported by relative improvements in the economy and structural adjustment loans. For example, Rawlings "extended the hydroelectric grid to the Brong-Ahafo and Northern regions [and] commissioned water projects in remote parts of the country" in the days ahead of the elections (Gyimah-Boadi 1994, 83). Rawlings intensified efforts to court rural voters with development projects due in part to electoral insecurity. Frempong (2012) claimed that the NDC was unsure about the outcome of the transition elections, despite its control over resources and other incumbency advantages. On the other hand, because of the PNDC's poor human rights record, the opposition parties, especially the NPP, promised to reinstate civil and political liberties (Gyimah-Boadi 1994). The NPP further promised to foster a conducive environment for local businesses (Jeffries and Thomas 1993). This was expected, given that the NPP described itself as pro-business and enjoyed the support of many businesspersons (Ayee 2008).

When the Interim National Electoral Commission counted the votes, Rawlings obtained 58.4%, compared to 30.3% for the main challenger, Boahen (Interim National Electoral Commission 1993; Frempong 2012, 3). With the NPP rejecting the results and boycotting the legislative elections, the NDC took 189 of 200 seats, two minor parties won nine seats and the remaining two seats went to independent candidates (Frempong 2012, 51).

Analysts of Ghanaian politics, including Jeffries and Thomas (1993), Gyimah-Boadi (1994), and Frempong (2012), identified divisions in the opposition, which undermined their electoral appeal, as a cause of Rawlings' victory. Apart from the NDC, which ran its campaign on many Nkrumahist ideas, three parties claiming to be Nkrumahist competed in the elections (Frempong 2021). Moreover, the NPP's message of promoting human rights and pursuing pro-business policies persuaded only its own base – the middle class and business owners (Jeffries and Thomas 1993; Frempong 2012). In addition, one cannot ignore the role of the NDC's grassroots mobilization in Rawlings' victory (Jeffries and Thomas 1993; Gyimah-Boadi 1994). The party reached remote rural areas – inaccessible to many opposition parties because of limited resources – through grassroots agencies of the PNDC, including local governments, Committees for the Defense of the Revolution, and the 31st December Women's Movement.[39] Opposition parties faced other disadvantages. For example, they lacked adequate time to organize themselves and prepare for the elections because the PNDC lifted the ban on political parties and allowed them to register only four months before the day of the poll (Gyimah-Boadi 1994).

Rawlings won partly because many Ghanaian voters, in particular rural residents, appreciated improvements in their living standards during the late 1980s and early 1990s (Bawumia 1998; Debrah 2009). Rawlings and the NDC received more votes in rural areas than in most urban constituencies, where Adu Boahen of the NPP performed better. Table 6.1 illustrates Rawlings' electoral appeal in rural areas versus major urban centers. It shows that Rawlings obtained the greater share of the vote in nine out of 10 regions, but lost in several urban constituencies. In urban constituencies where Rawlings won, he had a low margin of

[39] The Committees for the Defense of the Revolution and the 31st December Women's Movement constituted the PNDC's agencies for mobilizing grassroots support for the regime.

victory. In each region, except Upper West, his total percentage of the vote topped his proportion in the region's main urban constituency (see Table 6.1). This reveals that Rawlings was remarkably popular in rural areas, where residents benefited from development projects and antipoverty measures, including electrification. The completion and commission of electrification projects and roads in rural areas, which the media widely covered during the election period, boosted Rawlings' electoral appeal (Nugent 2001a; Interview with an academic at the University of Ghana Business School, Accra, 26 April 2019). It additionally seems that Rawlings' promise at campaign rallies to continue investing in infrastructure assured unelectrified rural communities that they would receive their share of development projects if they retained Rawlings in power. In sum, as Bawumia (1998, 70) argued, most rural voters who benefited from the PNDC's development projects supported the incumbent, whereas most urban residents who suffered more from the costs of the Structural Adjustment Program (SAP) voted against Rawlings and the NDC.

Table 6.1: Rawlings' regional vote shares versus his vote shares in regions' main urban constituency in 1992

Region	Rawlings' regional proportion (a)*	Rawlings' proportion in region's main urban constituencies (b)	Difference (a)-(b)
Western	60.7	33.5	27.2
Central	66.5	45.9	20.6
Eastern	56.7	41.5	15.2
Volta	96.2	94.1	2.1
Ashanti	32.8	16.8	16.0
Brong-Ahafo	61.5	40.3	21.2
Northern	62.5	41.2	21.3
Upper East	50.8	39.8	11.0
Upper West	51.0	55.9	-4.9
Greater Accra	51.8	41.7	10.1

Sources: Data from Interim National Electoral Commission (1993); Jeffries and Thomas (1993); Bawumia (1998)
*Notes: Rawlings' share of the vote in the region, including urban constituencies.

Following Rawlings' victory in the 1992 elections, he became the (civilian) president of Ghana on 7 January 1993. He appointed many leading members of the former PNDC as ministers and deputy ministers as well as to other key positions in government (Gyimah-Boadi 1994). With no significant change in the ruling coalition, Gyimah-Boadi (1994, 80) concluded, "Ghana … experienced a transition without change."

Ghana faced power shortages during 1993-1994 (see Figure 5.1). Some analysts attribute the shortages and their resulting load shedding to droughts and increasing demand for electricity (Opam 1995; Edjekumhene et al. 2001; Malgas 2008b). According to them, droughts struck during this period, evaporating hydro-generation capacity, which in turn resulted in rolling blackouts. Increasing electricity demand that stemmed from rapid electrification and economic recovery from the crises of the early-to-mid 1980s then aggravated the impact of the droughts (Opam 1995; Bawumia 1998, 57; Rothchild 1991; World Bank 2020b).

What is missing in this narrative is the root cause of the rapid electrification. A closer consideration shows that the rapid electrification is not a cause but a product of the politicization of electricity provision during and after the transition elections in 1992. The politicization led to a prioritization of electricity access without investment in generation. Recall from Chapter 5 that the PNDC instituted an electrification scheme as one of several strategies to address its legitimacy crisis during the 1980s. In the early 1990s, the government accelerated implementation of its electrification scheme to boost its prospect of successes in future elections. The NDC extended the electricity grid to many communities in northern Ghana in the days ahead of the elections and claimed credit for it (Gyimah-Boadi 1994). NDC candidates promised rural voters that they would connect their communities to the national grid (Interview with bureaucrat 1 at the Energy Commission, Accra, 10 May 2019). After the elections, politicians pressured power utilities to connect communities to the grid in fulfilment of those promises (Interview with bureaucrat 1 at the Energy Commission, Accra, 10 May 2019).

Furthermore, access to electricity increased speedily because politicians latched onto the Self-Help Electrification Program (SHEP) to help their communities (Interview with officer 2 of the Public Utilities Regulatory Commission, Accra, 21 June 2019).[40] As discussed in Chapter 5, under the SHEP, the government would connect communities to the electricity grid if they were situated within 20 kilometers of high and medium tension poles and provide their own distribution poles. Communities unable to afford distribution poles had to wait longer, until the government made resources available (Interview with officer 2 of the Public Utilities Regulatory Commission, Accra, 21 June 2019). Some politicians took advantage of the SHEP requirement, promising to reward communities with electricity distribution poles, if elected (Interview with officer 2 of the Public Utilities Regulatory Commission, Accra, 21 June 2019). Others provided poles prior to the elections and used them to score political points. Once in office, politicians fulfilled their promises by giving poles to their communities and lobbying the government to connect them to the grid (Interview with bureaucrat 1 at the Energy Commission, Accra, 10 May 2019). To this day, politicians continue to woo and reward communities with poles, meters, and bulbs for streetlights in the hope of being (re)elected (Interview with Nuamah, Accra, 2 May 2019; Interview with a representative of the Ghana Trades Union Congress, Accra, 8 May 2019).

If electoral incentives drive rapid electrification, they can induce incumbents' political willingness to address electricity shortages. As compared to the 1983 power crisis that happened under an authoritarian regime, the second power shortage (1993-1994) occurred under constitutional rule, with periodic multiparty elections and free speech. The liberalization of the media encouraged it to highlight the power shortages and load shedding, which the Rawlings government simply could not wish away. Free speech enabled citizens and the opposition to criticize the government. For example, the NPP's presidential candidate in the 1992 elections, Adu Boahen, argued in two newspaper articles that Rawlings' failure to reform the sector during the 1983 power crisis and the introduction of electrification policies for political advantage without investments in generation capacity caused the shortages of the 1993-1994 period (Miescher and Tsikata 2011). The power shortfalls and the media coverage of them could threaten the NDC's chances of electoral success, especially if the government did nothing about the problem. What is more, the shortages represented a threat to the regime's electrification agenda, one of the key sources of its electoral appeal among rural voters. Moreover, it would undermine economic performance for which voters could punish incumbent officials at the polls. Last, opposition parties would capitalize on it in the upcoming elections in 1996.

[40] The SHEP is ongoing.

Given the incumbent party's electoral incentives, it took steps to end the power shortages. In 1994, the government turned to the World Bank for financial support for a thermal project to augment electricity production capacity. Predictably, the World Bank made financial help conditional on liberalization reforms in the power sector (Opam 1995).[41] The World Bank required the Ghanaian authorities to remove institutional and political barriers to private investments in the electricity sector, create an independent regulator that would enforce standards and set cost-recovery prices, and split the VRA into two separate entities: one for generation and the other for transmission (World Bank 1993; Edjekumhene and Dubash 2002).

Ghanaian authorities accepted the policies in principle but attempted to own and control the reform process. First, the "GOG [Government of Ghana] took the unusual step of hiring its own consultant independently from the World Bank" (Edjekumhene and Dubash 2002, 125). The ministry of mines and energy engaged Chile-based SYNEX Consulting Engineers to study the feasibility of institutional restructuring in the electricity sector (Opam 1995; Edjekumhene and Dubash 2002). The government chose SYNEX because of its understanding of neoliberal electricity reforms in Latin American countries, notably Chile – one of the earliest electricity reformers globally (Opam 1995). The NDC accepted SYNEX's recommendations, which were consistent with the World Bank's proposals. Second, the government established the Power Sector Reform Committee (the Committee) in June 1994 to study the recommendations, and design and execute a reform program for Ghana (Opam 1995; Keener and Banerjee 2005; Kapika and Eberhard 2013).

In 1996, Ghanaians went to the polls in line with the country's constitution. As Table 6.2 shows, Rawlings won reelection with slightly more than 57% of the vote, whereas the NPP's presidential candidate obtained roughly 40%. The NDC retained 133 of 200 legislative seats, the NPP won 61 seats, and six seats went to two other parties (Anebo 1997, 46; Frempong 2012, 72). As in 1992, the NDC used infrastructure to mobilize voters, especially rural residents, during the 1996 elections. Campaigns featured billboards with photos of roads and electricity projects in rural communities (Briggs 2012, 2021). One of the NDC's campaign mantras was "Let there be light for rural people, for they are Ghanaians too" (Adedeji 2001, 18). The government also froze electricity price increases before the elections (Keener and Banerjee 2005). Perhaps, these strategies worked due to the incumbent's success in providing amenities like electricity to several rural communities. On the other hand, it is conceivable that other factors had greater influence in the elections. Reforms carried out for the 1996 elections improved the electoral process, increased politicians' confidence in the elections, and enabled the NPP to pay more attention to campaigning and building its organization (Lyons 1999). Among other things, these reforms required the collation of a new electoral roll as well as the photo identity cards and see-through ballot boxes (Frempong 2012). Regardless of how one interprets the outcomes, electoral competitiveness intensified with the NPP entering the parliamentary race in 1996 (Lindberg and Morrison 2005).

During Rawlings' second four-year term as president, electricity sector reforms moved forward. In 1997, the Committee submitted its report after a series of workshops and conferences (Kapika and Eberhard 2013). Its proposals included the setting up of institutional mechanisms for independent and transparent regulation, the separation of the generation function and the

[41] During the 1980s and 1990s, a wave of electricity sector reforms rolled globally in the wake of a neoliberal ideology that emphasized economic liberalization, privatization, and cost recovery, among other free-market interventions. Countries such as Chile, UK, Norway, Argentina, Ireland, and Jamaica were liberalizing their electricity sectors at the time.

transmission function of the VRA, the establishment of a separate transmission utility, the introduction of IPPs, and the introduction of cost-recovery prices (Edjekumhene et al. 2001). It also recommended the creation of electricity wholesale and retail markets (Edjekumhene et al. 2001; Malgas 2008b). Under this proposal, the Northern Electricity Department would be separated from the VRA and merged with the Electricity Company of Ghana. The government would divide the new national utility into five distribution companies and privatize them. Power producers would sell power directly to bulk consumers, but all other users would choose their preferred power provider from among the five distribution companies. Besides, the Committee recommended splitting up responsibility for hydroelectricity and thermal generation, with the VRA focusing on hydro production and IPPs on thermal generation (Edjekumhene et al. 2001; Malgas 2008b). In the same year (1997), the NDC adopted these recommendations. Edjekumhene et al. (2001, 17) argued that the government accepted them and commenced execution because it wanted to fully wean utilities off state support. Yet implementation has been gradual and halting, characterized by long periods of inactivity punctuated by periods of dramatic execution. Since 1997, successive administrations have carried out different aspects of the reforms, as elaborated below.

The first substantive reform in electricity regulation occurred in 1997, following two major developments: power shortages and public uproar over a tariff increase (Interview with Nketia, Accra, 9 June 2019; Interview with bureaucrat 2 at the Energy Commission, Accra 17 June 2019; Malgas 2008b). As in 1993-1994, a drought exacerbated the effects of increased access without increased investments in production (Interview with bureaucrat 2 at the Energy Commission, Accra 17 June 2019). During the power cuts, the Ministry of Mines and Energy increased electricity prices by 300% in May 1997 to raise money for investment in the electricity infrastructure (Keener and Banerjee 2005; Kojima et al. 2014). This through-the-roof tariff increase followed the freeze on electricity tariffs prior to the elections in 1996.

The price hikes triggered national demonstrations led by the Association of Ghana Industries (AGI), the Ghana Trades Union Congress (TUC), and the Civil Servants Association (CSA) (Keener and Banerjee 2005; Kojima et al. 2014). As Keener and Banerjee (2005) observed, until this time, the Rawlings government had increased tariffs without public resistance. As a result of the public outcry and the fear that the increase would dent the popularity of the NDC, Rawlings ordered the energy ministry to reverse it until further notice. The order quieted the storm and bought time for the government to form two regulatory agencies – the Public Utilities Regulatory Commission (PURC) and the Energy Commission (EC).

The NDC established the PURC under the PURC Act of 1997, Act 538, in October 1997 and swore its first board into office on 10 November 1997 (Keener and Banerjee 2005). The PURC's overall mandate is to "regulate and oversee the provision of utility services … to consumers" (Republic of Ghana 1997, 4). Among other functions, the PURC sets tariff guidelines, determines utility tariffs, and enforces performance standards for the provision of services. The law mandates the PURC to protect the interest of consumers and utility providers. It also makes the regulator independent in carrying out its mandate (Republic of Ghana 1997, 6). The government reserved technical regulation of the operations of electricity providers for the Energy Commission. Founded under the Energy Commission Act of 1997, Act 541, the Energy Commission licenses electricity providers. It has responsibility for the management, development, and use of the country's energy resources.

The independence of the PURC not only fulfilled a World Bank loan condition, but it also reflected the NDC's political motivation. Freeing the government from electricity pricing would

allow it to avoid blame for tariff hikes. In practice, however, Ghanaian governments have tried to reduce the loss of control because tariff increases by the PURC provoke public backlashes. Behind-the-scenes political maneuverings and political appointees' loyalty to the appointing authority undermine the PURC's independence (Interview with officer 1 of the PURC, Accra, 21 June 2019; Interview with officer 2 of the PURC, Accra, 21 June 2019). The mode of appointment compromises the autonomy of the regulator as appointees serve at the pleasure of the president. The president usually appoints persons who are loyal to the ruling coalition. As an interviewee claimed, even representatives of civil society organizations on the PURC are friends of the government (Interview with Boakye, Accra, 15 May 2019).

Once the Ghanaian authorities established the regulatory agencies, the World Bank provided financial support in 1997 for the construction of the first thermal plant in the country – Takoradi Thermal Power Plant (Essandoh nd). That same year, Rawlings opened the generation subsector for private investments (Essandoh nd). He contracted two emergency IPPs in 1998 – Aggreko plc and Cummins Power Generators – to produce 30 megawatts each (Resource Center for Energy Economics and Regulation 2005). In 1999, it signed a joint venture agreement between the VRA and CMS Energy of the US to expand the Takoradi Thermal Power Plant (Williams and Ghanadan 2006). The introduction of IPPs in Ghana in the late 1990s happened relatively easily, with little or no political controversies.

In the absence of domestic geothermal sources, thermal generation requires imported fossil fuels. Rising prices of oil in the late 1990s made thermal generation expensive (Interview with bureaucrat 1 at the Energy Commission, Accra 10 May 2019). To address this challenge, the NDC initiated a long-term plan to obtain gas from Nigeria on a regular basis at a cheap price (Interview with bureaucrat 1 at the Energy Commission, Accra,10 May 2019; Interview with Nketia, Accra, 9 June 2019). The project involved the construction of the West African Gas Pipeline (WAGP), a reverse-flow gas pipeline from Ghana to Nigeria. As we will see in the next section, while the NDC conceived the project in the late 1990s, the NPP carried it out in the late 2000s.

Last, Rawlings aimed to reduce barriers to IPPs by attempting to split the VRA into two separate utilities – one for generation and the other for transmission – in the late 1990s into 2000 (Interview with Nketia, Accra, 9 June 2019; Interview with bureaucrat 2 at the Energy Commission, 17 June 2019, Accra). For the government and supporters of the policy, the VRA's control over both generation and transmission undermined competition and hindered private-sector participation in electricity generation (Interview with Nketia, Accra, 9 June 2019; Interview with bureaucrat 2 at the Energy Commission, 17 June 2019, Accra). According to this view, the VRA could refuse to evacuate the power of other producers, in particular IPPs who had lower tariffs than its prices. Unbundling the VRA, advocates claimed, would ensure fair competition in the dispatch of power since the transmission line would be accessible to all producers – public and private, small and large (Interview with an Officer of the Millennium Development Authority, Accra, 27 May 2019; Interview with Nketia, Accra, 9 June 2019). Fair competition in power transmission, as an energy bureaucrat observed, would cut the cost of operations for IPPs, which would in turn attract private investments into electricity generation (Interview with bureaucrat 2 at the Energy Commission, 17 June 2019, Accra). This would increase electricity production, contribute to reliable supply of power and thus help the government to avoid popular backlash against electricity shortages and power cuts.

However, the Volta Aluminum Company Limited (Valco) and workers of the VRA opposed the unbundling of the national power utility. Valco sought to maintain its existing low-

price deal with the VRA (Williams and Ghanadan 2006).[42] Workers of the VRA compounded Valco's pressure on the government in an election year – 2000. They argued that unbundling would enfeeble VRA's competitiveness in a proposed regional electricity market known as the West Africa Power Pool.[43] According to them, the VRA's tariffs would be more expensive, given that a separate utility would introduce new transmission tariffs. Staff of the utility further resisted unbundling because they dreaded job losses. An energy bureaucrat noted that "They have been doing this thing, so it was difficult to give it up, to let it go, because now, if you ask them to stop, what will be the job of the people? And that is the challenge we have in this country" (Interview with bureaucrat 1 at the Energy Commission, Accra, 10 May 2019). Another bureaucrat at the Energy Commission echoed the concern over staff retrenchment. Unbundling "took a while" to happen because of "the institutional upsets and staffing issues and the union, should I say, resistance" (Interview with bureaucrat 2 at the Energy Commission, 17 June 2019, Accra). As a result of "battles pitched between engineers [of the VRA] and us [the government]," the NDC failed to split the VRA ahead of elections in 2000 (Interview with Nketia, Accra, 9 June 2019). It understood that the mobilization of powerful social groups like utility workers could hurt its popularity and constituted a recipe for electoral defeat. In other words, NDC's electoral incentives compelled it to be responsive to the electricity workers.

In December 2000, Ghana marked a political milestone as for the first time in the country's history, power alternation occurred by the ballot rather than the bullet (Gyimah-Boadi 2001; Lindberg 2003; Debrah 2004). The presidential candidate of the NPP, John Kufuor, forced the election to runoff in which he beat the ruling NDC's Atta Mills (see Table 6.2). The NDC obtained 92 legislative seats, while the NPP won a slim majority, increasing its share of seats from 67 in 1996 to 100 out of 200 seats (Lindberg and Morrison 2005, 574; Frempong 2012, 90). Independent candidates and minor parties shared eight seats.

A confluence of factors accounted for the defeat of the NDC. Ghana's constitutional provisions on term limit meant that Rawlings could not stand for a third term in office. This reduced the NDC's incumbency advantages and increased the possibility of defeat. As Cheeseman (2010) has observed, turnovers in presidential elections occur more often when there is no incumbent candidate. In addition, internal divisions rooted in succession politics prior to the elections contributed to the NDC's loss (Nugent 2001a; Smith 2002). First, the NDC had to find a successor to term-limited President Rawlings. In the absence of a clear successor, Rawlings proclaimed Vice President Atta Mills as presidential candidate. Second, the NDC national executive committee failed to allow primaries for parliamentary candidates. These developments caused disaffection among party supporters and functionaries, with some supporters defecting to opposition parties and some leading members breaking away to form the National Reform Party in 1999 (Nugent 2001a; Smith 2002).

[42] As discussed in Chapter 5, the Nkrumah government signed an agreement with Kaiser Aluminum Corporation, the majority shareholder in the Valco, to use the bulk of the Volta River Authority's electricity at a cheap price to produce aluminum from Ghana's bauxite. Silver (2016, 992) found that the low-tariff deal existed during his fieldwork in 2010 and 2011.

[43] The West Africa Power Pool is a collaboration between national electricity companies in West Africa to establish a common electricity market in 2006 and foster a reliable supply of electricity (WAPP 2022).

Table 6.2: Vote shares of NDC and NPP presidential candidates, 1992-2020

Election year	Winner	Total votes of NDC Candidate (%)	Total votes of NPP candidate (%)	Margin of victory (%)
1992	Rawlings (NDC)	58.4	30.3	28.1
1996	Rawlings (NDC)	57.3	39.6	17.7
2000*	-	44.5	48.2	3.7
2000	Kufuor (NPP)	43.1	56.9	13.8
2004	Kufuor (NPP)	44.6	52.5	7.9
2008*	-	47.9	49.1	1.2
2008	Mills (NDC)	50.23	49.77	0.46
2012	Mahama (NDC)	50.7	47.74	2.96
2016	Akufo-Addo (NPP)	44.4	53.9	9.5
2020	Akufo-Addo (NPP)	47.4	51.3	3.9

Sources: Data from Interim National Electoral Commission (1993); Frempong (2012); Election Watch (2017); Electoral Commission of Ghana (2016, 2020)

*Note: In the first rounds of the 2000 and 2008 presidential elections, no candidate obtained the 50% plus one vote required by Ghana's 1992 constitution to be declared president. In line with constitutional requirements, the Electoral Commission conducted run-off elections for the two leading presidential candidates within three weeks after the general elections.

Economic problems further weakened the NDC's popular support. The annual inflation rate had jumped to 25.2% in December 2000 from 12.4% in December 1999 (Government of Ghana 2001, 10). Falling prices of cocoa and gold in the late 1990s eroded economic gains made following the implementation of the SAP (Government of Ghana 2001; Smith 2002). The local currency depreciated against the US dollar by 91.5% in 2000 (Government of Ghana 2001, 10). The growth rate in agriculture, then the mainstay of the Ghanaian economy, decreased from 3.9% in 1999 to 2.1% in 2000 (Government of Ghana 2001, 8).

The NPP emphasized this economic deterioration, blamed it on the NDC's incompetence, and highlighted the skills and abilities of its leading members to revive the economy (Adedeji 2001; Yeboah 2019). It promised jobs and zero tolerance for corruption, which appealed to the unemployed youth (Nugent 2004). Its message of positive change in the face of economic decline may have captured the imagination of voters (Adedeji 2001; Yeboah 2019).

In elections as competitive as Ghana's, many issues can be relevant, and electricity is one of them. As in previous elections, the NDC used electricity provision to mobilize voters by highlighting its electrification achievements. The ruling party claimed credit for extending electricity to all unelectrified district capitals before schedule (NDC 2000, 32-33). It then promised to roll out more electrification projects under the SHEP between 2001 and 2005 (NDC 2000, 33).

Yet voters in unelectrified communities deemed the NDC's accomplishments to be insufficient and intensified demands for electricity access during the elections. Some communities in the ruling party's stronghold of Volta region felt neglected by the government and threatened to use the elections to hold politicians to account for their electricity performance (Ghanaweb 2000; Sackeyfio 2018). They demonstrated, wielding placards displaying such claim-making slogans as "No [electric] power, No vote" (Ghanaweb 2000).

Given these bottom-up pressures, incumbent officials' electoral incentives influenced the distribution of electrification projects before the vote in 2000. As Briggs (2012) shows, the NDC targeted projects to rural communities that supported it in previous elections, a tactic that helped it electorally. The party's vote share increased in northern rural communities connected to the national grid in 1999, a year before the elections. Relative to the 1996 elections, the NDC received 5% more votes in the first round of the 2000 elections and 7% more votes in the runoff elections in 2000 in those communities (Briggs 2012, 620). The NDC's proportion of the vote decreased in northern communities for which it failed to provide electricity (Briggs 2012). This suggests that those communities exacted their pound of flesh on election day. It further highlights the risks associated with campaigning on electrification when it is impossible to serve everybody.

It must be pointed out that, as compared to 1992 and 1996, the NDC failed to carry out many electrification projects in the period leading up to the 2000 elections because of a decline in revenues. International prices of cocoa and gold collapsed in the late 1990s. For instance, cocoa revenues fell by 21% in 1999 (Government of Ghana 2001, 12). In 1999, donors disbursed less aid than anticipated (Government of Ghana 2001; Briggs 2012). The reason for this failure is unclear (Briggs 2012). Their action might not have been deliberate because Ghana was a model reformer under the SAPs. As Briggs (2012) suggests, it possibly resulted from an unpredictable multilateral lending system. The revenue shortfalls constrained government spending on projects and public services during the 2000 elections (Gyimah-Boadi 2001; Government of Ghana 2001). It is imaginable that the NDC could have boosted its electoral chances by executing more electrification projects if it had had more revenues. Nonetheless, it remains unclear if such spending would have enabled it to retain power, given the party's internal upheavals ahead of the elections and the broader economic problems.

As expected, the NPP used electricity provision to score political points. The party's message responded to popular protests for electrification projects by pledging to provide electricity in unelectrified rural communities (NPP 2000). It further capitalized on the electricity shortages and load shedding during the 1997-1998 period. In its view, the shortages resulted from several years of underinvestment in generation capacity (NPP 2000, 21). It promised to develop cheap sources of power, including the Bui hydro dam, and ensure low tariffs (NPP 2000).

In a nutshell, the NDC had hoped voters would think that it had a track record of fulfilling campaign promises and could deliver more, if retained in power. It pledged to provide more development projects, including electrification. However, most Ghanaian voters deemed its accomplishments to be insufficient and voted for the NPP.

6.3 Intensifying Electoral Competition and Electricity Provision, 2001-2009

The previous section showed that the NPP came to power in a close electoral contest in which, among other issues, electricity provision was relevant. Rawlings, who had hit his term limit, handed over power to the winner. With this electoral turnover, politicians became more insecure because they realized that Ghanaian voters could exact punishment. This uncertainty motivated political elites to intensify voter mobilization by being responsive to popular demands and expectations for electricity and other public services. It additionally encouraged them to make decisions with short-term horizons to appease potential swing voters and avoid antagonizing politically powerful constituencies.

The turnover presented different challenges for the NPP and the NDC. The NPP faced the challenge of increasing its chances of success in subsequent elections, given the closeness of the 2000 elections and after years in opposition. Like its predecessor, the NPP relied on pro-rural and

antipoverty strategies to build political support (Hirvi and Whitfield 2015). The NDC faced a new challenge: to rebuild its support base in opposition, where access to resources is limited because Ghana's winner-takes-all governance excludes rival politicians from the spoils.

With a slogan of 'Positive Change', the NPP rallied voters around revitalizing the Ghanaian economy by making the private sector the engine of economic growth, creating jobs, and transforming urban and rural infrastructure during the 2000 elections (NPP 2000; Nugent 2001a; Arthur 2006). In the electricity sector, in addition to extending access, it pledged to address recurring power shortages by investing in generation capacity (NPP 2000). It campaigned against unbearably high costs of living and promised to keep prices down for industries and households. These promises raised Ghanaians' expectations for an improved economy and social transformation.

Upon assuming office, Kufuor created the Ministry of Private Sector Development to foster the development of a competitive private sector in Ghana (Arthur 2006). He declared a Golden Age of Business under which the state would attract businesses by improving the investment climate and public service provision to achieve growth and reduce poverty (Arthur 2006; Aryeetey and Owoo 2017). In 2001, the NPP signed on to the Heavily Indebted Poor Countries (HIPC) Initiative because of the economic challenges it had inherited, including declining prices of commodities and depreciation of the local currency (see page 115). The HIPC Initiative is an arrangement the Word Bank and the IMF instituted to help poor countries to manage unsustainable debts and free up money for social expenditure (Whitfield 2010; IMF 2021b). The government justified this decision on the grounds that the program would provide the fiscal space needed to address Ghana's economic deterioration (Osei and Quartey 2001; Arthur 2002). On the other hand, critics believed that the HIPC initiative would aggravate unemployment and poverty, given that the program required the NPP to freeze recruitment into the public sector (Nsefo 2001; Ghana News Agency 2001).

By 2002, the national electricity companies were reeling from financial burden that stemmed primarily from low tariffs and depreciation of the local currency (Government of Ghana 2002; Kojima et al. 2014). The PURC introduced a new pricing policy in 2002 to resolve this problem. Known as the Automatic Adjustment Formula (AAF), the new tariff regime aimed at reviewing "electricity tariffs quarterly to reflect changes in factors whose effects on operations were considered beyond the control of the utility companies" (PURC 2011, 2). The AAF, the PURC had hoped, would reduce the frequency of big increases, which were shocking. The main components of the formula included the price of crude oil on the international market and exchange rate fluctuations, in particular the performance of the local currency (the cedi) against the US dollar (PURC 2011).[44] Kufuor prevented the new pricing policy from taking effect and promised subsidies to power utilities (Keener and Banerjee 2005; Myjoyonline 2007; Interview with officer 1 of the PURC, Accra, 21 June 2019).

By the end of 2002, Ghanaians had begun to complain about hardships under Kufuor's NPP. A national survey conducted by Afrobarometer in 2002 revealed that "a staggering cumulative total of 85 percent" of respondents saw themselves as poorer than before the last elections in 2000 (Afrobarometer 2002, 8). Valco exacerbated the economic situation as Kaiser Aluminum Corporation, the majority shareholder and operator of Valco, filed for bankruptcy and laid off workers in late 2002, and sold its assets to the Ghanaian government in 2003 (Ghanaweb 2002; Kaiser Aluminum Corporation 2003; Quaye 2006). Rising levels of unemployment and

[44] Utility providers purchase oil and gas in US dollars and the government pays IPPs in US dollars.

poverty reminded the NPP that, during the first half of its first term, it had failed to deliver the positive change it promised during the 2000 elections.

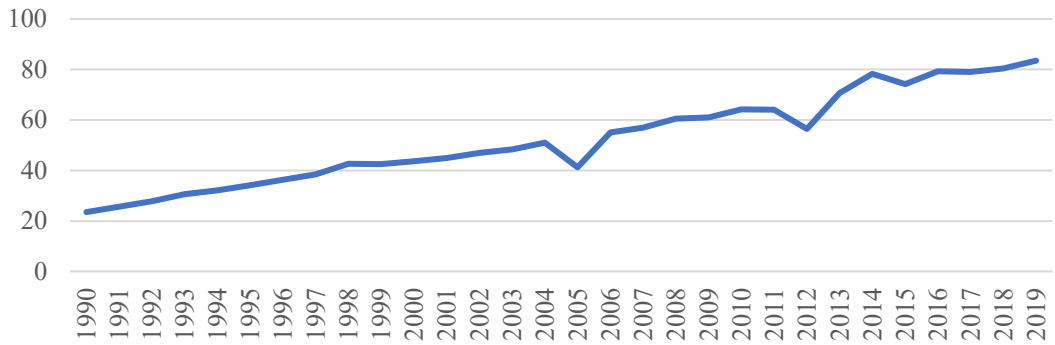
With elections less than two years away and the possibility of defeat at the polls, the NPP government instituted a myriad of pro-poor policies with the support of HIPC funds (Debrah 2009). The National Health Insurance Scheme, and Presidential Special Initiatives that, for instance, provided targeted subsidies to farmers, among other policies, brought tangible benefits like jobs to many young people, especially party supporters. HIPC funds enabled the NPP to spend on social interventions, including electrification. The NPP continued the implementation of electrification projects that the NDC initiated ahead of elections in 2000 and rolled out new ones "with renewed vigor" (Government of Ghana 2001, 43; Government of Ghana 2002, 2003, 2004). For instance, under the SHEP, the NPP completed electrification projects in 650 communities by 2003 (Government of Ghana 2003, 61).

That same year (2003), utilities had accumulated deficits resulting from low tariffs, depreciation of the local currency, and the government's failure to pay subsidies it had promised in 2002 when it stopped the PURC from implementing the AAF (Interview with Graham, Accra, 22 May 2019; Interview with officer 1 of the PURC, Accra, 21 June 2019). The three state-owned power utilities (ECG, VRA and NED) had a total deficit of 204 million US dollars in 2003, representing about 4% of the country's GDP (Keener and Banerjee 2005, 2). This financial condition undermined "utility investments and resulted in inadequate generation reserve, transmission network constraints, overloaded transformers and degraded distribution networks" (Keener and Banerjee 2005, 2). It is therefore unsurprising that, in 2003, power shortages hit Ghana again (Malgas 2008b).

In response to the power crunch, Kufuor revisited sectoral reforms in 2003 (Government of Ghana 2004). In the short term, he imported power from Côte d'Ivoire and gave the VRA approximately 450 billion cedis (about US$52 million) to procure crude oil for thermal plants (Government of Ghana 2003, 22; Asante 2003). Despite the power shortfall, the NPP rolled out electrification projects in an additional 1,069 communities in 2004, an election year (Government of Ghana 2004, 92). Data from the World Bank (2021), presented in Figure 6.1, confirm this rapid electrification. Figure 6.1 shows that electricity access increased from 48.3% in 2003 to 51% in 2004, indicating an improvement of 2.7%. To put this in a comparative perspective, access to electricity rose by 1.4% between 2002 and 2003. But it even dropped from 51% in 2004 to 41.3% in 2005 after the elections (see Figure 6.1) possibly because of disconnections for nonpayment of electricity bills or inaccurate data.

Government officials framed their electricity strategies in socioeconomic terms. They intended to use subsidies and electrification to alleviate poverty and enhance Ghanaians' quality of life (Government of Ghana 2003). A pro-business party, the NPP aimed not only to protect poor users but also to attract local and foreign businesses by reducing the cost of doing business (Government of Ghana 2004).

Figure 6.1: Access to electricity (% of population) in Ghana, 1990-2019



Source: Data from World Bank (2021), World Development Indicators

Nevertheless, a careful examination of Kufuor's electricity strategies reveals the political considerations that underlined them. First, they fulfilled promises he made during the 2000 elections to reduce prices for industries and households and intensify electrification (Government of Ghana 2003). Fulfilling campaign promises suggests political responsiveness to voters' expectations. Voters' expectations remained high partly because the NDC's provision of amenities and implementation of pro-poor policies had already whetted their appetite for visible projects and tangible benefits. The NPP's own electoral promises in 2000 further raised the electorate's expectations. Second, the NPP designed subsidies with its loyal supporters in mind: urban professionals who have a history of opposing increases in the prices of utilities and businesspeople who favor low cost of operations (Gyimah-Boadi 1993; Gyimah-Boadi and Jeffries 2000). Having businesspeople in mind suggests an ideological but also pragmatic consideration influenced NPP's subsidy policy. The government saw low electricity prices as a pro-business measure that would reduce the cost of doing business and attract domestic and foreign investors (Government of Ghana 2004, 8). Third, the NPP faced incentives to attract rural voters because it performed poorly in the countryside in the elections in the 1990s (Ayee 2008). In addition, prior to winning the December 2000 polls, members of the Danquah-Busia tradition had stayed in opposition for nearly three decades (e.g., Bennett 1982; Frempong 2012).[45] Kufuor found existing rural electrification policies and subsidies useful resources for consolidating the NPP's electoral gains.

In 2004, most Ghanaian voters renewed the mandate of the NPP. As shown in Table 6.2, it obtained roughly 53%, compared to the NDC's 44.4%, in the presidential election. Of a total of 230 seats, the NPP increased its legislative seats from 100 in 2000 to 128 in 2004, whereas the NDC won 94 seats (Frempong 2012, 109-110). The incumbent's victory indicated the readiness of the majority of electorate to retain the party and its socioeconomic strategies (Debrah 2009). By 2004, the policies had begun to bear fruits as Ghanaians reported relative improvements in their living standards (Debrah 2009). Even in rural constituencies in northern Ghana that had previously rejected the NPP, many voters claimed they voted for the NPP because of its socioeconomic strategies (Essuman-Johnson 2006), such as electricity subsidies and electrification.

The NPP continued to prioritize electrification and subsidies in its second term. In the 2005 budget, the finance minister emphasized the government's commitment to electrification projects (Government of Ghana 2005; see also Republic of Ghana 2006). As a result of the prioritization of electrification under the NPP, access in rural areas doubled in five years, despite a downturn in

[45] As discussed in Chapter 5, soldiers removed the Busia government from office in 1972.

2005. Electricity reached 31.4% of rural households in 2006, up from roughly 15% in 2001 (World Bank 2020b).

The utilities' financial challenges contributed to power shortages during 2006-2007. In 2006, Kufuor relaunched Valco – the bulk consumer of the VRA's electricity – to augment industrial production, increase foreign exchange earnings and create employment (Donkor 2006).[46] Valco's restart of operations coincided with a period of low water inflows into the Akosombo dam. Moreover, the company paid low electricity prices, which did not cover the cost of generation. During this period, the global price for crude oil, which utilities used to generate 40% of Ghana's electricity, rose rapidly (Donkor 2006; Government of Ghana 2006; Graham 2007). The VRA needed about 60 US dollars to buy a barrel of oil in November 2005 (Government of Ghana 2005). By July 2006, a barrel of crude oil sold at roughly 75 US dollars on the international market (Government of Ghana 2006). The cost of fuel alone was "more than 10 US cents per kilowatt-hour at current [2007] crude oil prices. That is more than three times Valco's tariffs" (Graham 2007).

Despite rising global prices for crude oil, Kufuor prevented the PURC from increasing electricity tariffs due in part to campaign promises made during previous elections and with a re-election bid in mind (Graham 2007; Whitfield 2010; Interview with Graham, Accra, 22 May 2019). Recall that Kufuor had stopped the PURC from implementing the AAF in 2002. The VRA's financial health deteriorated so much that on 13 July 2006 the government presented a supplementary budget that, among other objectives, aimed to resolve the debt – between 274 billion (roughly US$30 million) and 320 billion cedis (approximately US$35 million)[47] – it owed to the VRA (Graham 2007; Interview with Graham, Accra, 22 May 2019). The government revised its budget because the World Bank was worried about the former's debt to the VRA and made its payment a condition for accessing a credit of 140 million US dollars in support of the Growth and Poverty Reduction Strategy (Interview with Graham, Accra, 22 May 2019; World Bank 2006). The VRA's precarious financial situation undermined its ability to purchase crude oil needed to generate thermal electricity, invest in electricity infrastructure, and carry out routine maintenance and repairs (Graham 2007; Interview with Graham, Accra, 22 May 2019).

These factors then triggered the electricity shortfalls and power cuts during the 2006-2007 period (Energy Commission 2007), which in turn played a role in the 2008 elections. National electricity distributors – the ECG and the NED – carried out a load-shedding program because of a shortage of 300 megawatts (Energy Commission 2008). Under the electricity rationing program, users typically received power for only 12 hours (6 a.m. – 6 p.m. or 6 p.m. – 6 a.m.) in 24 hours (Bekoe and Logah 2013).

The rolling power outages had several consequences for the economy and social life. By constraining industrial production and commercial activities, the blackouts possibly contributed to Ghana's loss of nearly 2% of real GDP growth in 2007 (World Bank 2020b). In terms of social life, the absence of electricity, for instance, prevented students from preparing for the next day's classes at night. The media reported loss of human life and property due to voltage fluctuations and unannounced power cuts (Ghanaweb 2007). In one instance in Nkawkaw, a major urban center in the eastern part of the country, an unexpected outage ignited a fire that burnt a two-and-half year-old boy to death and gutted an eight-bedroom building (Ghanaweb 2007). In hospitals, power

[46] As discussed earlier in this section, Kaiser Aluminum Corporation, the majority shareholder and operator of Valco, filed for bankruptcy in 2002 and sold its 90% shares to the Ghanaian government in 2003 (Ghanaweb 2002; Kaiser Aluminum Corporation 2003; Quaye 2006).

[47] One US dollar equaled to 9,080 cedis in May 2006 (Bank of Ghana 2022).

cuts damaged medical equipment, including CT scans, ultrasound machines and medical storage facilities (Rupp 2013). Hospitals with no in-house generators could neither refrigerate medications nor operate electricity-dependent medical equipment. Potable water supply declined as treatment plants did not function in the absence of electricity (Rupp 2013).

The NPP responded to the power problems by revisiting the neoliberal reform package and carrying out a slew of policy measures aimed to curtail electricity shortages and their associated economic and political risks. In 2006, Kufuor unbundled the VRA to ensure efficiency in the transmission and distribution of power and to encourage private investment in production. As presented in the last section, Rawlings had failed to split this utility because powerful groups mobilized against it ahead of elections in 2000 and threatened his party's electoral prospects. At the second attempt at unbundling the VRA, no pushback emanated from Valco, which the Ghanaian government now fully owned. However, the government had to contend with workers of the VRA, who resisted the unbundling again (Interview with bureaucrat 2 at the Energy Commission, Accra, 17 June 2019). The electricity workers cited job losses and uncertainties over their conditions of work as reasons for their opposition (Interview with bureaucrat 2 at the Energy Commission, Accra, 17 June 2019). This time around, the NPP co-opted the workers by promising them job security and unchanged conditions of service under the new institutional arrangement. This paved the way for the government to split generation from transmission. The VRA retained responsibility for the generation of electricity. A new state-owned utility, the Ghana Grid Company (GRIDCo), took over the transmission function and fulfilled Kufuor's promise to the workers (Interview with an officer of the Grid Company, Accra, 21 May 2019).

Kufuor took steps to increase generation capacity and to ensure reliable supply of gas for thermal plants. In the short term, he purchased diesel generators capable of producing 126 megawatts of electricity and signed a lease agreement with TransTema Limited to supply 25 megawatts of power (Adam 2015). He adopted long-term measures, too. He initiated the construction of a 220-megawatt thermal plant at Kpone and the Tema 2 Power Plant with an installed capacity of 50 megawatts (Adam 2015). He obtained funding (about US$600 million) from China to construct a 400-megawatt hydro dam at Bui, which started in 2008 (Republic of Ghana 2006; Gocking 2021). The development of the Takoradi 3 thermal plant, with a generation capacity of 132 megawatts, started during this period (Adam 2015). In December 2006, the NPP completed the West African Gas Pipeline project, whose negotiations had started during the late 1990s (Republic of Ghana 2006). Finally, the NPP signed agreements with IPPs, including Sunon Asogli Power Plant (200MW) and Cenit Energy Limited (126MW) (Adam 2015).[48]

Finally, the PURC announced a 35% increase in electricity prices in late 2007 to lessen the financial burden on utilities resulting from the rising cost of crude oil in 2006 and 2007 (Interview with officer 1 of the PURC 1, Accra, 21 June 2019). However, Kufuor prevented it from going into effect (Myjoyonline 2007). Socioeconomic and political factors accounted for his action. Economically, the Kufuor government explained that it intended to lower the detrimental effects of price hikes on a broader section of Ghanaians (Myjoyonline 2007). Costs of living remained high due in part to the global financial crisis during 2007-2008. For Ghana, the global economic downturn at the time implied rising prices of food and petroleum, lower export revenues, and less donor support (Government of Ghana 2009). In the face of the global economic slump, the NPP understood that raising electricity prices would burden users. Yet its action may be interpreted as a strategic attempt to avert popular discontent and voter backlash, with the 2008 elections less than

[48]Cenit Energy Limited was originally known as Osonor Power Plant. The Social Security and National Insurance Trust (SSNIT) bought and re-christened it (Adam 2015).

a year away. Amid rolling outages and rising cost of living under the context of a global economic crisis, tariff hikes could dampen the NPP's popularity and bite it at the polls. Kufuor's decision to annul the tariff increase influenced the resignation of the board chair of the PURC, who believed that electricity tariffs should reflect the costs of supply to users and ensure the sector's financial sustainability (Myjoyonline 2007). He also complained that low tariffs would dissuade much-needed private investments in electricity.

By late 2008, the economic gains of Kufuor's first term had disappeared. His continued reliance on electricity subsidies, infrastructure projects, and other social spending to lessen the consequences of the global financial crisis on Ghanaians may have had noble socioeconomic intents, but they increased the fiscal deficit (Government of Ghana 2009). The overall budget deficit reached roughly 15% of GDP in 2008, up from 3.2% of GDP in 2004 (Government of Ghana 2005, 21; 2009, 14). The inflation rate hit 18.1% in 2008, up from 11.8% in 2004 (Government of Ghana 2005, 21; 2009, 14). Gross national debt jumped from 7,405.5 million US dollars in 2007 to 8,002.5 million US dollars in 2008, representing an increase of 8.1% (Government of Ghana 2009, 24).

Against this backdrop of economic decline, Ghanaians went to the polls in December 2008. The electorate removed the NPP and replaced it with the NDC after two rounds of presidential elections, marking the second peaceful power alternation. The stakes in the elections were high. The elections constituted a test of whether the incumbent NPP would become the first political party in Ghana to win three elections on the trot or the NDC would regain power after eight years in opposition (Gyimah-Boadi 2009). The discovery of oil and gas in commercial quantities in 2007 increased the stakes (Graham et al. 2016). Whoever would win the elections would have the opportunity to manage oil dollars, in addition to revenues from Ghana's traditional commodity exports. Domestic production of oil and gas promised to ease the burden of oil imports for electricity generation. This could reduce the cost of power generation and translate into lower end-user tariffs. Finally, the availability of domestic gas had the potential to reduce generation shortfalls and power cuts.

The NPP and the NDC jockeyed for electoral advantage over sectoral management and performance in the days leading up to the 2008 elections. They campaigned on their record of electrification, promising to accelerate access. The NPP's campaign slogan, "We Are Moving Forward," emphasized continuity. The incumbent invited the electorate to reflect on its electrification performance in comparison with the NDC's. As the NPP (2008, 16) put it, "Under the National Electrification Project (NEP), 1,900 towns and villages were connected to the national grid in the ten-year period, 1990-2000. In just seven years (2001-2007) of the NPP government, a total of 2,400 towns and villages have benefitted from the project." It then promised to use the NEP to extend electricity to a minimum of 600 communities yearly for five years (NPP 2008, 16). The party touted its achievements in the generation subsector, notably the construction of the Bui dam and the expansion of state-owned thermal plants.

On the other hand, the NDC (2008) trumpeted change as seen in its "Change for A Better Ghana" mantra. At political rallies and in the media, the party promised to improve Ghanaians' living conditions by lowering inflation and reducing the cost of living, including energy prices (Oduro-Frimpong 2014, 144). Unsurprisingly, it capitalized on the power shortages and load shedding during 2006-2007. It condemned the power rationing and promised to "increase generation to at least 5,000 megawatts in the medium term… [,] restore [its] program to provide household access to electricity… [and] establish efficiency in electricity production to bring down tariffs" (NDC 2008, 8).

The outcome of the elections was close, with none of the presidential candidates obtaining the constitutional requirement of 50% plus one vote to be declared the winner in the first round (see Table 6.2). In the second round, just 40,586 votes tilted power to NDC's Atta Mills (Jockers et al. 2010, 98; Table 6.2). The closeness of the results reinforced a routinized two-party system in which the NDC and the NPP increased their share of votes, while the electoral fortunes of small parties diminished.

Several factors influenced the outcome of the 2008 elections. With Kufuor ineligible for a third term, the NPP's advantages of incumbency declined, increasing the likelihood of defeat in line with Cheeseman's (2010) observation.[49] Moreover, as happened to the NDC ahead of the 2000 elections, the race to choose Kufuor's successor generated intraparty divisions, highlighted by the resignation from the party of a failed presidential candidate in April 2008 (Myjoyonline 2008). Some NPP parliamentary aspirants, who felt done in during the party's primaries, ran as independent candidates and split the NPP's votes (Gyimah-Boadi 2009). Additionally, the NPP entered the electoral race with incumbency disadvantages, despite rolling out many pro-poor measures. Mounting global prices of oil, rising costs of living that resulted partly from the global financial crisis, rising levels of joblessness, and the ballooning fiscal deficit dented the NPP's reputation as a prudent manager of the economy (Ayee 2008; Gyimah-Boadi 2009). The proliferation in local and international media of allegations of corruption and drug trafficking involving the party's leading members soiled its name. For instance, a US court convicted and jailed a NPP Member of Parliament (MP) in December 2007 for smuggling cocaine (The Irish Times 2005; Ghanaweb 2008). Furthermore, the NPP's disregard for the concerns of some blocs of voters represented a recipe for defeat. For example, in 2008, local fishermen – well-mobilized voters in coastal Ghana – complained about the government's dismissal of their grievances about the prices and shortage of pre-mixed fuel and the encroachment by foreign trawlers (Gyimah-Boadi 2009). Finally, Kufuor's failure to solve the electricity problem contributed to the NPP's damaged image. As Ayee (2008, 199) noted, party supporters and a section of the public felt disappointed in the NPP because they had believed that the party well understood Ghana's electricity problems, but it failed to deal with them.

In contrast, the NDC showed signs of unity after eight years in opposition (Gyimah-Boadi 2009). By selecting its presidential and parliamentary candidates 24 months before the elections, the NDC permitted itself enough time to iron out differences that emerged from its primaries (Zounmenou 2009). Leading members who broke away in 1999 and formed their own parties returned to the NDC in the run-up to the 2008 elections (Gyimah-Boadi 2009).

In sum, incumbency brings advantages as well as disadvantages. Among several incumbency disadvantages, one may be correct to state that the rolling outages, which adversely affected social life and economic activities, contributed to the defeat of the NPP in 2008. When elections are intensely competitive, anything that antagonizes a sizeable number of voters can shape the outcome, as can anything that demobilizes a party's supporters.

[49] In Section 6.2, I referred to Cheeseman's prediction that a ruling party can lose elections if the sitting president is not running for office due to presidential term limits.

6.4 Electricity and Political Developments, 2009-2017

Atta Mills became president on 7 January 2009, after emerging victorious in the closest presidential elections in Ghana's history. He did not complete his term in office because he passed away in a hospital in July 2012, six months ahead of that year's elections. Vice President John Mahama served the remaining months of his term in accordance with the country's constitution and then won the 2012 elections. This section thus discusses the Mills and Mahama presidencies together. Electricity management and sectoral performance from 2012 to early 2017 receive more attention because protracted power shortages and an attempt to privatize a national power distributor featured prominently in Ghanaian politics and played an important role in Mahama's defeat in December 2016 (Osei 2016; Interview with Owusu-Mensah, Accra, 16 May 2019). The discussion shows that Mahama walked a tightrope between resolving severe power shortages resulting from inadequate investments and avoiding popular discontent over tariffs and job losses.

Ghana had a relatively stable power supply for much of the Mills presidency, from January 2009 to July 2012. No full-blown electricity rationing occurred, despite erratic supply at times. Improvements in generation capacity and a tariff raise probably led to this relative stability. Some of the state-owned thermal plants had come on stream and the West African Gas Pipeline Company Limited (WAPCo) had started to supply gas to Ghana by December 2008 (Adam 2015). Moreover, some IPPs began operations during this period.

By 2010, electricity companies were reeling from the effect of politically motivated low tariffs and unpaid subsidies. To recall from the previous section, Kufuor quashed tariff raises in 2002, 2006 and 2007 and instead promised to pay subsidies (Keener and Banerjee 2005; Myjoyonline 2007). He failed to fulfil the promise. Depreciation of the local currency and a high oil import bill exacerbated the impact of artificially low tariffs and unpaid subsidies on utilities' financial position. The poor fiscal health then hamstrung investment in the infrastructure and purchases of crude oil to generate thermal electricity (PUWU 2016; Interview with Graham, Accra, 22 May 2019). To address this problem, the PURC increased electricity prices by 89% in June 2010 (PURC 2011). The regulator averred that "The rationale for this upward review was to reposition the utility service providers financially [and] address the continuing deterioration in the quality of service being delivered to consumers" (PURC 2011, 2). But a report in the media suggested that the increase fulfilled a World Bank loan conditionality (Myjoyonline 2010). According to this report, the World Bank required Ghana to increase tariffs to access a poverty reduction loan, given the poor fiscal health of electricity companies and its deleterious effects on the economy. That the World Bank started to disburse a loan of 300 million US dollars to Ghana just two weeks after the increase supports the plausibility of this position (Myjoyonline 2010).

The 2010 price increase became a bone of contention, underscoring the politicization of electricity prices. The NPP condemned the increase and called on the NDC to reduce it. The NPP's 2008 presidential candidate argued that the price hike would burden poor domestic users and increase businesses' costs of operation (Myjoyonline 2010). Another senior official of the party criticized the NDC for failing to fulfill its campaign promise of lowering the cost of living (Myjoyonline 2010). Workers took to the streets to protest the tariff raise (Myjoyonline 2010). Civil society groups such as the Committee for Joint Action opposed it in media discussions (Clottey 2010a). Nonetheless, President Mills underlined the necessity of the tariff increase for alleviating the financial pressures on electricity companies and promised to assist utilities financially (Clottey 2010a; Myjoyonline 2010). Perhaps, he allowed the PURC to implement the increase because the World Bank had begun paying out the loan (US$300 million) to Ghana.

Mills sought to use Ghana's newly discovered gas to fuel electricity generation. In 2010, Ghana signed a three-billion-dollar loan agreement with China to develop infrastructure, including gas infrastructure (MacDougall 2011). Mills had hoped that the gas infrastructure would allow thermal plants to get access to cheap domestic gas for electricity production. In 2011, he established the Ghana National Gas Company (GNGC) to, among other functions, manage the gas infrastructure and supply gas to electricity producers in the country (Ghana Gas Company 2020). However, Mills did not live to see the company's commencement of operations (in 2014). In July 2012, he died in office of natural causes and Vice President Mahama succeeded him in line with the country's constitution (BBC 2012).

One month later – in August 2012 – electricity shortages recurred (Adam 2015). National electricity distributors carried out a monthly power rationing schedule, with consumers receiving power for 12 or 13 hours in every 36 hours (Abeberese et al. 2017, 6-7). Some attributed the shortages to low rainfall, a faulty unit at the Kpong dam (Donkor 2015, 2), and broken-down thermal plants (Interview with bureaucrat 2 at the Energy Commission, Accra, 17 June 2019). But tariff decisions with a short-term horizon led to this electricity shortage and rationing. In 2011 and early 2012, the government prevented the PURC from passing on increases to users (PUWU 2016; Interview with Graham, Accra, 22 May 2019). It also failed to pay subsidies and its own electricity bills (PUWU 2016; Interview with Graham, Accra, 22 May 2019). Lacking funds, thermal plants, especially those operated by the VRA, could not obtain fuel to generate electricity (Adam 2015).

A few months into the power shortages, Ghanaians went to the polls (in December 2012) in which sitting President Mahama ran for a fresh mandate. As in previous elections, electricity figured in the two-horse race. His NDC mobilized voters around its electrification performance. According to the NDC manifesto (2012, 77), access rates rose from 54% in 2008 to 72% in 2011 and "1,700 communities have been connected to the … grid since 2008, with a larger proportion of this increase representing poorer households who would otherwise not have access to energy." Mahama further framed the power shortage as a problem he could resolve and promised to end it "by the end of 2013; … launch … an 'Energy For All' program under which universal access to electricity will be targeted by 2016; [and] increase installed power generation capacity from 2,443 megawatts [in 2012] to 5,000 megawatts in 2016" (NDC 2012, 78-79).

The NPP (2012) emphasized free secondary school education, but campaigned on electricity, too. Naturally, it took advantage of the power shortage and framed it as an economic problem. In the party's words, "the frequent power cuts and the consequent slowing down in the growth of the non-oil economy is a cause for worry. Without … reliable energy, our industrial development and expansion efforts will fail and hinder our ability to transform the economy" (NPP 2012, 24). The NPP's Akufo-Addo pledged to address the problem by working with the private sector, increasing power "output and … reopen[ing] negotiations with interested partners to develop and complete mini-hydro projects … We will also work to exploit our gas resources to increase our energy supply. By the end of 2016, we aim to extend rural access to 90%" (NPP 2012, 24).

Like past elections, the 2012 poll was tight, with the NDC defeating the NPP by about 300,000 votes (Brierley and Ofosu 2014). Table 6.2 shows that Mahama obtained 50.7% of the votes, compared to Akufo-Addo's 47.7%. The NDC obtained 148 out of 275 legislative seats as against the NPP's 123 seats and four for minor parties (Inter-Parliamentary Union 2013).

A range of factors shaped this outcome. Factors like personality and economic performance worked in favor of Mahama. As Brierley and Ofosu (2014, 2) correctly observe,

> Mahama was a relatively easy candidate to sell to voters. … To his advantage, … he would be the first president under the Fourth Republic [that is, since 1992] to hail from the Northern part of the country. He was also seen as dynamic and relatively young – nearly fifteen years younger than Akufo-Addo. The economy … supported the re-election of the incumbent. Economic growth rates the year before the election were among the highest in the world (around 12%), and as the election drew closer the government was able to stabilize the devaluing Ghana cedi by limiting access to foreign currencies.

It seems electors did not hold Mahama accountable for the power shortage. The sudden death of Mills most likely attracted sympathy to the NDC. Besides, it is possible that electors recognized that the government is to blame, but that the problems have roots in policies and strategies pursued over many years, and thus by both major parties (News Ghana 2012; Yalley 2021). Under this condition, voters may be discontent with the incumbent's management of the sector, but doubt that the challengers would be any better, and thus vote based on other considerations.

The NPP rejected the outcome of the presidential polls because of what it described as widespread irregularities and challenged the validity of the results in the Supreme Court (BBC 2013). Although the Supreme Court upheld the results as valid after eight months of litigation, its verdict and recommendations for electoral reforms influenced strategies of political parties during the 2016 elections, as discussed below.[50]

Power outages intensified soon after the inauguration of Mahama as president on 7 January 2013 (Quartey 2013). A proprietor of a cold store in Kumasi, Ghana's second largest city, succinctly captured the erratic character of the outages: "Initially, the electricity company had a schedule for us. But it got to a point … [where] there was no schedule, and the light just went off unexpected and unannounced" (quoted in Clerici et al. 2016). As interruptions became more erratic, Ghanaians christened the situation *dumsor* – a local Akan word meaning to switch on and off abruptly.[51] Some tagged Mahama as "Mr. Dumsor" (Darko 2015), while others called him "the power-cut president" (Osei 2016).

A confluence of factors explains the worsening electricity shortfall after the elections. To begin with, gas from Nigeria stopped flowing to Ghana in late 2012 and 2013 because of a damaged pipe (Quartey 2013; MacLean 2016). Mahama lamented the situation in the State of the Nation address in Parliament on 21 February 2013:

> The incapacitated gas pipeline [has] … led to the loss of over 250 MW of electricity supply in Ghana…. As president I am adequately aware of the challenges and the extreme discomfort that this is causing to the generality of our people and businesses. This situation causes me sleepless nights…. (Mahama 21 February 2013, 15-16)

As if interruptions in the operations of the WAPCo were not enough, gas supply from Ghana's domestic gas field, Jubilee Gas, tarried for more than three years in part because China delayed in disbursing the loan for gas infrastructure development (Kpodo 2014; Adam 2015). As Ghana's finance minister explained at the time, both parties to the loan eventually cancelled half of it because of "challenges that we have had in coming to an understanding with [the] CBD (China Development Bank)" (quoted in Kpodo 2014).

[50] The Supreme Court issued no orders or directives to the Electoral Commission because the elections management body is an independent institution under the country's constitution.

[51] Akan is one of many Ghanaian languages, but it is the most popular language in the country, especially in the middle and southern regions.

Another explanation related to politics: the hydro dams' inability to generate sufficient power emanated less from poor rainfall than the mismanagement of power shortages of the past years (Interview with Graham, Accra, 22 May 2019; Interview with Nketia, Accra, 9 June 2019). Governments' failure to adequately fund the VRA in the face of low tariffs meant that the utility lacked the wherewithal to invest in the hydro dams and purchase fuel for thermal plants. This had compelled the VRA to draw more power from the Akosombo dam to mitigate the severity of previous outages (Adam 2015, 5; Interview with Graham, Accra, 22 May 2019; Interview with bureaucrat 2 at the Energy Commission, Accra 17 June 2019). The overdrawing of the dam had weakened the hydro turbines and they only partially operated by 2013.

To address the financial challenges of utilities, the PURC (2013) announced price increases ranging between 65% and 78.9% – the increase varied by the type of consumer – in September 2013. The PURC and the NDC had hoped that the tariff raise would improve the finances of utilities and enable them to reduce the shortages (Panafrican News Agency 2013). But Mahama capitulated to social pressures and reversed the increase within a few weeks. The reversal highlights political responsiveness to social forces in Ghana.

Social groups resisted the tariff raises. Organized labor, represented by the Ghana Trades Union Congress (TUC), argued that the increase would burden workers and Ghanaians more generally (Daily Guide Network 2013). They proposed a staggered approach whereby the PURC would raise electricity prices gradually over an agreed period to reduce their burden on consumers. Organized labor gave the PURC and the government a 10-day ultimatum "to reduce the tariffs or face the wrath of workers" (Ghana Trades Union Congress 2013). Mahama responded to workers' demand by forming a Technical Working Group (TWG)[52] in October 2013 to examine "mitigating measures that would allow industry and consumers to adjust to any new level of tariff adjustment" (Ghana Trades Union Congress 2013). The TWG recommended an average increase of 60%, which the TUC rejected and scheduled nationwide demonstrations and a strike for 18 November 2013 (Arku 2013; Ghana Trades Union Congress 2013). On 10 November 2013 – before the planned strike – Mahama succumbed to workers' threats by "effecting a 25% cut in rates announced by the Public Utilities Regulatory Commission" (Panafrican News Agency 2013). In reaction to the reduction, organized labor called off the intended strike and protests. This episode shows that politicians understand very well that ignoring powerfully mobilized groups like unionized workers would sully their electoral appeal and endanger their political survival.

Mahama attempted to end the power shortages and public displeasure at blackouts by restructuring the energy ministry (Bigg 2014). In 2014, he created a new Ministry of Power that would focus on electricity management, with oil and gas left for the Ministry of Petroleum. That same year, Mahama sacked the Managing Director of the ECG, which a section of Ghanaians viewed as the least efficient among all state-owned electricity companies (Interview with bureaucrat 2 at the Energy Commission, Accra, 17 June 2019).

In late 2014, the electricity sector was suffocating under debt (Graham 2015), which had become popularly known in Ghana as the legacy debt. The legacy debt is commonly understood among stakeholders in the electricity sector to denote debts owed by the government to electricity companies and inter-utility debts that have accumulated since the 1990s (Interview with Bawa, Accra, 11 June 2019). In a chain of debt, the government owes the ECG, the ECG owes the VRA and IPPs and the VRA in turn owes the GRIDCo. The government owed the ECG 375 million dollars as of October 2014 (Graham 2015). This debt reached about 500 million US dollars in

[52] The TWG included technical experts and economists (e.g., Arku 2013).

2016, representing more than 62% of the legacy debt at the time (PUWU 10 May 2016; Interview with Nyantakyi, Accra, 20 May 2019; Interview with Graham Accra, 22 May 2019).

The causes of the legacy debt vary but analysts agree that politically determined electricity tariffs and successive governments' failure to pay subsidy pledges and the electricity bills of state agencies have contributed to the debt (Interview with Manteaw, Accra, 20 May 2019; Interview with Nyantakyi, Accra, 20 May 2019; Interview with Graham, Accra, 22 May 2019).[53] Besides, the agencies owe one another precisely because of the unbundling, so that the producer has to pay for transmission and the distributors have to pay for generation and transmission. The legacy debt impacts electricity provision by undermining the credit worthiness of utilities and their ability to borrow money from banks, invest in the electricity network, and obtain fuel to generate thermal electricity (Mathrani et al. 2013). This then leads to recurring power shortages and load shedding.

To resolve the legacy debt, the Government of Ghana enacted the Energy Sector Levies Act (ESLA) in 2015. This law provides for the use of taxes, bonds, and debt securities to address the debt (Ministry of Finance 2019). Furthermore, the PURC (2015) hiked electricity prices by 59.2% in December 2015. It explained that the rising price of crude oil and the depreciation of the local currency primarily drove the tariff raise (Kpodo 2015). Others argued electricity prices went up for the government to meet loan conditionalities of the IMF (Kpodo 2015). They cited a fiscal stabilization program (of US$918 million loan) that Ghana signed with the IMF in April 2015 (IMF 2015). The program intended "to restore debt sustainability and macroeconomic stability to foster a return to high growth and job creation, while protecting social spending" (IMF 2015). According to a media report, the agreement required the government to raise tariffs to address the energy sector debt (Kpodo 2015). It also fulfilled a conditionality for a US grant, which required Ghana to increase tariffs to make the electricity sector attractive to potential concessionaires (Interview with Nyantakyi, Accra, 20 May 2019).

The NPP opposed the hike in tariffs, condemning the NDC for being insensitive to economic hardships in Ghana (Kpodo 2015). Workers, too, protested the tariff increase in Accra and other major cities across the country (Smart-Abbey 2016). They maintained that the tariff increase and the introduction of taxes on petroleum products under the ESLA, in the face of high inflation (17.4% at the time) and the depreciation of the local currency, were unbearable. So, workers demonstrated to "bring home to [the] government in a more forceful manner the difficulties and the desperate social and economic condition the tariff increases and the new taxes and levies on petroleum products [and] on our incomes have occasioned" (Smart-Abbey 2016).

Additional protests highlighted challenges related to electricity and demands for accountability for the management of the sector. Ghanaian celebrities organized demonstrations in Accra to express their frustration at unannounced power cuts and their impacts on their careers and businesses in May 2015 (The Guardian 2015; Kokutse 2015). In addition to street protests, they articulated their anger at rolling blackouts and prohibitively high electricity prices through conventional and social media (Acquaye 2015). The hashtag "#DumsorMustStop" popped up on celebrities' accounts on Twitter, Facebook, and WhatsApp platforms, receiving "about 7 million impressions and 2.5 million reach on Twitter as of 18 May 2015" (Acquaye 2015). These protests and the media coverage of them possibly dented the image of the governing party and its presidential candidate.

Ongoing power shortages intensified in June 2016, as the WAPCo stopped gas supply to Ghana because of "unpaid bills" of about 180 million US dollars (Reuters 2016). The effects of these shortages deserve attention here because they help to understand the outcomes of the 2016

[53] State agencies alone consume 40% of the electricity distributed by the ECG (Graham 2015).

elections. The power shortfalls resulted in outages that upended the Ghanaian economy and society, affecting businesses, hospitals, schools, and families (Clerici et al. 2016; Abeberese et al. 2017; ISSER 2020). Personal stories of small business operators illustrate the impacts of the load shedding. A cold store owner in Kumasi recounted that "Sometimes we come, and the light is out. … You have no option… You have to throw [the meat] away so that you don't have a problem with the Food and Drug Authority" (quoted in Clerici et al. 2016). A printing press operator narrated that "we lost out on so many jobs and contracts. … Or sometimes customers might not bring anything because there is no light" (quoted in Clerici et al. 2016).

Besides, power cuts affected social life. During field research in Accra, a seller by the roadside at Nima, a slum in Accra, said power cuts disturbed her "one-and-half years old daughter. She could not sleep because of the heat that came if the lights went out" (Interview with resident 3 at Nima, Accra, 11 May 2019). Another resident indicated that "[the ECG] wasn't giving us any warning before the lights went out, thereby destroying my home appliances" (Interview with resident 1 at Nima, Accra, 11 May 2019). As a representative of civil society asserted, people "suffered a lot…, with the heat and everything. The average Ghanaian really suffered" (Interview with a representative of the Ghana Center for Democratic Development, Accra, 9 May 2019).

Amid the power shortages, rolling outages and their pernicious consequences for the economy and social life, electricity workers, numbering 8,850 as of 2020 and belonging to the TUC (PUWU 2020), and civil society groups mobilized against the privatization of the ECG throughout 2016, an election year. The struggle to privatize the national electricity distributor, narrated below, shows not merely the electoral influence of electricity, but also the political strength of social forces. It further demonstrates that electoral incentives can prevent politicians from implementing politically contentious policies like the privatization of public utilities.

Mahama attempted to privatize the ECG in 2016 in fulfilment of a US Millennium Challenge Corporation (MCC) grant agreement (MCC nd; MCC 2020; PUWU 2016). According to the original privatization design, a concessionaire would manage the utility for 25 years and invest at least 500 million US dollars during the first five years (Myjoyonline 2016b; PUWU 2016; Kpekpena 2017). It also included a minimum of 80% foreign private participation with a 20% Ghanaian private equity participation (Interview with Manteaw, Accra, 20 May 2019; Interview with Nyantakyi, 20 May 2019; Afful 2019). Moreover, the agreement required the private firm to retain all employees of the utility for the first two years of the contract, but allowed dismissals afterward (Interview with Nyantakyi, 20 May 2019).

The utility's workers and their allies in civil society opposed the privatization, which they described as "this assault of a national asset" (PUWU 2016). In their view, handing over the utility to a foreign company would injure Ghana's national (economic) interest. As they argued, a foreign private company would contribute to capital flight by repatriating profits, which would undermine the country's foreign exchange position (PUWU 2016; Interview with Nyantakyi, Accra, 20 May 2019; Interview with Manteaw, Accra, 20 May 2019).

Additionally, the strategic significance of electricity for social and economic development, they claimed, requires a strong state role to curb the profit drive of private players (PUWU 2016; Interview with Graham, Accra, 22 May 2019). The PUWU maintained that the government must control an asset as strategic as the national distributor. They judged the utility to be viable and blamed its inefficiencies on inadequate financing, non-payment of bills and political interference (PUWU 2016; Interview with Nyantakyi, Accra, 20 May 2019). Noting that the government had changed the managing director of the ECG four times between 2009 and

2016, the workers asked, "How can a Company operate efficiently when the appointing authority changes leadership frequently?" (PUWU 2016, 3).

> The political interference is also seen in the area of procurement and service delivery. Political appointees dictate the types and sources of certain major procurements, which impact negatively on the operations of the Company. A key example is the procurement of meters. Substandard meters are forced on the Company and have to be changed within a short time, adding to the losses of the Company. (PUWU 2016, 3)

In sum, the workers and other social forces agreed that the ECG is inefficient. However, they disagreed with the government about the cause(s) of the inefficiencies. In their view, the solution lies less in the privatization of the utility than in charging adequate tariffs, lessening political interference, and paying the government's debt (PUWU 2016).

The workers highlighted price raises and job cuts, too. In their view, privatization would lead to "abnormal increases in tariffs" because a private firm would seek to recoup its investments and place profit ahead of people (PUWU 2016, 5). As part of cost-cutting measures, the concessionaire would retrench many staff of the utility. The electricity workers claimed that this would inevitably worsen unemployment and wreak hardship on several families in a country where joblessness[54] is already a serious issue and the dependency rate remains high. They reminded Mahama that in the few privatizations that happened in the past, workers experienced massive job cuts.

Finally, some civil society groups expressed concern over the possibility of sovereignty violations. This fear stemmed from section 1 of article 7 of the Compact treaty, which states that "The Parties understand that this Compact and the PIA [Program Implementation Agreement], upon entry into force, will prevail over the domestic laws of Ghana" (MCC nd, 13). According to the groups, this nebulous provision could subject electricity management and regulation to external forces (Interview with a representative of the Wassa Association of Communities Affected by Mining, Accra, 21 May 2019; see also Myjoyonline 2016a).

Under these conditions – prolonged shortages, rolling outages, and workers mobilizations – Ghanaians headed for the polls in December 2016. The NPP's presidential candidate, Akufo-Addo, wrested power from President Mahama of the NDC. The results were historic and unprecedented because, for the first time in Ghana's history, an incumbent president lost to an opposition candidate and by a margin of more than one million votes. The NPP won 171 of 275 legislative seats, representing 62.2% (Cheeseman et al. 2017, 92).

The NDC blamed apathy among its supporters, especially those in the Volta region (Ayee 2017). Allegations of corruption and scandals abounded and damaged the appeal of the NDC and its presidential candidate. The media and civil society groups highlighted scandals, and opposition parties capitalized on them (Africanews 2016; Biggs 2016; Laary 2016; Pulse.com.gh 2016).[55] For example, opposition parties described as corrupt Mahama's deal with the AMERI Energy in 2015 to produce 250 megawatts of electricity for five years at a cost of 510 million US dollars (Ministry of Power 2015; Boadu 2015; Dzawu 2018; Nyavor 2018; Interview with an NPP MP on the committee of mines and energy, Accra, 2 May 2019; Interview with a bureaucrat in the parliamentary service, Accra, 8 May 2019). In another instance, within six months of the elections, an investigative journalist in Accra revealed that a Burkinabe contractor bribed the

[54] Ghana's unemployment rate stood at 6.8% in 2015 and 5.5% in 2016 (World Bank 2021a).
[55] Pulse.com.gh identified "Seven scandals that rocked the NDC under John Mahama" in an article on 14 December 2016.

president with a car in return for a deal (Pulse.com.gh 2016). Although Mahama attempted to defend himself, it seems the mud stuck and hurt his political popularity.

Then there was a sagging economy, which the NPP attributed to the president's incompetent management (Kojo 2015; Obour 2015). Mounting debt (roughly 73% of GDP) and low economic growth (Government of Ghana 2017, 1-2) signaled a troubled Ghanaian economy. Figure 6.2 illustrates that, after rising from 4.8% in 2009 to 14% in 2011 with oil and gas coming on stream, real GDP growth began to decline. It dropped to 3.6% in 2016. The poor economic performance partly resulted from the lack of electricity, which constrained industrial production and commercial activities, and caused dismissals of workers and income losses (Graphic Online 2017; Government of Ghana 2017). With these economic conditions, the NPP's message of change for competent economic management resonated with the majority of voters. The NPP presented not just electrifying campaign messages and slogans, but they also aimed at specific blocs of voters. For instance, the 'One District, One Factory' message targeted unemployed young voters and private investors; 'One Village, One Dam' aimed at mobilizing rural voters, especially in the northern part of the country where low rainfall undermines agricultural productivity and household incomes; the 'Zongo Development Fund' targeted voters in Muslim communities; and 'Free Senior High School' appealed to poor parents and students (Daily Guide 2016; Ayee 2017; Boako 2020).

Source: Data from Government of Ghana (2017)

Electricity provision factored in the 2016 elections in a number of ways. To begin with, some communities found the incumbent's electrification accomplishments inadequate. At protest marches, communities made it clear that electricity was on the ballot. For instance, in September 2016, residents of Sherigu – a community in the northern part of Ghana – threatened to boycott the polls if the government failed to connect them to the electricity grid (Ghanaweb 2016). They underscored the importance of the community's population to electoral outcomes: "Sherigu has a population of about 24,000 and a voter population of 10,000…" and "we wish to bring to the attention of … President John Mahama that we need our share of the national cake" (Ghanaweb 2016). The community seemed to suggest that their votes could tilt the balance of power and that the incumbent should chase their votes with electricity goodies.

On the other hand, Mahama's strategies involved deflecting responsibility for the power situation and pointing out power shortages under previous governments (NDC 2016, 53). He also trumpeted a litany of completed and planned generation projects to address shortages (NDC 2016, 53). He claimed credit for increasing the country's generation capacity from 2,280 megawatts in 2012 to 4,223 megawatts in 2016 and then invited the electorate to consider the

party's electricity performance (NDC 2016, 53; see also Energy Commission 2020 on generation capacity). Yet organizing voters around electricity was problematic and self-defeating for the NDC. In 2012, Mahama not merely promised to fix the power challenges by the end of 2013, but he also provided a roadmap, including specific timelines, for doing so (NDC 2012, 78-79). When endorsing him at the polls in 2012, most voters may have found his strategies convincing. Nonetheless, the power problems had worsened for much of 2013-2016, although the president had expanded the generation capacity toward the end of his term.

No wonder the NPP mobilized voters around electricity shortages. The party linked the country's economic hardships to power outages and expensive tariffs and attributed them to Mahama's incompetence (Laary 2015; Min 2019; Interview with Owusu-Mensah, Accra, 16 May 2019). Three years later, an interviewee explained that power cuts and prices "were major issues. … [As a] government-in-waiting, looking for power, [we] promised to address these things using a myriad of measures" (Interview with a spokesperson at the Ministry of Energy, Accra, 14 May 2019). Besides, the NPP identified job creation as one of its priorities in its manifesto. To create jobs, the NPP claimed that it would boost businesses by ending power cuts and reducing tariffs (NPP 2016). Cutting down prices, the party trumpeted at campaign rallies, would moreover lessen households' financial burden.

The NPP capitalized on other electricity issues, not least the privatization of the ECG, to score political points. Despite its conservative ideology and much-touted commitment to private participation in the economy, the NPP criticized the planned privatization. The party supported the electricity workers, who were in a standoff with the NDC government over the reform. It took its campaign to organized labor and held a meeting with them. At the meeting, the NPP underlined Mahama's failure to consider the views of the workers and then pledged to take a second look at the reform, if elected. As its presidential candidate stated, "Our first duty in January [2017] will be to sit down with the various stakeholders and look at the options you have placed on the table. We need to engage you again and engage with the American partners to find a way forward" (quoted in Kwawukume 2016). Engaging workers in the run-up to the 2016 elections was politically expedient, given the electoral significance of organized labor in Ghana. Ghana's labor unions have a history of policy activism and represent a well-mobilized social force (Tangri 1991; Ayee 2016). The workers and their families and friends constituted a voting bloc to whom the NPP could appeal for votes. Their votes matter in a country where elections are close, with the last two elections having been decided by less than 3% of votes (see Table 6.2).

The 2016 elections underscore the risks that politicians face when sectoral reforms antagonize influential constituencies. The point here is that a mélange of factors influences elections in Ghana and that the popular discontent caused by electricity management and sectoral performance under the NDC played a significant role in Mahama's defeat in 2016. As a representative of civil society remarked,

> Oh yes! I think … whatever other reasons, … the bottom line is that the dumsor [unannounced power cuts] created such a toxic environment, economic environment, and that whatever else happened in the course of the campaign, dumsor was at the center. For the opposition, it was a very good issue to raise all the time. The businessmen were not happy, individuals were not happy, and it affected every aspect of our economy. Even though the government tried toward the end to do a lot, in the end, people did not forget that … they were subjected to dumsor. (Interview with a representative of the Ghana Center for Democratic Development, Accra, 9 May 2019)

The NDC itself acknowledged the role of electricity provision in its loss. Its general secretary observed that power rationing and tariffs "contributed because [electricity users] blame us when there is a light out" (Interview with Nketia, Accra, 9 June 2019).

6.5 Keeping Electoral Promises, 2017-2021

In Ghana, politicians should not merely persuade voters with promises, but they must also fulfil them; at a minimum, voters should see politicians to be fulfilling them. Short-term political survival can influence ruling elites to keep campaign promises because of the uncertainty of electoral outcomes. Recall from the last section that during the 2016 elections, Akufo-Addo promised to fix the power shortages and reduce electricity prices as part of measures to resuscitate the economy that slumped on Mahama's watch. He pledged to renegotiate the privatization of the ECG and to review some power purchase agreements into which Mahama entered. Upon ascending to the presidency, Akufo-Addo's incentive to keep these promises affected sectoral management, which in turn impacted performance, and then played a role in the 2020 elections.

Akufo-Addo fulfilled a flagship campaign pledge by announcing cuts in electricity prices in January 2018. He outlined specific groups that would experience price decreases and the percentage of reduction. He intimated that,

> From January this year, the non-residential tariff rate, which is the rate that … all of you here [pay], is being reduced by an average of 14%. For barbers, it is being reduced by 18%; for hairdressers and beauticians, 15.7%, and for tailors, 9.8%.... We want to encourage private businesses and make businesses stand on their feet. (Quoted in Communications Bureau of the Presidency of the Republic of Ghana 31 January 2018)

On the one hand, reducing power prices not only fulfilled a campaign promise, but it also had the potential to motivate the party's political base and appeal to floating voters who resent high prices of utilities. The reductions alleviated financial pressures brought on households and businesses by expensive electricity prices (Interview with a representative of the Association of Ghana Industries, Accra, 10 May 2019). My informal interactions with residents of Accra during field research revealed that power prices remain a major economic burden for households. On average, a household in the country spent 2.1% of its income on electricity in 2018, even after an 18% reduction early that year (AfDB 2019). Moreover, quarterly surveys conducted by the Association of Ghana Industries (AGI), a coalition of businesses, identify the cost of electricity as a major challenge. A significant number of respondents (42%) ranked electricity prices as the second topmost challenge facing businesses in the third quarter of 2018, despite a reduction of 25% in tariffs for them early that year (AGI 2018a).[56] In the fourth quarter of 2018, electricity price represented the greatest challenge for businesses (48%), ahead of exchange rate volatility, the tax regime, the cost of credit, and the cost of raw materials (AGI 2018b).

On the other hand, decreasing tariffs is economically problematic, if the government fails to pay promised subsidies and invest in the electricity infrastructure. With the promise of lower tariffs kept, the promise of reliable electricity becomes more difficult or even impossible to fulfill. Akufo-Addo's decision to lower tariffs remains economically puzzling, given that tariffs have historically lagged behind the cost of electricity supply and the sector chokes on debt (Interview with an officer of MiDA, Accra, 27 May 2019). Price cuts would worsen utilities' financial challenges. In addition, the way the reduction happened may be interpreted as a high-

[56] Most respondents identified exchange rate volatility as the top challenge (AGI 2018a).

level presidential interference in the mandate of the economic regulator. The president's announcement heralded the PURC's publication of a tariff decrease of 22% on average in March 2018 (PURC 2018). By announcing the decrease ahead of the PURC, the president tied the hands of the regulator, constraining it from an objective review of electricity tariffs (Interview with Kotei, Accra, 30 April 2019).

Akufo-Addo also acted on his promise to renegotiate the terms of the privatization of the national electricity distributor and ensure a win-win situation for electricity workers and the government. Following dialogues with representatives of civil society groups after the elections, the government increased Ghanaian private equity participation in the national distributor from 20% to 51% and decreased foreign private participation from 80% to 49% (Arko 2018; Interview with Manteaw, Accra, 20 May 2019; Myjoyonline 2019b). It reduced the duration of the concession from 25 to 20 years. Most significantly for the workers, who could have been dismissed after two years of the concession agreed by Mahama, the revised agreement required the private firm to retain all the workers of the utility.[57] Table 6.3 portrays the changes in the terms of the privatization. These changes paved the way for Akufo-Addo to award the contract to a private firm called the Power Distribution Service (PDS) in July 2018. The changes illustrate that the president kept his campaign promise of renegotiating the terms of the privatization.

Table 6.3: Comparing the terms of the privatization of the ECG before and after the 2016 elections

	Shareholding structure	**Contract duration**	**Status of workers**	**Role of private firm**	**Tariff decision**	**Maintenance & investments**
Pre-election	80% foreign ownership, 20% local participation	25 years	Job guaranteed for 2 years	Operation and management of distribution	Independent regulator	Concessionaire and US grant
Post-election	49% foreign ownership, 51% local private participation	20 years	Job security	Operation and management of distribution	Independent regulator	Concessionaire and US grant

Sources: Arko (2018); Myjoyonline (2019b); Interview with Nyantakyi (Accra, 20 May 2019); Interview with Manteaw (Accra, 20 May 2019)

However, Akufo-Addo cancelled the privatization agreement with the PDS in October 2019, accusing the PDS of fraud (Brantuo 2019). His government laid out in the media that, upon due diligence carried out after the commencement of the concession, it discovered that an insurance guarantee – a kind of insurance to protect the assets of the ECG in case the private firm defaulted on its obligations – that the PDS had provided was fraudulent and therefore invalid and unenforceable (Myjoyonline 2019a; Africa Center for Energy Policy 2019; Nyavor 2019).

Reactions in the media to the nullification of the PDS deal differed. In the view of the American government, the annulment was unjustifiable, and it violated the sanctity of the contract (MCC 2019). Therefore, Ghana forfeited the remaining 190 million US dollars under the MCC agreement (MCC 2019; Dzawu 2019; Reuters 2019a). According to the NDC, the whole PDS transaction represented "Ghana's biggest corruption scandal ever" (quoted in Frimpong 2019). The NDC alleged that the NPP favored friends and family of the president to acquire the 51% shares in the PDS. No wonder the NDC often cited this deal to demonstrate corruption in the Akufo-Addo government during the 2020 elections discussed below.

[57] The revised deal allowed workers to quit voluntarily.

Akufo-Addo faced a challenge in keeping his promise to cancel IPP deals he deemed to be corrupt. The AMERI deal, which Mahama had signed during the heyday of power shortages and as the 2016 elections approached, resulted in a scandal in 2018 when the Akufo-Addo government's attempts to renegotiate it led to an even pricier agreement (Darko 2018; Interview with Boakye, Accra, 15 May 2019). Civil society groups, including the Senior Staff Association of the VRA, the Public Services Workers Union, and the ACEP, estimated that Ghana would pay more than one billion dollars over 15 years and mobilized against the cost and duration of the new agreement (Adogla-Bessa 2018; Darko 2018; Adomonline 2018; Interview with a bureaucrat in the parliamentary service, Accra, 8 May 2019). As social pressures mounted, the president cancelled the new agreement and dismissed the minister of energy – in August 2018 – for misinforming him (Adogla-Bessa 2018). The president's actions clearly underline Ghanaian politicians' understanding of the significance of well-mobilized social forces for their political survival: disregard for such groupings risks electoral defeat.

Electricity prices dominated Ghanaian politics yet again in 2019, with utilities requesting tariff increases. Depreciation of the local currency conspired with increases in prices of oil on the international market to force the PURC to raise tariffs by roughly 11% in June 2019 (*Ghanaian Times* 2019). According to the executive secretary of the PURC, "The key objective of the tariff review was to sustain the financial viability of utility providers as well as ensure the delivery of quality service to customers," following a "prudent" review of costs of production and supply (quoted in *Ghanaian Times* 2019, 17).

The period of this increase coincided with my field research in Accra. For nearly one month (from 27 May to 20 June 2019), my attempts to meet and interact with officials of the PURC failed. The officials repeatedly rescheduled the meetings until June 21, the same day the PURC announced new electricity prices. During my numerous visits to the PURC, I observed that, although the regulator should have announced revised prices in the first quarter of 2019 in accordance with its schedule of tariff reviews, it delayed the announcement until the end of the second quarter (21 June 2019). The reason for the delay and that of the officials' inability to assist my research at the time coincided: the officials engaged in a string of meetings. First, the officers, alongside the board of directors of the PURC, held meetings with government officials, including the president, over the tariff review. Second, they attended numerous meetings with the board but also stakeholder consultations to balance the interest of utilities (cost reflective tariffs) and those of the government and consumers (low tariffs) in setting new prices.

It appeared that high-level political pressures attempted to stop the increase because it could dent the government's popularity. An officer at the PURC disclosed that governmental and social pressures on the regulator are the norm rather than the exception. In Ghana, "when you are going to adjust tariffs, it becomes something like somebody is being sentenced to death and will not allow an increase in tariffs to occur. Meanwhile, the sector is collapsing" (Interview with officer 1 of the PURC, Accra, 21 June 2019). The interference constitutes a political response to popular demands for low tariffs in a competitive electoral democracy where voters can and do exact punishment at the polls. The fear of losing power and the exclusion of rival politicians from the spoils of political power compel political elites to instrumentalize electricity provision in Ghana. In sum, it is politically expedient to keep electricity prices low (Wolfram et al. 2020), especially with presidential and parliamentary elections approaching in December 2020.

2020 saw more subdued election campaigns than previous ones largely because of restrictions on social gatherings – in this case political rallies – as a measure to curtail the spread of COVID-19. Akufo-Addo's strategies to tackle the COVID health crisis included a national

lockdown, regular national addresses on public health measures and free electricity and water (Nunoo 2020; Wolfram 2020; Agence de Press Africaine 2021). The government reasoned that free utilities would enable Ghanaians to stay at home during the pandemic. But, of course, providing free electricity and water also scored political points of great value in Ghana's highly competitive electoral democracy.

The NPP campaigned on them. Akufo-Addo's slogans – "Four More Years to Do More" and "Four More for Nana" – suggested he and the NPP deserved additional four years to continue to govern partly because they had ruled well in general and made good on past electoral promises (Daily Guide 2019; Ghanaweb 2019). Among other policies, the NPP touted the implementation of free secondary school education and, predictably, the reduction of electricity prices in 2018. Party and government officials projected the president as a promise keeper and vaunted the electricity price decrease as an unprecedented achievement since the country returned to multiparty democracy in 1992. At a town hall meeting in Kumasi, a NPP stronghold, Vice President Dr. Mahamudu Bawumia claimed political credit for the cutback:

> [In] 2018, we reduced electricity price by 22%, and by the way, this is the first government in the history of the fourth republic that has reduced electricity prices. And in 2019, we increased the prices by 11%. But when you take the net between 2019 and 2018, we have reduced electricity tariffs by [11%]. And this has never happened before … in the fourth republic and therefore it is a promise we have fulfilled. (Quoted in Nyabor 2020)

At the unveiling of its manifesto and campaign ahead of the 2020 elections, a deputy minister of energy (in charge of electricity) reiterated this point, claiming that "The NPP government is the first in the history of Ghana to reduce tariffs by 11% on a net basis against an increase in tariffs of 265% under the NDC government" (Myjoyonline 2020). Statements such as this underscore not merely the politicization of electricity, but also its electoral significance.

When the Electoral Commission counted the votes in December 2020, the NPP emerged victorious but with a taste of defeat, whereas the NDC lost but with a taste of victory. Akufo-Addo retained power with 51.3%, a decrease from nearly 54% in 2016, as shown in Table 6.2. Mahama's share of votes increased from 44.4% in 2016 to 47.4% in 2020. The NPP and the NDC obtained 137 legislative seats apiece, with an independent candidate taking one seat. This means that the NPP's share of seats fell from 169 in 2016, a net loss of 32 seats, while the NDC had a net gain of 28 seats (Electoral Commission 2016, 2020). Mahama challenged the presidential result in the Supreme Court. He alleged that none of the presidential candidates obtained the constitutional requirement of 50% plus one vote to be declared president and asked the court to order a re-run between him and Akufo-Addo (Reuters 2021). The Supreme Court dismissed Mahama's application because of lack of evidence, confirming the validity of Akufo-Addo's victory.

The results suggest that the NPP performed poorly in 2020 relative to the 2016 elections. A series of scandals and allegations of corruption, which the media exposed and the NDC campaign highlighted, may have tainted the president's image. The resignation of the head of Ghana's antigraft agency – over claims of political interference and corruption in a gold transaction that critics argued would benefit the president's family members – three weeks before the election day may have dealt a blow to the electoral fortunes of the NPP (Emmanuel 2020; Hawkson 2020).[58] Internal divisions that resulted from the NPP's parliamentary primaries

[58] The deal is popularly known in Ghana as the Agyapa Royalties scandal.

cost the party control over parliament (Emmanuel 2020; Graphic Online 2020). The divisions saw some failed aspirants contest the elections as independent candidates, splitting votes of NPP legislative candidates in some constituencies and contributing to voter apathy in others. In some instances, voters chose the president but rejected the incumbent's parliamentary candidates (i.e., a voting pattern known in Ghana as skirt and blouse) because they felt the party denied them their preferred aspirants by manipulating primaries (Kamasah 2020). Besides, electors claimed they voted against some candidates because they failed to fulfil their electoral promises, while others had become arrogant (Kamasah 2020). This means voters held their representatives accountable at the polls for their stewardship.

On the other hand, several factors helped the NPP to retain power. The economy performed relatively well prior to the pandemic. The electorate possibly blamed the economic downturn on the COVID-19 crisis rather than Akufo-Addo. Moreover, anti-poverty policies enhanced the president's electoral appeal. Free electricity and water for low-income users for much of 2020 and early 2021 protected the poor against the financial impacts of the COVID-19 pandemic (Myjoyonline 2021). The introduction of free senior secondary education, the reduction of electricity tariffs, and the renegotiation of the privatization of the ECG, which guaranteed jobs to electricity workers, most likely won him some admirers. It is unsurprising that the NPP capitalized on these measures during the campaign and portrayed the president as a promise keeper and therefore deserved another term (Arhinful 2020).

After the elections, the effects of the tariff reduction and free electricity started to severely bite power utilities, with unexpected outages resurfacing in early 2021 and dominating national political discourse (e.g., Ansah 2021; Atinka Online 2021; BBC 2021a; Business24.com.gh 2021; Darko 2021a, 2021b; Lartey 2021; Peacefmoline 2021a, 2021b). Government officials and power utilities blame the recent outages on a technical factor: maintenance and repairs (Lartey 2021). But by now, a major political source of recurrent power shortages appears easy to understand: a combination of artificially low prices, governments' failure to pay electricity subsidies, and their failure to pay for the electricity consumption of public agencies. Electricity companies' poor financial health then constrains investments in electricity installations, maintenance and repairs and crude oil purchase for the generation of thermal electricity. In other words, the recurring electricity shortage is a product of politics.

The politically motivated reduction in electricity tariffs in 2018 and the provision of free electricity in 2020 and early 2021 threw a spanner in the works by reducing revenues of utilities and forcing them to put off much-needed maintenance and investments in the electricity infrastructure. As the former minister of power explained in a radio interview in Accra,

> In this case, we have a situation where the expansion that ought to have been completed two or a year ago was not done because of cash flow inadequacy. We also have a situation where critical maintenance that ought to have been done was left undone because of a populist decision to reduce tariffs and that starved the utilities of the needed cash flow. (Quoted in Nyabor 2021)

Due in part to unannounced power cuts, young Ghanaians launched a protest on social media to demand accountability from the government less than six months after the 2020 elections. They called on Ghanaian authorities to "Fix the country" (Cromwell 2021; Darko 2021a), tweeting the hashtag "#FixTheCountry" more than 660,000 times on Twitter by the close of day, 5 May 2021 (Avle 2021). The campaigners maintained that rising youth unemployment, dysfunctional streetlights, recurrent power disruptions, water shortages, and bad roads indicated mismanagement by ruling elites over the years (Darko 2021a).

The campaign shows a general disenchantment with politicians, whose accomplishments voters deem to be inadequate. It highlights the failure of the political class to meet expectations of the electorate. With the next national elections scheduled for 2024, ruling elites can be worried about the effect of rising agitations among young voters, who form the majority of the Ghanaian electorate. Ignoring them and their concerns about unemployment and infrastructure such as electricity can contribute to their defeat. This may explain why a team of cabinet ministers held a meeting with initiators of the "Fix the country" campaign in May 2021 (Darko 2021b). However, while strategies, including cuts in tariffs, intended to address such concerns may be temporarily politically expedient, they can undermine the economy, social transformation, and politicians' own electoral fortunes in the long term, if politicians fail to pay promised subsidies and the electricity bills of government institutions.

6.6 Conclusion

In competitive regimes, the uncertainty of electoral outcomes makes all sorts of issues politically salient. Electricity is one such politically relevant resource. As we have seen, electricity is a politicized good in Ghana, where political competition remains extremely intense. Politicians use electric power to gain or retain political power. They rely on electricity provision as a tool for mobilizing voters and appeasing powerful blocs of voters. Once in office, the threat of losing political power influences how ruling elites manage electricity. Electoral incentives encourage political responsiveness to popular expectations and demands for access to reliable and cheap electricity and discourage politicians from making tough decisions such as raising tariffs to reflect the cost of service. As an officer of the PURC summarized it,

> Electricity has been used as a political good. If you tell the people to do the right thing by paying for it, the next time they won't vote for you. So, for fear of losing power and [for] fear of not getting the necessary votes to get into power, politicians have tended to draw back on issues that could have been put forward in a rational manner to help consumers to appreciate the need to pay for electricity. (Interview with officer 1 of the PURC, Accra, 21 June 2019)

This political responsiveness influences sectoral performance, which then affects electoral outcomes because of bottom-up accountability mechanisms in Ghana. Communities make claims for their share of electrification projects through protests during election periods. Well-mobilized social groups, which politicians disregard at the peril of their political survival, resent tariff raises and electricity privatization. A section of voters also holds elected officials accountable in part for their electricity performance by rejecting or rewarding them at the polls.

This chapter does not seek to suggest that electricity provision is the only determinant of electoral outcomes or electoral incentive is the only factor that affects electricity management and ultimately sectoral performance in Ghana. Other factors are relevant, too. Among other reasons, incumbency advantages and disadvantages, intraparty unity, and economic performance remain important explanations for Ghanaian voting behavior. This chapter takes the position that, regardless of all other factors, electricity provision and elections interact in important ways. Electricity provision influences elections, which in turn affect political elites' choices related to the electricity sector and their outcomes. When elections are intensely competitive, the risk of losing political power increases if tariffs increase sharply and if the reliability of electricity supply decreases dramatically. Ruling elites must perform a balancing act because of tensions between keeping electricity prices low and expanding access on the one hand and improving reliability on the other.

Chapter 7

The Politics of Electricity Provision in Côte d'Ivoire, 1940s-1990s

7.1 Introduction

In line with historical institutionalism, my study expects past infrastructure policies to shape later policies (e.g., Pierson 1993; Oberlander and Weaver 2015). This implies that the effects of colonial infrastructure policies can influence resource allocation during the postcolonial period and that infrastructure policies during the first few years after independence can shape subsequent infrastructure decisions. The policies may spawn a host of winners who will seek to preserve the status quo and losers who will try to change it. Policy change can thus spark social mobilization. Fewer and more unified powerful political actors can facilitate reforms if they favor them, whereas divided interests can hinder policy change (e.g., LeVan 2015; Boone et al. 2019). My research further anticipates the distribution of development projects during the postcolonial era to reflect political elites' voter mobilization strategies (e.g., Min 2015; Rosenzweig 2015; Trotter 2016). Political competition can encourage politicians to employ electricity provision to mobilize political support or appease opposition. This implies that, although macroeconomic and climatic crises can foreground the need for reforms, political incentives can drive whether and how governments carry out reforms.

This chapter analyzes these expectations in Côte d'Ivoire by drawing connections between broader political and socioeconomic developments and developments in the electricity sector during the late colonial period. It documents the French colonial administration's role in infrastructure development as well as the political considerations underlying electricity management during the regime of Félix Houphouët-Boigny (Houphouët), Côte d'Ivoire's first president (1960-1993).

The remainder of this chapter proceeds as follows: The next section sketches the historical context of electricity provision by highlighting the relationships between political developments and politicians' strategies regarding electricity provision from the late colonial period to the early 1980s. Section 3 considers the implications of the economic and climatic crises of the 1980s for electricity management. Section 4 focuses on links between sources of political competition and neoliberal sectoral reforms. As demonstrated in this section, the privatization of the state-owned electricity company proceeded relatively quickly because few groups could influence policy and those groups could neither undermine nor oust PDCI rule. I detailed the terms of the privatization agreement in section 5 and then examined the role of electricity provision in the multiparty elections in 1990 in section 6. The last section concludes that, in the absence of competitive elections, nonelectoral threats to the survival of the PDCI played a role in its strategies related to electricity provision and their outcomes.

7.2 Electricity Development before the Crises of the 1980s

France implemented an assimilation policy and attempted to develop direct rule in its African colonies, including Côte d'Ivoire (Firmin-Sellers 2000; Keller 2018). The assimilation policy aimed to spread French culture and language to French colonies. French direct rule intended to incorporate the colonies into a centralized bureaucracy in Paris. Toward the end of the Second World War, France took steps to reform this colonial policy in response to political upheavals such as anticolonial mobilization in French West Africa in 1943 (Genova 2004). Among other

initiatives, a French decree made local educated elites "partners with French officials in the administration" of the colonies in 1944 (Genova 2004, 57-58).

The reform of the French colonial administration coincided with the rise of the *Syndicat Agricole Africain* (SAA) in Côte d'Ivoire. Rich farmers of cocoa and coffee formed the SAA in 1944 to oppose colonial agricultural policies they deemed obnoxious (Toungara 1990; Crook 1991; Boone 2007; Schmidt 2009; Keller 2014). The Baoulé and the Dioula ethnic groups formed the spine of the SAA (Toungara 1990; Boone 2007; Schmidt 2009). The SAA excluded wealthy Agni farmers and intellectuals and marginalized Bété indigenes (Boone 2007; Schmidt 2009; Keller 2014). In 1945, the SAA allied with a voluntary association of educated elites in Abidjan, from which Houphouët mobilized support to get elected – based on limited suffrage – to represent Côte d'Ivoire in the French Constituent Assembly charged with enacting a new constitution (Toungara 1990; Chafer 2002; Keller 2014).

This Assembly passed reforms in French colonial institutions, thanks in part to "the influence of African and Caribbean deputies on colonial policy and legislation [and] the leading role of the Communist Party in the Assembly…" (Lewis 1995, 161; Chafer 2002, 63-64). In this Assembly, Houphouët introduced a bill that ended forced labor in April 1946, in fulfilment of his campaign promise (Zolberg 1964; Fall 2002, 15; Woods 2003; Keller 2014; Fall and Roberts 2019). This achievement bolstered Houphouët's political popularity and contributed to his successes in subsequent elections. In addition, the Assembly established the French Union, which replaced the French Empire, under the Constitution of October 1946 (Julien 1950). The French Union encompassed France and its colonies.[59] The colonies had local governments (territorial assemblies and executive) with limited autonomy over economic, financial and administrative matters in the territories (Julien 1950). France controlled "foreign affairs, defense and security" (Houphouët-Boigny 1957, 596). Besides, the Constituent Assembly conferred citizenship rights, including the right to representation in the French National Assembly, on all residents of French colonies (Julien 1950).

These changes opened opportunities for political participation and increased political competition. For instance, they enabled African political leaders to form political parties and take part in policymaking. In Côte d'Ivoire, Houphouët transformed the SAA into a political party – the *Parti démocratique de Côte d'Ivoire* (PDCI) – in April 1946 (PDCI-RDA 2021; Boone 2007). Baoulé farmers, chiefs, and educated elites as well as Dioula farmers and businesspeople became the cornerstones of the PDCI coalition (Zolberg 1964; Boone 2007; Schmidt 2009). Immigrants in Côte d'Ivoire, for whom Houphouët advocated the right to vote, also constituted an important electoral base for the PDCI (Keller 2014). Houphouët's main challengers, in particular Agni intellectuals and farmers, formed the *Parti Progressiste de Côte d'Ivoire* and drew support from the Agni ethnic group (Zolberg 1964; Schmidt 2009). The Bété ethnic group backed the *Parti Socialiste* (Toungara 1990). In June 1946, Houphouët obtained 98% in the elections for the Constituent Assembly in Paris (Zolberg 1964). Houphouët's rise in political popularity emanated from his role in ending forced labor.

Increased political participation in Côte d'Ivoire triggered French repression. In October 1946, Houphouët's PDCI allied with the African Democratic Rally (*Rassemblement démocratique Africain* – RDA) (Alalade 1979; PDCI-RDA 2021). An interterritorial party affiliated with the French Communist Party, the RDA opposed imperialist exploitation and espoused equal rights for the colonies (van Beusekom 2008; Schmidt 2009). During the late 1940s, the French colonial administration clamped down on the RDA, following the expulsion of

[59] France designated the colonies as overseas departments and territories under the reforms.

the Communist Party from the French government and because of a perceived threat of communist revolution in French colonies in Sub-Saharan Africa (Keese 2008). As the president of the Ivorian branch of the RDA (i.e., the PDCI), Houphouët became the target of French colonial repression (Toungara 1990; Keese 2008). The repression occasioned waves of violent clashes in Côte d'Ivoire, as in other French West African colonies. In 1950, a new French government appointed François Mitterrand as the French Overseas minister (Ramsis 1993). Mitterrand, who favored reforms in French anti-communist strategies, changed course, negotiating with RDA leaders (Ramsis 1993; Keese 2008; N'Guessan 2015).

The outcome of the negotiations manifested after elections in French West Africa in June 1951 returned only Houphouët and two other incumbent RDA legislators to the French National Assembly, with five opposition parties sharing the remaining 17 seats among them (Ramsis 1993, 156; Chafer 2002, 147). As some researchers have explained, the French colonial administration, distrustful of the RDA, interfered in the elections in favor of RDA's opponents (O'Brien 1965; Ramsis 1993; Chafer 2002). In late 1951, the negotiations resulted in a shift in political alliances, with the RDA abandoning its alliance with the French Communist Party for cooperation with a socialist and anti-communist party (*Union démocratique et socialiste de la Résistance,* UDSR) (Ramsis 1993, 152; O'Brien 1965; Keese 2008; N'Guessan 2015). From this time on, Mitterrand and French governing elites "recognized Houphouet-Boigny as the *interlocuteur valable* [valid negotiator or partner] of the Ivory Coast" (Alalade 1979, 123).

Improved relations facilitated infrastructure investments in Côte d'Ivoire. Partly in response to PDCI demands for socioeconomic development and to mounting nationalist agitation, the French colonial administration invested in capital projects (Quigley 1958; Berg 1960; see also Babou 2010, 45). It, for example, built a harbor in Abidjan in 1951 (Quigley 1958). It invested in roads, schools and health facilities in southern Côte d'Ivoire – at the expense of the north – to open the forest zone for increased production of cash crops (Berg 1960; Woods 1989).[60] The concentration of social and economic opportunities in the south resulted in socioeconomic inequalities. It created southern educated elites who were also landowners in the cash crop economy and made the south relatively more prosperous and urban than the north (Zolberg 1964; Cohen 1974; Woods 1989).

Despite investments in infrastructure, transportation of raw materials from Côte d'Ivoire and other French West African colonies to France remained expensive (Quigley 1958). To address this problem, France promoted the manufacturing of raw materials in the colonies (Quigley 1958, 93; see also Berg 1960, 392).[61] This contributed to increased manufacturing activities, which required reliable and cheap electricity. To this end, the French colonial administration established the *Energie Electrique de Côte d'Ivoire* (EECI) in 1952 (World Bank 1980; UNDP and World Bank 1985a). The utility took over the electricity functions – production, transmission, and distribution – of the Department of Public Works (Lavigne 1999). The EECI had a mandate to invest in the power infrastructure and extend electricity access in Côte d'Ivoire.

Political competition that intensified during the 1952-1960 period set the PDCI on the path of one-party rule. First, the PDCI achieved overwhelming successes in a string of elections

[60] The French colonial administration drew labor from the north for plantations in the south, a practice that continued in postcolonial Côte d'Ivoire (Woods 1989). As a result of this practice, the south produced the lion's share of the country's commodities.

[61] France established plants for processing food and for manufacturing flour and soap in the colonies to reduce the cost of transporting raw materials to Paris (Berg 1960, 392).

during this period (Zolberg 1964; Chafer 2002). For example, in elections to the Ivorian Territorial Assembly in 1952, the PDCI won 72% of the vote and 28 of 32 seats, partly because of its alliance with independent candidates and an opposition party (Zolberg 1964, 155). In January 1956, the RDA won the most seats for French West Africa in the French National Assembly. It obtained eight out of 20 seats, various opposition parties won 10 seats and two seats went to independent candidates (Chafer 2002, 148-149). Houphouët, whose PDCI won Côte d'Ivoire's two seats for the RDA, became a cabinet minister in the French government. This position meant more access to policymakers in Paris to lobby for economic benefits for Côte d'Ivoire. In May 1956, Houphouët's main opponents in that year's elections supported the PDCI in response to his "renewed call to territorial unity" (Zolberg 1964, 188). The PDCI rewarded those parties by including some of their candidates on its ticket for subsequent municipal and territorial elections (Zolberg 1964; Crook 1991; Medard 1991; Akindès 2004).

Second, constitutional reforms (*Loi Cadre*), which kicked in after the National Assembly elections in 1956, introduced universal suffrage and internal self-government across the overseas territories in the French Union, drawing more people into electoral competition (Quigley 1958; Keller 2014). The reforms granted responsibility for managing public services, including electricity, to the overseas territories (Zolberg 1964; O'Brien 1965; Skurnik 1967). The overseas territories received legislative powers and "were empowered to regulate nearly every aspect of domestic social, economic, and cultural life" (Skurnik 1967, 327). France retained control over defense, foreign affairs, education, and economic planning (Quigley 1958). It aimed to use these changes to "satisfy the political aspirations of native peoples before hostile nationalism developed" (Quigley 1958, 97; O'Brien 1965). In 1957, elections to the Ivorian Territorial Assembly based on universal suffrage confirmed the PDCI's electoral dominance. The PDCI defeated 13 opposition parties – mainly ethnic based – by winning all the 60 seats in the Territorial Assembly (Quigley 1958, 97; Fauré 1993, 314; Woods 2003).[62]

Political pressures for independence and debates about Franco-African relations had intensified by mid-1958 partly because of Ghana's independence in 1957 and proposed reforms in French colonial administration (Zoberg 1964; Schmidt 2009). France asked its African colonies to choose between internal autonomy in the French Community and sovereignty in a referendum in September 1958 (Berg 1960; Schmidt 2009; Keller 2014). Under the French Community, France intended to make its overseas territories self-governing states with no sovereignty (Fuglestad 1973). The proposed constitution further provided that each territory could join the French Community separately or as groups and could apply for independence later (Berg 1960). In the referendum, 'yes' accepted the French Community and 'no' approved independence from France. In Côte d'Ivoire, Houphouët rejected independence and mobilized Ivorians to support the constitution. But not everyone in the country agreed with his stance. Aware of the opposition from inside and outside the PDCI to his position, Houphouët used force to sway the election results (Zolberg 1964; Schmidt 2009). He made voting in the referendum mandatory for the Ivorian electorate, threatened to expel from Côte d'Ivoire within 24 hours any Ivorian who would vote 'no', incarcerated some 'no' supporters, and banished others to nearby countries (Zolberg 1964; Schmidt 2009). In the end, according to the official count, nearly all

[62] Zolberg (1964, 211-212) reported that the PDCI obtained 58 seats during the elections, but the two opposing legislators joined the PDCI in the Territorial Assembly.

Ivorians on the voter roll turned out to vote (>99%), with a similar percentage of electors (about 99.98%) endorsing the French Community (Zolberg 1964, 239-240).[63]

Economic and political considerations affected Houphouët's rejection of independence during this period. He feared that independence would cut Côte d'Ivoire off French trade and aid, which not only contributed to socioeconomic development but also enabled PDCI's distributive politics and thus its survival (Berg 1960; Zolberg 1964; O'Brien 1965; Keller 2014).[64] Moreover, Houphouët pushed for the French Community because of domestic threats to national unity in Côte d'Ivoire. Having gained more insights into the demands of nation building since the early 1950s, the PDCI grew more apprehensive about its inability to deal with ethnic and religious conflicts if it severed ties with France (Berg 1960; Zolberg 1964). Houphouët believed that the French Community would enable his government to benefit from French security resources.

The PDCI obtained internal autonomy over Côte d'Ivoire following the affirmative vote. With internal autonomy came responsibility for state-building, economic development, and public services provision. The PDCI leadership viewed electrification as an instrument to foster industrialization and improve living standards (Bamba 2010). The PDCI thus built the first hydro power station with a generation capacity of 20 megawatts at Ayamé in 1959, with the financial and technical help of France (UNDP and World Bank 1985; Bamba 2010).

The trend in Africa toward independence and the aspiration of the Ivorian people for sovereignty influenced the PDCI to change course by August 1960 (Keller 2014). Aware of the challenges of uniting a country divided ethnically and religiously, transforming the economy, and developing infrastructure, Houphouët negotiated not only independence from France, but also economic and military aid and cooperation (Crook 1991; Medard 1991). He perceived that the PDCI's chances of survival and Côte d'Ivoire's economic development success would be greater if backed economically and politically by France. By maintaining ties with France and encouraging French presence in Côte d'Ivoire, Houphouët identified with the capitalist strategy of development (Boansi and Denemark 1999; Firmin-Sellers 2000; Prosperetti 2018).

At independence, limited infrastructure constrained economic development and social transformation (Bamba 2010). As discussed previously, the French colonial administration sited infrastructure like roads, schools, and hospitals in the south for strategic reasons (Woods 1989). Only four towns had electricity in 1960 (World Bank 1980, 2; Marwah 2017, 126). Houphouët acknowledged this limitation and underscored the provision of electricity at low prices as the bedrock of his industrialization program in his first post-independence address to the Ivorian National Assembly on 3 January 1961 (Houphouët 2016 [1961], 84). In this address, he also stated his goal of extending electricity access to all communities to improve the quality of social life in Côte d'Ivoire (Houphouët 2016 [1961], 84).

In the first three decades after independence, no regime change occurred, but the intensity of political competition changed over time (Crook 1991; Widner 1994a). During the 1960-1980 period, the authoritarian one-party regime meant that Ivorian voters had to vote for a PDCI candidate, refrain from voting, or spoil the ballot (see Widner 1994a). The PDCI won all five presidential elections from 1960 to 1980 with about 98% of the vote (Fauré 1993, 318).

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[63] In contrast, 66.2% of voters in French West Africa (minus Guinea) participated in the elections and 96.8% voted in the affirmative (Zolberg 1964, 240). Only Guinea voted 'no' in the referendum, ending French colonial rule in the country in 1958. Guinea had a turnout rate of 76.5%, with merely 4.6% voting 'yes' (Zolberg 1964, 240).

[64] France exported about 36% of its goods and services to its colonies, while the colonies exported roughly 75% of their raw materials to France yearly over the 1952-1957 period (O'Brien 1965, 209). France provided more than 70% of the total investment in capital projects – between $750 million and $1 billion – during 1947-1956 as grants and loans to Côte d'Ivoire and other French colonies (Berg 1960, 394).

Legislative elections took a similar turn. Legislative candidates of the ruling PDCI had no challengers on the ballot.

Houphouët consolidated his grip on power through a range of mechanisms. He ignored opposition parties' right to exist. As Fauré (1993, 314; see also Kilson 1963) noted, "The 1960 constitution officially recognized the right of other parties to exist, but their role was to be clarified by a subsequent law, which was never even voted on." Houphouët's failure to recognize opposition parties and legislate their role made Côte d'Ivoire a de facto one-party state. Furthermore, the PDCI created the General Union of Côte d'Ivoire Workers (*Union Générale des Travailleurs de Côte d'Ivoire* – UGTCI) in 1962 to co-opt Ivorian workers (Freedom House 1990; Crook 1991). A senior PDCI official served as UGTCI's leader and almost all unions had to belong to this organization. This prevented the formation of an autonomous workers' union until the early 1990s (Representative of FESACI, Abidjan, 29 October 2019). Besides, rents from commodity booms and foreign aid encouraged PDCI patronage during the 1960s. The PDCI distributed public sector jobs, loans, and scholarships to party faithful "on the basis of an informal quota system that ensured that a political elite linked to the PDCI emerged within each region" (Boone 2007, 71; Crook 1989, 1997; Akindès 2004). State-owned companies and joint ventures funded by the Ivorian state and private capital provided "spoils appointments" (Crook 1989, 214). Houphouët further used parastatal jobs to co-opt political rivals.

Nonetheless, he faced non-electoral threats. In 1962, intellectual and political elites from the Agni ethnic group asked for independence for their region. They argued that a precolonial treaty between France and the Agni Kingdom promised them sovereignty (The New York Times 1970). He arrested and incarcerated many of the separatists, while others fled to Ghana (The New York Times 1970; Akindès 2004). In addition, the PDCI reported attempted coups in 1963 and 1964. It arrested and sentenced the alleged coup plotters to death (Toungara 1990; Medard 1991).[65] These punishments may have suppressed overt contestation and fostered some semblance of unity in the ruling coalition and across the country (e.g., Crook 1991).

Houphouët welcomed immigrants from neighboring West African countries for both political and economic ends. He conferred economic rights, including access to land, and voting rights on immigrants (Woods 1999, 2003; Crook 2001; Chirot 2006; Marshall-Fratani 2006). Politically, the open-door immigration and land policies boosted Houphouët's popularity among immigrants, who backed him so that they would continue to exercise these rights (Bassett 2003). Economically, Houphouët intended to use the policies to support agricultural production, in particular cocoa and coffee, for export (Crook 1991; Boone 2007; Dunn 2009). African immigrants provided labor for rich farmers, while others became farmers themselves and later dominated agriculture in some regions in the south (Chirot 2006; Boone 2007).

The liberal immigration and land policies contributed to increased agricultural exports and thus revenues during the 1960s and early 1970s. Bolstered by commodity revenues and loans, the PDCI government massively invested in infrastructure projects (Cohen 1974). It planned and financed development projects such as roads and schools during this period (Berthélemy and Bourguignon 1996). It developed the electricity infrastructure, too. It built a second hydro plant with a capacity of 30 megawatts at Ayamé in 1965, bringing the combined capacity of the Ayamé dams to 50 megawatts (World Bank 1980; UNDP and World Bank 1985). In 1968, it commissioned the country's first major thermal power station (UNDP and World

[65] Houphouët later appointed some of the alleged putsch planners as ministers and suggested that the regime staged the coup plot and the prosecution to dissuade potential insurgents (Toungara 1990; Medard 1991).

Bank 1985; see also US Department of Commerce 1968).[66] Expanded electricity production capacity would enable the government to extend access.

Economically, the PDCI continued the French colonial investment policy by concentrating infrastructure like electricity, roads, schools, telecommunications and housing in the south, where the land and climate supported cash crop farming and timber harvesting (World Bank 1980; Woods 1989; Toungara 1990; Widner 1994a). Houphouët's government intended to open this area up to increase agricultural production and exports and thus revenues. Politically, the distribution of development projects reflected the interests of elites in the urban south. Urban educated and landed elites, who had emerged in the south, dominated the PDCI party and held strategic positions in the government and the public bureaucracy (Woods 1989; Gyimah-Boadi and Daddieh 1999). Their strategic positions allowed them to control the distribution of resources and infrastructure in favor of their localities (Woods 1989; Widner 1994a). As Shaw and Wick put it, "The power of the central government enabled Côte d'Ivoire's urban elite to preserve its domination over the country by holding back rural development" (1998, 12; see also Toungara 1990, 40; Chirot 2006, 65; Marwah 2017).

By the late 1960s and early 1970s, the development gap between the urban south and the rural north had widened even further. This led students and jobless youth, including northern migrants in the south, to protest the uneven distribution of development projects (Cohen 1974; Woods 1989). Security forces arrested about 1,600 protesters in connection with student demonstrations in May 1968 and 1969 and protests by unemployed people in September 1969 (Cohen 1974, 230; Gyimah-Boadi and Daddieh 1999). In response to the social mobilization, Houphouët held several meetings with social groups, including youth associations (Cohen 1974, 230-231). He later conceded that the north-south development disparities could threaten national unity and security (Gouvernement de Côte d'Ivoire 1978, 16).

This means that Houphouët understood the north-south development gap as a threat to the political survival of Côte d'Ivoire. The PDCI government thus initiated policies to address this inequity (Cohen 1974; Woods 1989; Daddieh 2001; Ogwang 2011). Among other policies, it instituted an electrification levy in 1969 to extend the electricity grid to rural areas (Marwah 2017). It levied only those who had access to electricity at the time, with the levy appearing on their electricity bills (N'Guessan 2000). Given the small number of people with access, the levy was inadequate to fund electrification projects. So, the government permitted the EECI to borrow from banks to finance electricity projects (N'Guessan 2000). This borrowing enabled the utility to expand generation capacity and initiate electrification projects, with the objective of supplying electricity to all communities in Côte d'Ivoire (Botchway 2000).

The government's development plans in the 1970s also responded to popular discontent over imbalanced development. For example, the five-year national development plans for 1971-1975 and 1976-1980 aimed to invest in cotton and sugar farms, establish new textile factories and expand old ones in the north (Ancey and Percey 1983; Government of Côte d'Ivoire 2012). Widner (1994a, see also Daddieh 2001) confirmed that the PDCI financed cotton and sugar agriculture in the north during the mid-1970s. The development plans also targeted improvements in access to public utilities, including water, electricity, and telecommunications, by establishing hydro dams and telecommunication facilities (Ancey and Percey 1983; Wick and Shaw 1998; Government of Côte d'Ivoire 2012). The plans favored the development of hydroelectricity because hydro generation was (and remains) less expensive than thermal generation, reflecting high global prices for oil. Houphouët constructed a 174-megawatt hydro

[66] It built a second thermal power station a decade later.

station at Kossou in 1972 to support electrification (Traoré 2013). The government's preference for cheap hydropower contributed to the delay in the extraction of 1.1 billion cubic feet of natural gas discovered in Côte d'Ivoire in 1977 (Handloff 1988, 127; Malgas and Gratwick 2008; Bamba 2010; Traoré 2013). In line with the prioritization of hydro, Houphouët constructed a 210-megawatt hydro dam at Taabo in 1979 and a 165-megawatt hydro plant at Buyo in 1980 to improve access to electricity (Traoré 2013). As Traoré (2013, 6) noted, the oil shocks of the 1970s "reaffirmed Côte d'Ivoire's decision to prioritize hydroelectric power production."

Political competition intensified when Houphouët changed the electoral rules within the PDCI in 1980 (Fauré 1993; Widner 1994a, 1994b). In response to allegations of corruption and signals that some old party leaders were scheming to replace him, Houphouët implemented changes in the party to structure competition and give critics, especially young people, stakes in the regime (Widner 1994a). Among other initiatives, he axed nine party elders and set up an executive committee in the PDCI to counsel him (Widner 1994a). According to Widner (1994a, 135), this committee had "a larger than usual proportion of *jeunes* [youth]." He introduced internal competition within the PDCI for legislative seats (Fauré 1993; Widner 1994a, 1994b). As a result, 249 PDCI candidates competed for 147 seats in the 1980 legislative elections (Widner 1994a, 135).

Competitive pressures, especially the new imperative to win votes at the local level, possibly generated incentives for politicians to pay more attention to rural development projects. Prior to 1981, no separate rural electrification program existed (World Bank 1980). Instead, rural electrification strategies that the PDCI carried out formed part of broader economic development plans. Houphouët launched the first major rural electrification program for the 1981-1984 period as part of measures to reduce the rural-urban development divide (World Bank 1980). He obtained financial assistance for the program from the World Bank, the Canadian International Development Agency (CIDA), and the German Credit Institute for Reconstruction (World Bank 1980). The 1981-1984 rural electrification program,

> consisting of 6 independent components (or spider networks), [provided] for the linking to the main Ivorian interconnected hydropower-fed system, of about 676 small towns and villages with a total population of 890,000 people …. [The] total cost of EECI's 1981-1984 program ... [was] estimated to be US$151 million equivalent, including contingencies, with a foreign exchange component of US$106 million equivalent. (World Bank 1980, 1)

This electrification program, officials of the Ivorian government and the World Bank had expected, would expand electricity access by at least 8% (World Bank 1980). Yet economic and climatic shocks in the 1980s decelerated electrification and sent the entire electricity sector into a tailspin.

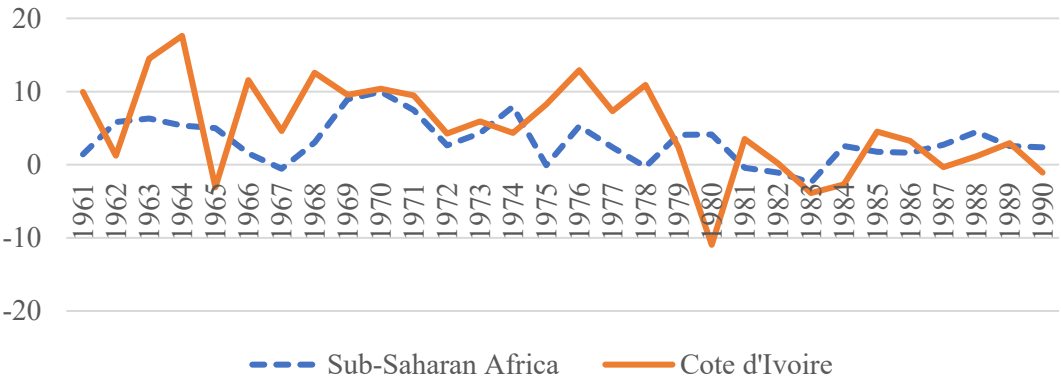
7.3 The Emergence of the Electricity Crisis during the 1980s

As mentioned in Chapter 5, many African countries struggled with economic problems (see Figure 7.1) and droughts during the 1980s. Droughts exacerbated the effects of a sharp decline in global prices for non-fuel commodities. Côte d'Ivoire did not escape these economic and climatic crises.

Despite its stronger than average economic performance prior to the collapse of international commodity prices, the country joined many other countries hard hit by the slump. As Figure 7.1 illustrates, Côte d'Ivoire's GDP growth rate fell dramatically from 10.9% in 1978 to about -11% in 1980 (World Bank 2021a). Public long-term debt topped 85% of GDP in 1984,

up from about 40% of GDP in 1980 (Berthélemy and Bourguignon 1996, 70; see also Ghirardi et al. 1986, 24; Wick and Shaw 1998, 12).[67] Beside the contraction of economic activities and the mounting debt, mismanagement and corruption in state-owned enterprises depleted public coffers. Houphouët openly conceded in April 1983 that the mishandling of parastatals "had produced losses of CFAF32 billion, or 1.2 percent of GDP" (Berthélemy and Bourguignon 1996, 23). By the 1983-1984 period, the Ivorian economic "miracle had turned into a mirage" (Bamba 2016, 9).

Figure 7.1: GDP growth (annual %) in Côte d'Ivoire and Sub-Saharan Africa, 1961-1990



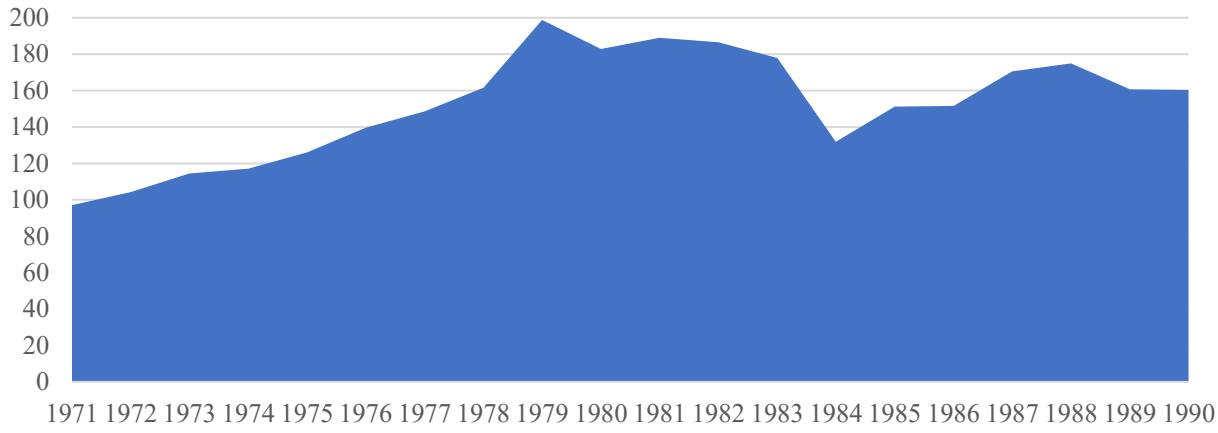
Source: Data from World Bank (2021a), World Development Indicators

Côte d'Ivoire's dire financial situation hindered much-needed investments in the electricity sector (Malgas and Gratwick 2008). The government paused electrification projects and network maintenance. As shown later in this section, the EECI had a heavy debt burden. But with little or no financial room to maneuver, the PDCI could not bail out the national power utility. Droughts worsened the impact of the economic crises on electricity provision. As in many countries in Africa, droughts hit Côte d'Ivoire during 1982-1984 (Nicholson 1985; Ghirardi et al. 1986). The drought evaporated water in hydroelectric dams at Ayamé, Buyo and Kossou. Water inflows to the dams fell by 49.5% at Buyo, 52% at Ayamé, and 54% at Kossou in 1983 (UNDP and World Bank 1985a, 47). Low levels of water in the dams decimated hydro generation capacity, which accounted for 75% of Côte d'Ivoire's total installed capacity in 1983 (UNDP and World Bank 1985a; Marwah 2017). Hydro-generation capacity fell from 1.731 billion kilowatt-hours in 1982 to 0.369 billion kilowatt-hours in 1984, intimating a 79% decrease (Energy Information Administration 2021). Lack of water to cool the thermal plant at Vridi, coupled with unrelated technical breakdowns of some of the steam units of this plant, reduced available thermal capacity by about 60% (UNDP and World Bank 1985a). Côte d'Ivoire and Ghana had an electricity purchase agreement and had completed an interconnection transmission line by 1983 (UNDP and World Bank 1985a; Resource Center for Energy Economics and Regulation 2005). However, Côte d'Ivoire's expectations of imports from Ghana to make up the difference failed to materialize. The same droughts had devastated Ghana's generation capacity (UNDP and World Bank 1985a; Ofori-Sarpong 1986).

[67] The debt increased from US$4.7 billion in 1980 to US$6.8 billion in 1984 (Berthélemy and Bourguignon 1996, 70).

Côte d'Ivoire's reduced generation capacity led to power shortages and rationing (UNDP and World Bank 1985a; N'Guessan 2000). As Figure 7.2 depicts, the power cuts dampened electricity consumption. A steady increase in consumption occurred from 1971 through 1981. Consumption plateaued from 1981 to 1983, and then plunged in 1984. The data for the rest of the period show a gradual and partial recovery.

Figure 7.2: Electricity consumption per capita (kWh/capita) from 1971 to 1990



Source: Data from World Bank (2020b), World Development Indicators

The EECI responded to the power shortages by installing emergency gas turbines in 1984 to augment thermal production and minimize drought-induced power rationing. The government constructed an additional thermal power station at Vridi in the same year (1984) to enhance production capacity (UNDP and World Bank 1985). Furthermore, the national power utility increased its reliance on imported fuel (N'Guessan 2000). These changes in the generation mix raised the cost of operations due mainly to high prices of oil and gas. The EECI's financial health deteriorated, with its actual expenditure swelling sixfold relative to its projections. As N'Guessan (2000, 32) observed, the "… total bill for fuel rose from a planned spending of about 6 billion FCFA[68] to 36 billion for the fiscal year October 1983 … [to] September 1984." The utility incurred a total debt of about 350 million US dollars by 1990, with officials of the World Bank deeming it to be bankrupt (Malgas and Gratwick 2008).

With less revenue and little or no savings, the PDCI approached the International Monetary Fund (IMF) and the World Bank for loans. Ivorian authorities and the Bretton Woods institutions discussed macroeconomic reforms in the early 1980s. Côte d'Ivoire raised the power utility's financial need during these discussions (Malgas and Gratwick 2008). The Bretton Woods institutions made market-based reforms in the electricity sector conditions for loans (Malgas and Gratwick 2008). In the next section, I examine Houphouët's reactions to the policy prescriptions of the World Bank, focusing on the political dynamics influencing the pace and extent of implementation of the proposed policies.

7.4 The Politics of Electricity Sector Reforms, 1985-1990

This section discusses the role political competition played in political elites' choices in the Ivorian electricity sector during 1985-1990. This period receives considerable attention because

[68] West African Financial Community Franc

neoliberal economic reforms, including those in the electricity sector, triggered social mobilization, which, coupled with donor pressures, paved the way for Côte d'Ivoire's first multiparty elections since independence.

The crises of the 1980s constituted a game changer in the electricity sector. As mentioned in the preceding section, Côte d'Ivoire turned to the World Bank and the IMF for financial aid. The Bretton Woods agencies required Côte d'Ivoire to restructure its power utility as part of the country's macroeconomic reforms. The reforms ultimately intended to shift electricity provision from state-operated power utilities to private companies. In response to the Bretton Woods institutions' conditionalities, the Ivorian government made two main moves: the passage of electricity legislation, followed by the privatization of the state-owned electricity company.

Côte d'Ivoire started power sector reforms by passing an electricity law in 1985 (Law No. 85-583). This law established the legal and institutional framework for electricity privatization (Republic of Côte d'Ivoire 1985). According to the legislation, the state had a monopoly over the transmission, distribution, importation, exportation, and sale of electricity (Republic of Côte d'Ivoire 1985, 377). The law excluded electricity generation from the list of monopoly activities. It envisaged opening the production subsector to independent power producers (IPPs), subject to the use of fuel sources sanctioned by the Ivorian government (Republic of Côte d'Ivoire 1985, 377). The electricity law then provided for a concession arrangement in which a private firm would carry out the activities on which the state had a monopoly. The law mandated the state to set electricity tariffs in consultation with the concessionaire.

But no concession occurred until 1990. It is difficult to assess why the privatization occurred five years after the passage of the electricity legislation. But, as some scholars claimed, a faction within the PDCI coalition resisted the privatization and austerity measures (Wick and Shaw 1998; Gyimah-Boadi and Daddieh 1999). By shrinking patronage resources, the move threatened Ivorian political elites' interests and the party's ability to manage political competition. Gyimah-Boadi and Daddieh (1999, 143) noted that "Public sector retrenchment entailed the loss of jobs and the diminution of political sinecures that had characterized appointments to senior positions in the government and parastatal sector." Expenditure cuts meant fewer resources for co-opting political opponents and rewarding supporters.

However, in 1990, the EECI remained heavily indebted. The EECI's losses amounted to 240 million US dollars, its total debt stood at roughly 350 million US dollars, and "the utility had started to default on its debt payments" (Malgas and Gratwick 2008, 9). The EECI, as a World Bank Staff Appraisal Report observed, had become insolvent (World Bank 1995a). But, "With the continent's highest per capita level of external debt, Côte d'Ivoire could not borrow additional funds to continue business as usual" (Widner 1991, 32). To access donor funds to revive the electricity sector and the economy, the government conformed to the World Bank's demand to privatize the EECI.

The dynamics of political competition in late 1989 and 1990 offer a window on why the privatization happened. During this period, pressures from foreign actors and domestic social forces for multiparty democracy intensified (Freedom House 1991). President François Mitterrand announced at the La Baule Francophone African Summit in 1990 that the French government would tie assistance to political reforms leading "to greater liberty and democracy" (quoted in Riley 1992, 117). In this same year, a section of the Ivoirian military mutinied over proposed pay cuts for public servants (Riley 1992; Schiel et al. 2017). In line with Mitterrand's announcement, France declined to provide military help to the PDCI to deal with the insurgency

(Riley 1992). This presented an ominous sign for Houphouët's government, given its close connections to France. France's change in attitude toward authoritarian governments coincided with political changes in the world order in late 1989 and 1990. The Berlin Wall had collapsed, as did communist regimes in Eastern Europe (Richard 1997). Authoritarianism had fewer friends under the new international order and the wind of political liberalization began to blow across much of Africa.

In reaction to international pressures, Houphouët reorganized his government and appointed Alassane Ouattara to leading positions in his administration in 1990. Ouattara spent much of his career at the IMF, which first appointed him as an economist in 1968 (IMF 2020). He served as the director of the African department of the IMF from January 1983 to October 1988, when he was appointed governor of the Central Bank of West African States (IMF 2020). Houphouët turned to the "IMF technocrat," Ouattara, to lead Côte d'Ivoire's economic rescue mission in 1990 (BBC 2011). In April 1990, Ouattara became the chairman of the Inter-Ministerial Committee for the Coordination of the Stabilization and Economic Recovery Program of Côte d'Ivoire. Later that same year (1990), Houphouët created the position of prime minister for Ouattara. Opponents of the regime believe that the IMF and the World Bank imposed Ouattara's appointment on the country to facilitate the implementation of adjustment policies (Representative of FESACI, Abidjan, 29 October 2019). As prime minister, Ouattara had responsibility for economic policy (Fauré 1993). Given Ouattara's relationship with the Bretton Woods agencies and his support for neoliberal reforms, including the privatization of the EECI, one may conclude that he was a reformer.

The government's compliance with the reforms, which came with austerity, sparked anti-adjustment and pro-democracy protests in 1990. University students started demonstrations against the government because they believed cuts in public spending had led to power cuts, which made it impossible for them to study for examinations (Konaté 2002, 780). A series of protests, meetings, and strikes gave "rise to a number of small student associations that later joined together to form the FESCI [*Fédération estudiantine et scolaire de Côte d'Ivoire*], which presented itself as an alternative to the official government-controlled student association MEECI [*Mouvement des estudiants et elèves de Côte d'Ivoire*]" (Arnaut 2004, 117). A wide array of groups joined the demonstrations. Secondary school teachers belonging to the independent teachers' union known as the *Syndicat national des enseignants de second degré de Côte d'Ivoire* (SYNESCI) and university professors of the *Syndicat national de la recherche et de l'ensiegnement superieur* (SYNARES) participated in the protests (Konaté 2002). The newly formed independent labor union known as the *Fédération des syndicats autonomes de Côte d'Ivoire* (FESACI) and the unofficial political opposition took part in the demonstrations (Interview with a representative of FESACI, Abidjan, 29 October 2019). Public servants, who faced potential job cuts and salary reductions as consequences of structural adjustment, resisted the reforms.

The privatization of the national electric utility featured in the anti-adjustment and pro-democracy protests (Interview with a representative of FESACI, Abidjan, 29 October 2019). The socialist opposition coalition, led by Laurent Gbagbo, argued that the state had to retain control of such strategic parastatals as the EECI to serve the interest of all Ivorians equitably. As a leader of the coalition recounted,

> Our position was that the state has a principal role to play through state-owned enterprises and state agencies, which permit all citizens to benefit from a healthy life. We thought that, if you privatize those sectors – the strategic, productive sectors such as electricity, water, road maintenance, and

> telecommunications – you take away essential services from citizens who depend on them. Those measures were not justifiable. They could not correct [the economic deterioration], they [rather] destroyed the resources of the Ivorian state….
>
> We vehemently opposed the Structural Adjustment Program imposed by the IMF and the World Bank. We demanded discussions to let the government know that the measures were not just unpopular among workers, but also unproductive for the national economy. But we were not listened to, the government did not want to discuss with us. The government refused to dialogue. When the state did not listen, we decided to take risks. We organized protest marches and strikes. We also made public pronouncements to inform the people that the decision of the government [to privatize parastatals such as the EECI] was dangerous for the state. (Interview with a representative of FESACI, Abidjan, 29 October 2019; author translated from French to English)[69]

In short, they protested not only the erratic supply of electricity but also authoritarianism and neoliberal policies. In their judgment, the deconstruction of the state's economic role, especially austerity measures instituted under structural adjustment, would harm the economy and the Ivorian people.

Typical of authoritarian regimes, the PDCI deployed the coercive force of the state to crush the protests (Freedom House 1991, 218). Heavily armed police officers descended on demonstrators, rounded up and incarcerated scores of students, leaders of the opposition, and representatives of the newly formed labor union. A protestor and ex-political prisoner narrated his experience:

> The government of Côte d'Ivoire, led by Mr. Ouattara, who was the prime minister of the republic, and [President] Houphouët-Boigny, proceeded to arrest the leaders of the opposition – the opposition political party and the trades union. [The reason for the arrest] was that there was a coordination. Coordination about what? The trades union liaised with the opposition party to organize a march in Abidjan to protest against the violence meted out on students on the university campus. The police attacked students. Some [of the students] died and others sustained serious injuries. … About 200 people were arrested and imprisoned for two months, others one month and so on. I was arrested and imprisoned, too. (Interview with a representative of FESACI, Abidjan, 29 October 2019; author translated from French to English)[70]

[69] Notre position était que l'État a un rôle principal à jouer par l'intermédiaire des entreprises d'État et des agences d'État, qui permettent à tous les citoyens de bénéficier d'une vie saine. Nous avons pensé que si on privatisait ces secteurs – les secteurs stratégiques et productifs comme l'électricité, l'eau, l'entretien des routes et les télécommunications – on priverait les citoyens qui en dépendent de services essentiels. Ces mesures n'étaient pas justifiables, elles ne pouvaient pas corriger, elles détruisaient les ressources de l'État ivoirien. Nous nous sommes vivement opposés au programme d'ajustement structurel imposé par le FMI et la Banque mondiale. Nous avons exigé des discussions pour faire savoir au gouvernement que les mesures étaient non seulement impopulaires parmi les travailleurs, mais aussi improductives pour l'économie nationale. Mais on ne nous a pas écoutés, le gouvernement ne voulait pas discuter avec nous. Le gouvernement a refusé de dialoguer. Quand l'État n'a pas écouté, nous avons décidé de prendre des risques. Nous avons organisé des marches de protestation et des grèves. Nous avons également fait des déclarations publiques pour informer la population que la décision du gouvernement était dangereuse pour l'État.

[70] Le gouvernement de la Côte d'Ivoire, dirigé par M. Ouattara, qui était Premier ministre de la République, et Houphouët-Boigny, ont procédé à l'arrestation des dirigeants de l'opposition – le parti politique d'opposition et le syndicat. C'était qu'il y avait une coordination. La coordination sur quoi? Le syndicat a pris contact avec le parti d'opposition pour organiser une marche à Abidjan pour protester contre les violences infligées aux étudiants sur le campus universitaire. La police a attaqué des élèves. Certains sont morts et d'autres ont subi des blessures graves. Environ 200 personnes ont été arrêtées et emprisonnées pendant deux mois, d'autres un mois et ainsi de suite. J'ai aussi été arrêté et emprisonné.

In response to the international and domestic pressures, Houphouët announced the formal recognition of opposition parties and press freedom in May 1990 (Widner 1991; Fauré 1993; Arnaut 2004). He scheduled multiparty presidential elections for October 1990 and legislative elections for November 1990 and abandoned salary reductions. These measures "immediately had the desired effect, calm was restored, and twenty-six new political parties were officially sanctioned" (Fauré 1993, 317). Perhaps, the refusal of the French government to provide military support to the PDCI in May 1990, when a section of the army mutinied over planned salary cuts pushed Houphouët to yield to calls for political liberalization (Riley 1992; Schiel et al. 2017). Doing so would prevent the collapse of the PDCI regime by appeasing donors, especially France, in order to receive financial and military help to ensure the survival of Houphouët's ruling coalition. Moreover, as Widner (1991; see also Daddieh 2001) explained, Houphouët and the PDCI had confidence that they would retain power if the elections happened sooner rather than later. Because Côte d'Ivoire lacked the networks of subterranean proto parties found in other single party systems (e.g., Senegal), organizing elections quickly would give the opposition parties limited time to build organizational structures and mobilize voters across the country, particularly in the countryside.

A few weeks ahead of the first multiparty elections in three decades, Houphouët addressed electricity workers' concerns about the implications of the privatization of the national power utility for their job security and conditions of work. These workers belonged to the General Union of Côte d'Ivoire Workers, an affiliate of the ruling PDCI. The workers resisted the privatization of the EECI because they feared losing their jobs. A former worker of the EECI explained that

> the workers thought that the new company would sack all of us and bring in new people. So, the workers were worried, and we opposed the decision. There was opposition from the EECI. The workers union of EECI said that if there were failures on the part of management, the workers should not be held responsible for that. The managers, directors must rather be held to account…. So, first, the concern was about the workers. We did not want the new company to come and sack all of us. That was our primary concern. (Interview with union leader 1, Abidjan, 20 October 2019; author translated from French to English)[71]

The electricity workers exploited their affiliation with the PDCI coalition by seeking an audience with the president. As the Ghanaian electricity staff did during 2016-2019 (see Chapter 6), the Ivorian electricity workers sought protection against potential dismissal by the new private firm at a meeting at the presidential palace (Interview with union leader 1, Abidjan, 20 October 2019). Houphouët promised them job security and unchanged working conditions and benefits. As a leader of the utility's staff recounted,

> So, the workers decided to meet the president …. The president received the workers. There was a single workers' union at that time. Mr. Houphouët-Boigny said that I am with you; I will keep all the workers – on the same conditions of service and benefits – to work with the new company. Nothing will change. The CIE came into being. (Interview with union leader 1, Abidjan, 20 October 2019)[72]

[71] …[L]es travailleurs pensaient que la nouvelle compagnie nous renverrait tous et amènerait de nouvelles personnes. Donc, les travailleurs étaient inquiets, et nous nous sommes opposés à la décision. Il y avait une opposition de l'EECI. Le syndicat des travailleurs de l'EECI a déclaré que s'il y avait des défaillances de la part de la direction, les travailleurs ne devraient pas être tenus responsables pour cela. Les gestionnaires, les administrateurs doivent plutôt rendre des comptes…. Donc, premièrement, on s'inquiétait des travailleurs. Nous ne voulions pas que la nouvelle entreprise vienne nous mettre à la porte. C'était notre principale préoccupation.

[72] Donc, les travailleurs ont décidé de rencontrer le président…. Le président a reçu les travailleurs. Il n'y avait qu'un seul syndicat de travailleurs à l'époque. M. Houphouët-Boigny a dit que je suis avec vous; je garderai tous les

One might argue that, with opposition parties competing in the elections for the first time in three decades, the PDCI faced political uncertainty, which impelled the incumbent to appease its electoral base, including the electricity staff. By cutting a deal with the workers, Houphouët acted in part on his electoral incentives. However, as shown in Section 7.6, the expansive political base of the PDCI coalition, the barely constituted opposition parties, and the PDCI's massive victory suggest that the electricity workers presented insignificant threats to Houphouët's electoral chances in 1990.

In sum, the dynamics of political competition played a significant role in Houphouët's and PDCI's choices related to the electricity sector. Given that neoliberal sectoral reforms such as retrenchment could limit patronage resources and then undermine the PDCI's ability to manage political competition, the government delayed the privatization of the EECI for five years. However, the privatization moved forward when the PDCI faced fewer or no contenders capable of ousting it from office. Finally, the protests by students and university teachers show that political competition occurs even in authoritarian regimes.

7.5 The Terms of the Contract

This section presents the terms of the privatization of the EECI and reviews the responsibilities of the state and the private firm under the privatization. It shows that the PDCI gave the state's monopoly over the transmission, distribution, importation, exportation, and sale of electricity to the private firm.

Following the co-optation of the electricity workers, the government privatized the management and operations of the EECI on 24 August 1990 (Traoré 2013, 7; Interview with union leader 1, Abidjan, 20 October 2019). It awarded a 15-year concession to a consortium of French utility companies – *l'Électricité de France* (EDF) and *Société pour l'Amenagement Urbain et Rurale* (SAUR) – without a competitive bidding process (Lavigne 1999) and "without consultations" with social groupings (Botchway 2000, 815). The consortium then formed the Ivorian Electricity Company (*Compagnie Ivoirienne d'Electricité* – CIE) (Republic of Côte d'Ivoire 1990; CIE 2014) and commenced operations on 1 November 1990. As Plane (1999, 343) summarized, the negotiations between the PDCI government and the private firms "took no more than a few months to be finalized." My interactions with a union leader, who used to be a staff member of the EECI, confirmed the brevity of the process (Interview with union leader 1, Abidjan, 20 October 2019).

The longstanding presence of the SAUR in the Ivorian water sector and the government's satisfaction with its management and operation of the country's water supply system influenced the government's sole-sourcing decision (Laffont and N'Guessan 2002). The SAUR owns the largest shares (46%) in *Société de Distribution d'Eau de Côte d'Ivoire* (SODECI), which has managed and operated water supply in Côte d'Ivoire since 1959 (Ménard and Clarke 2000, 4). In short, the PDCI was no stranger to the SAUR and private participation in the utilities sector. It hoped that the SAUR would bring efficiency in electricity provision.

On 25 October 1990, the government enacted Presidential Decree No. 90-1389 to bring the contract into effect. This decree laid out obligations of the concessionaire (the CIE) and the conceding authority (the state). Table 7.1 outlines the terms of the concession. Technically, the concession is an *affermage* contract, an institutional arrangement whereby a private firm

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travailleurs – dans les mêmes conditions de service et d'avantages sociaux – pour travailler avec la nouvelle entreprise. Rien ne changera. Le CIE est né.

manages and operates a state-owned utility with no responsibility for new capital investments in the utility's assets (Lavigne 1999; World Bank 2016). According to the World Bank (2016), an affermage contract aims at attracting private sector efficiency while maintaining public financing. Thus, the Ivorian government anticipated that, with public funding, the CIE would resolve the fiscal mismanagement and the commercial and technical losses of the state-owned electricity company, the EECI.

Table 7.1: Summary of the terms of the privatization in Côte d'Ivoire

Role of private firm	**Contract duration**	**Status of workers**	**Tariff decision**	**Maintenance and investments**	**Electrification**
Operation and management of the power system	15 years, renewable	Job security, no dismissal of EECI's staff	State	Concessionaire undertakes routine maintenance, State undertakes capital investments	State expands the network, CIE connects customers to the grid

Sources: Republic of Côte d'Ivoire (1985, 1990); N'Guessan (2000); Interview with bureaucrat 1 at Côte d'Ivoire Energies (1 October 2019); Interview with union leader 1, Abidjan (20 October 2019)

The CIE received responsibility to produce, transmit, distribute, import, and export electricity (Republic of Côte d'Ivoire 1990) for a duration of 15 years, with a possibility of renewal (Interview with union leader 1, Abidjan, 20 October 2019). The private company must purchase electricity generated by independent producers. With all electricity producers selling to the CIE, the power purchase agreement constitutes a monopsony. Furthermore, the concessionaire has a monopoly on electricity supply to consumers and the connection of new users to the electricity grid. The state then remunerates the private company based on its performance (Interview with bureaucrat 2 at Côte d'Ivoire Energies, Abidjan, 18 October 2019). The PDCI granted a monopoly to the CIE in line with the 1985 electricity legislation. One of my respondents also claimed CIE's monopoly over electricity transmission, distribution, importation, exportation, and sale agreed with the well-known economic idea that the electricity sector is a natural monopoly and capital intensive (Academic 2, Abidjan, 5 October 2019). Another interviewee argued that the size of the Ivorian electricity sector was relatively small at the time (Interview with officer 2 of the Public Utilities Regulatory Commission, Accra, 21 June 2019). Unbundling it would have made the subsectors too tiny and unprofitable and, therefore, unattractive to private investors (Interview with officer 2 of the Public Utilities Regulatory Commission, Accra, 21 June 2019).

The electricity law requires the CIE to operate and maintain the existing state-owned generation plants and transmission and distribution assets. However, as Table 7.1 illustrates, the CIE has no contractual obligation to invest capital in the infrastructure for production, transmission, and distribution of electricity. The distinction between maintenance of and investment in the electricity assets lacked clarity and constituted a bone of contention in the 1990s. The private firm "disputed its responsibility for new infrastructure investments and squabbled with [the] EECI over maintenance of equipment …" (Botchway 2000, 817). The ministry of energy attempted to solve this conflict by asking the CIE to perform maintenance "works that are urgent" while the EECI focused on those "that are necessary but less urgent" (Lavigne 1999, 86).

The contract outlined new functions for the EECI. The national electricity company retained the ownership of the country's electricity infrastructure, including transmission, distribution and production assets, on behalf of the state. It controlled the technical operations of

the CIE (ANARE-CI 2020b). The obligation for capital investments in and major repairs of the electricity network lies with the state (Interview with bureaucrat 1 at Côte d'Ivoire Energies, Abidjan, 1 October 2019). This means that the state has responsibility for network expansion and rural electrification. The EECI fulfilled these obligations on behalf of the state.

As the owner of the electricity infrastructure, the state retained responsibility for setting electricity prices, as indicated previously (Republic of Côte d'Ivoire 1985, 1990). The state kept this obligation in part because tariff increases by a private firm, desirous of profit, can be politically explosive for the governing coalition. Users may revolt against high prices. Besides, the CIE claims that the Ivorian state retained the tariff-setting function so that it can ensure social inclusion and equity in electricity prices (CIE 2018).

In essence, the new institutional arrangement in the Ivorian electricity sector resembles the relationship between the owner of a vehicle and his driver (Bureaucrat 1 at Côte d'Ivoire Energies, Abidjan, 1 October 2019). Like the owner of a vehicle, the state owns the electricity network, and, like a driver, the CIE runs the utility on behalf of the state (Bureaucrat 1 at Côte d'Ivoire Energies, Abidjan, 1 October 2019). The CIE carried out the state's monopoly over the transmission, distribution, importation, exportation, and sale of electricity. As the next chapter will show, the new electricity code of 2014 changed this institutional configuration. This code ended the state's monopoly over electricity transmission, distribution, importation, exportation, and sale and opened the entire electricity sector to competition.

7.6 Multiparty Elections in 1990

This section examines the interactions between the dynamics of electoral competition and politicians' strategies related to the electricity sector. It demonstrates that non-electricity issues, especially ethnicity, immigration, and land policies were front and center of the elections. The privatization of the state-owned power utility played no significant role in the election results, although opposition parties campaigned against neoliberal reforms.

On 28 October 1990, three days after passing the legislation that brought the concession into being, Ivorians went to the polls. Of 26 registered opposition parties, only the Ivorian Popular Front (*Front populaire ivoirien* – FPI), led by Laurent Gbagbo, a professor of history and a "long-standing critic and candidate of the 'democratic-left' coalition," challenged the PDCI's Houphouët in the presidential elections (Widner 1991, 31). Gbagbo's FPI attracted intellectuals and students who professed a socialist vision of society and development (Marshall-Fratani 2006). It further drew support from the Bété ethnic group (Akindès 2004; Chirot 2006). Gbagbo had the backing of the Bété not only because he belonged to this group but also because Houphouët's liberal immigration and land policies angered them, as immigrants settled and dominated agriculture in their regions (Akindès 2004; Chirot 2006; Boone and Kriger 2010). This may be understood as a resurgence of Bété opposition to the PDCI during the 1940s, when they supported the *Parti Socialiste.*

The FPI and other left-wing parties campaigned against neoliberal reforms, including the privatization of the EECI. According to them, neoliberal policies reflected French and American interests and betrayed Ivorian national interests (Crook 1997). They further mobilized voters against the country's severe economic decline and offered measures to address it (Inter-Parliamentary Union 1990). The FPI, for instance, promised to modernize agriculture by providing farmers with state-of-the-art irrigation techniques and farm implements and establishing agribusinesses to process farm produce (Widner 1991). It pledged to provide farmers with electricity, credit, and insurance (Widner 1991).

Ethno-regional identities figured prominently in the campaign (Crook 1997; Akindès 2004; Ogwang 2011). The FPI painted the PDCI as tribalistic and blamed Houphouët's open-door immigration and land policies for the country's economic problems (Crook 1997; see also Boone 2009; Boone and Kriger 2010). In many regions in the south, the FPI accused the ruling coalition of serving the interests of a few ethnic groups, including Houphouët's Baoulé, in the allocation of resources. By seizing every opportunity to assail Houphouët's support for immigrants, the FPI intended to broaden its electoral appeal in areas (e.g., Abidjan) where tensions existed between local Ivorians, foreigners, and northern migrants (Crook 1997; Akindès 2004). Rising joblessness, land complaints, and insecurity among young native Ivorians fueled these tensions (Boone 2009; Klaus and Mitchell 2015). The FPI promised to return land and economic openings to indigenous Ivorians by evicting foreigners, especially those in Bété regions (Boone and Kriger 2010). This message resonated among the indigenes of these regions because they had become minority populations in their ancestral land by 1990 (Boone 2009; McGovern 2011). The PDCI countered this message by trumpeting the father-for-all image of Houphouët, a strategy it had successfully used since independence (Crook 1997; Akindès 2004).

The Ministry of Interior counted the votes and announced Houphouët as winner with 81.7% of the vote, while Gbagbo received 18.3% (Widner 1991, 31; Crook 1997). The turnout rate for the presidential election stood at about 61% (The New York Times 1990; Widner 1991, 31). Seventeen of the 26 opposition parties, the PDCI, and many independent candidates competed in the legislative elections held a month later (Inter-Parliamentary Union 1990). Of the 175 seats in the National Assembly, the PDCI won 163, the FPI obtained nine, the *Parti ivorien des travailleurs* got one, and the remaining two seats went to independent candidates (The New York Times 1990; Inter-Parliamentary Union 1990; Widner 1991, 31; Crook 1997, 220; UK Home Office 2000, 4). Roughly 40% of registered voters turned out to vote in the legislative elections (Widner 1991, 31).

The incumbent coalition's massive victory was anything but astonishing, given the authoritarian regime's control over state resources, including the media and local governments, and the brevity of time opposition parties had to prepare for the elections (Widner 1994a, 1994b). Roughly five months – May to October 1990 – were inadequate for the opposition parties to build party structures, especially at the grassroots. Given their limited grassroots presence, the opposition parties could do little to make their presidential candidates popular nationally. For example, the margin of defeat and voting patterns confirmed that Gbagbo's and FPI's popularity hardly transcended their initial support base – among socialist intellectuals and students and in Bété regions.

In addition, Houphouët and the PDCI profited electorally from immigrants from neighboring countries who formed more than 25% of the Ivorian population in 1990 (Touré 2000, 75; Bassett 2003, 12; Woods 2003; Boone 2009; Boone and Kriger 2010). The PDCI's open-door immigration and land policies allowed foreigners to settle in Côte d'Ivoire and exercise economic and voting rights (Chirot 2006; Marshall-Fratani 2006; Crook 1997). Immigrants voted for Houphouët possibly to keep the incumbent in power so that they would continue to have economic and political rights in Côte d'Ivoire. As Laurent Gbagbo put it, immigrants constituted Houphouët's "electoral cattle" (quoted in Marshall-Fratani 2006, 22).

The privatization of the EECI played no significant role in the outcomes of the transition elections. The assurance of jobs and unchanged conditions of service possibly prevented some erosion of the PDCI coalition. The workers did not oppose the regime. Given Houphouët's huge margin of victory and the PDCI's lion's share of legislative seats, it seems very likely that he

would have won regardless of his dealings with the electricity sector workers or the timing of the privatization. The timing of the privatization and the elections – the elections occurred three days after the PDCI passed legislation that kicked in the privatization – indicated Houphouët's confidence in his electoral prospects.

In the end, Côte d'Ivoire transitioned to multiparty democracy without a change in the party in government. Yet the elections were significant because they constituted a "democratic opening [that] allowed opposition parties to gain a foothold in the National Assembly. Gbagbo was among nine FPI candidates who were elected" in the legislative election (Daddieh 2001, 16). The election established the basis for political pluralism and deepened political competition in Côte d'Ivoire.

Divisions emerged within the ruling PDCI coalition in the early 1990s. Crook (1997; see also Boone 2009; Boone and Kriger 2010) outlines the make-up of the intraparty factions as follows: Prime Minister Ouattara received support from reform-minded top civil servants who gained or anticipated to gain from public service reforms, Houphouët and his coterie of friends, a few PDCI legislators, and party officials supportive of neoliberal reforms. On the other hand, Henri Konan Bédié, speaker of the National Assembly, had the support of many PDCI legislators and party officials who viewed austerity measures as threats to the survival of the PDCI. It may seem that the two individuals' jostling to succeed the ailing Houphouët caused the internal split. But, as Crook (1997, 224) explains, the real cause of "the conflict was the increasingly serious threat posed by Ouattara's reform program to the core of the state patronage system, including leading parastatals such as the *Caisse de stabilisation* (crop marketing board) and companies that depended on state contracts."

This division blew up publicly after Houphouët's death in office of natural causes in late 1993 (Noble 1993; Daddieh 2001). While he was away in Europe for medical treatment, a succession crisis ensued, with Ouattara and Bédié struggling for political power (Seaman and Dizolele 2020). Daddieh (2001, 17) observed that

> Although Ouattara had apparently confessed his disinterest in Ivorian politics when he was pressed into service, immediately Houphouët-Boigny's death was announced … he saw an opening and tried to usurp power by refusing to recognize Bédié's right of succession.

Bédié invoked a constitutional provision that invested presidential powers in the speaker of the National Assembly in the absence or death of the president. In a televised speech on the same day the president's passing was announced, Bédié declared that "The constitution confers on me in this tragic moment responsibilities of whose weight I am aware, the responsibilities of a head of state…. I am assuming them from now" (quoted in Noble 1993, 9). Ouattara resigned his position as prime minister two days after Bédié took office and then rejoined the IMF as deputy director (Kamara 2000; Daddieh 2001). The FPI refused to recognize Bédié's rule and asked for transition elections, which he rejected. These rifts defined Ivorian politics henceforth.

7.7 Conclusion

Nonelectoral sources of threats to a ruling coalition's political survival can influence its choices, including those regarding electricity development and their outcomes. Côte d'Ivoire's robust economic performance in the few years after independence enabled the PDCI to invest heavily in infrastructure, including electrification. Massive state investments in electrification drove high electricity access rates. Nonetheless, Houphouët continued the French colonial administration's policy of concentrating infrastructure in the south. This move reflected not only the economic

end of opening up the southern forest zone to ramp up agricultural production for export, but also the preference of educated and landed elites in urban centers in the south who dominated the ruling PDCI (Woods 1989). The PDCI's attempts to redistribute infrastructure, including electricity, to the north aimed to manage protests by students and unemployed youth against inequity in the distribution of development projects in the late 1960s (Cohen 1974; Woods 1989). However, economic crises and droughts hampered this redistribution and put electrification projects on pause by leaving the Ivorian government with no fiscal space to operate. Electricity access rates thus slowed down. With droughts undermining hydroelectricity capacity, the EECI rationed electricity. Mounting debts pushed the PDCI to carry out economywide reforms, including in the electricity sector. Anti-austerity and pro-democracy protests and international pressure led Houphouët to allow multiparty competition in 1990.

Although the political liberalization increased political competition, Houphouët's confidence in retaining power encouraged him to go ahead with the privatization of the state-owned electricity company. The electricity workers did not challenge the stability of the PDCI coalition. Even if they did, Houphouët's promise of job security co-opted them and prevented some erosion of the incumbent's support. While this may have contributed to the stability of the PDCI coalition, Houphouët's margin of victory and the size of the PDCI's majority in the legislative election illustrate that the workers offered no electoral threat to the incumbent. Similarly, Gbagbo's opposition coalition (FPI) represented no significant source of electoral threat because of its limited time to prepare for the elections and mobilize voters, especially in rural constituencies. The FPI's margin of defeat shows the narrowness of its electoral support base at the time.

Following the demise of Houphouët, internal divisions in the ruling coalition exploded, casting a long shadow over politics in Côte d'Ivoire until this day. The next chapter documents the links between political developments and electricity management and in turn sectoral performance during the post-Houphouët era.

Chapter 8

Electricity Provision in Unstable and Uncertain Times, 1993-2020

8.1 Introduction

The last chapter showed that nonelectoral pressures to the continued rule of the *Parti démocratique de Côte d'Ivoire* (PDCI) played a significant role in electricity sector management, which then influenced sectoral performance during the reign of Félix Houphouët-Boigny (Houphouët). During the first decade after independence, the allocation of resources reflected the economic goal of opening the southern forest regions up for increased agricultural activities and exports and thus more foreign exchange earnings. It further mirrored the preferences of landed elites, who dominated the PDCI party and government and controlled resources allocation. Massive investments in hydroelectric dams during the 1970s aimed to support national electrification in response to popular disgruntlement over the north-south development gap. Anti-adjustment and pro-democracy protests and donor demands led to multiparty competition in 1990. During these elections, Laurent Gbagbo's *Front populaire ivoirien* (FPI), the largest opposition party, campaigned mainly on ethnicity and land reforms (Crook 1997; Boone and Kriger 2010). The margin of victory was so huge that one may conclude that the PDCI's management of the electricity sector, in particular the privatization of the national power utility, lacked electoral significance.

This chapter examines connections between political developments and electricity management and then sectoral performance during the post-Houphouët era – from late 1993 through 2020. Based on the theoretical framework in Chapter 1, this research anticipates that the intensity of political competition can shape how political elites mobilize political support and demobilize opposition. Following Houphouët's death in 1993, ethnicity and citizenship defined Ivorian politics (e.g., Boone 2009; Bah 2010; Milam and Jones 2011). Ethnic-based political exclusion led to civil wars during 2002-2011. During periods of high competition, politicians may gather support by instrumentalizing ethnicity when their group(s) has a size large enough to yield a winning coalition (Posner 2004). This may happen if voters lack forms of attachment other than ethnicity. Electors may vote for their co-ethnic political candidates because doing so offers them psychological benefits like self-respect (Horowitz 1985). Besides, they may have similar socioeconomic concerns and thus shared policy preferences (Lieberman and McClendon 2012). I expect these concerns to compete for the attention of not only the public but also policymakers. Public attention may focus so much on other issues, especially those related to existential crises, that people may have little energy for responding to electricity issues. Existential threats can emanate from civil wars. The literature on civil wars yields contrasting predictions about the effects of civil wars on electricity development. On the one hand, countries that have experienced civil wars are expected to have lower access to reliable electricity than non-violent ones (e.g., Yepes et al. 2009). Armed conflicts can devastate physical infrastructure and finances. One might expect that wars would affect government priorities, potentially lowering the prioritization of the electricity sector and other public services. Governments of war-troubled countries may channel resources to support security agencies, instead of investing in infrastructure (Lai and Thyne 2007). On the other hand, civil war can redistribute power among political coalitions. If a pro-growth coalition ascends to power after a civil war, it may carry out growth-oriented policies, including investments in infrastructure (Olson 1982; Kang and Meenik 2005; Koubi 2005).

This chapter analyzes these expectations and traces changes in the nature, intensity, and forms of political competition and their influence on electricity sector management and ultimately sectoral performance in Côte d'Ivoire during the post-Houphouët period. The next section discusses how ethnic and citizenship contestation overshadowed electricity management between late 1993 and 1999, before turning to the links between violent conflicts and electricity provision during 2000-2011. There follows an analysis of the implications of changes in political coalitions and mounting political tensions for sectoral management in the post-war period (2011-2021). The last section concludes that non-electricity issues drown out electricity issues, especially if the former poses existential threats.

8.2 Electricity and Elections under the Bédié Government, 1993-1999

This section examines electricity sector reforms and performance under the administration of Henri Konan Bédié, from late 1993, when he ascended to power, to 1999, when the army ousted him. As I will demonstrate, serious threats from non-institutional competition compelled Bédié to rally the Ivorian electorate on ethnicity and nationality (e.g., Kamara 2000; Arnaut 2004; Akindès 2004; Bah 2010). On the other hand, the PDCI's legislative supermajority enabled Bédié to carry out a raft of electricity sector reforms.

In accordance with the Ivorian constitution, Bédié succeeded Houphouët, but only after a brief succession crisis in late 1993. The power struggle occurred within the PDCI and between the PDCI and the FPI. A faction within the PDCI, mainly close allies of Houphouët, PDCI legislators from the north, and reform-minded southern deputies, supported Prime Minister Alassane Ouattara (Crook 2007; Bah 2010). Bédié obtained the backing of most PDCI parliamentarians from the south and party leaders who saw neoliberal reforms under Ouattara as threats to the party's patronage resources and continued rule (Crook 2007; Wick and Shaw 1998; Gyimah-Boadi and Daddieh 1999). The FPI protested against Bédié and campaigned for transition elections. Bédié thus faced the challenge of uniting the PDCI and the nation behind his presidency. He additionally had to address rising unemployment, land grievances, and urban insecurity, problems the FPI attributed to Houphouët's open border and land policies and neoliberal reforms (Marshall-Fratani 2006; Boone 2009; Milam and Jones 2011; Kathleen and Mitchell 2015).

Bédié's government faced new challenges following the devaluation of the African Financial Community (CFA) franc by 50% in January 1994 (Noble 1994; Shiner 1994; Laffont and N'Guessan 2002). Prior to the devaluation of the CFA franc, members of the CFA had experienced more currency and price stability than countries in Africa with individual currencies. The devaluation of the CFA franc generated immediate and direct consequences for consumers, as prices of imported goods and services doubled (Shiner 1994). In the electricity sector, prices of imported fuel used for thermal generation increased. This increase triggered negotiations about electricity tariffs between the Ivorian government and the Ivorian Electricity Company (CIE) (Lavigne 1999). The CIE had responsibility for the management and operations of the electricity sector, but the state set electricity tariffs. The negotiations resulted in a 20% increase in electricity prices (Lavigne 1999).

On the upside, the devaluation boosted the competitiveness of exports and thus production for a few years. This, coupled with increases in global commodity prices and foreign aid to Côte d'Ivoire, stimulated economic growth in 1994 (Crook 1997; Traoré 2013). The economic recovery in turn raised domestic demand for electricity. To keep up with rising demand, avert potential power shortages and sustain the economic recovery, the government

faced pressures to invest in electricity generation. Moreover, with the 1995 elections approaching, Bédié had electoral incentives to avoid electricity shortages and blackouts. But his government lacked funds for this investment (Traoré 2013). This impelled him to turn to independent power producers (IPPs) to expand Côte d'Ivoire's generation capacity (Traoré 2013). Bédié awarded Côte d'Ivoire's first IPP contract – also the first IPP agreement in Sub-Saharan Africa – to the *Compagnie Ivoirienne de Production d'Electricité* (CIPREL) in July 1994 through bilateral negotiations (Botchway 2000; Malgas and Gratwick 2008). The agreement required the CIPREL to use natural gas to produce 200 megawatts of electricity (Traoré 2013). This requirement is significant because, as mentioned in the last chapter, Côte d'Ivoire discovered a large quantity of natural gas in 1977. The gas remained untapped for electricity production because Houphouët prioritized hydroelectricity development. In contrast, the Bédié government expected that the use of domestic natural gas to generate electricity would reduce the country's dependence on expensive oil and gas imports and thereby reduce electricity prices. It would further contribute to a reliable supply of power. Climatic crises, such as the droughts that occurred in the 1980s, meant that hydro was unreliable and insufficient.

By mid-1994, the internal divisions in the ruling PDCI had escalated to the point that the faction supportive of Ouattara and neoliberal policies broke away and formed the Rally of the Republicans (*Rassemblement des républicains* – RDR) (Crook 1997; Toungara 2001; Bassett 2003; Bah 2010; Ogwang 2011). The RDR maintained that it represented Houphouët's real political principles, which the PDCI had abandoned. It also claimed the PDCI had become corrupt. But Bédié and his supporters viewed the RDR as a regional party, but also a serious threat to the survival of the incumbent PDCI and the Ivorian state (Bassett 2003; Akindès 2004; Bah 2010). For them, the RDR was nothing but a northern and Muslim party because Ouattara, seen as its leader, hailed from the north and practiced Islam. This meant that the north, which had supported the PDCI since the 1940s because of its pro-agricultural and free land policies, would switch loyalty and root for the RDR. Bédié feared that this could damage his chances of electoral success and additionally split the country into two – north and south.

As if the electoral threat the RDR posed to PDCI rule was not enough, other opposition parties pushed for electoral reforms ahead of the 1995 elections, heightening political competition in Côte d'Ivoire. Among other demands, they wanted the government to stop foreigners from voting (Bassett 2003). As discussed in Chapter 7, Houphouët had allowed immigrants to exercise the franchise since the 1960s. Foreigners rewarded him by voting massively for the PDCI. The opposition parties sought to avert a similar outcome from occurring in the 1995 elections and enhance their own chances of victory.

In reaction to these pressures, Bédié, who believed preventing Ouattara and the RDR from contesting elections would benefit the PDCI electorally, implemented electoral reforms (Bassett 2003, 2004). At Bédié's instigation, the PDCI-controlled National Assembly enacted a new electoral law in December 1994 (Daddieh 2001; Bassett 2003, 2004; Bah 2010). This law limited the right to vote in the 1995 elections to Ivorians only and required that presidential and legislative candidates must be Ivorians by birth and their parents – both father and mother – must be of Ivorian origin. Moreover, it excluded any candidate who had resided outside Côte d'Ivoire for five years prior to the election date, had taken the citizenship of another country, or had ever renounced his Ivorian citizenship (Crook 1997; Kamara 2000; Daddieh 2001; Bassett 2003; Akindès 2004; Bah 2010).

This electoral law constituted the bone of contention throughout the 1995 election period, with the RDR remonstrating and violently demonstrating in the streets. Capitalizing on ethno-

regional resentment, the RDR argued that the law unfairly targeted Ouattara, northerners, and immigrants for political ends (Crook 1997; Kamara 2000; Daddieh 2001; Akindès 2004; Whitaker 2005; Bah 2010). If allowed to stand, the RDR asserted, the law would exclude these people from Ivorian politics. Relative to Ouattara, claims about his ties to Burkina Faso circulated widely. Ouattara's political opponents questioned his father's Ivorian nationality, although he denied their allegations. Furthermore, they pointed out that Ouattara grew up and attended school in Burkina Faso prior to his higher education in the US and travelled on a Burkinabe diplomatic passport during his international career (Crook 1997; Daddieh 2001; Akindès 2004; Bah 2010). The RDR demanded changes to the electoral law and warned that the PDCI's failure to amend it would result in a civil war. During the six months before the elections (May to October 1995), the RDR and their supporters violently protested in the streets, clashed with security agencies and supporters of the ruling party and burnt down some of its offices (Crook 1997).

The FPI joined the protests, but with different demands that related to electoral management. It dismissed the Ministry of the Interior, responsible for conducting elections, as partisan and called for the creation of an independent electoral management body to conduct the elections (Crook 1997). According to the FPI, the new electoral authority should revise the electoral list to allow only Ivorians to vote. In essence, the period leading up to the 1995 elections witnessed an escalation of ethnic politics, which started during the elections in 1990.

The pre-eminence of ethnicity and nationality politics during this period put developments in the electricity sector on the back burner. In 1995, Bédié instituted a rural electrification policy, but the PDCI failed to implement it (Botchway 2000, 817; AfDB/OECD 2004, 115). Although the independent power producer, the CIPREL, expanded Côte d'Ivoire's generation capacity in 1995 and produced electricity surpluses for export to neighboring countries, including Benin, Burkina Faso, Ghana, Mali, and Togo (Malgas and Gratwick 2008; Lavigne 1999), no politician campaigned on this development. Indeed, the PDCI and the FPI hardly discussed economic programs during the 1995 elections (Crook 1997; Akindès 2004). This contrasts the Ghanaian case in which political parties invite the electorate to evaluate their sectoral performance and reward them, with opposition parties appealing to voters to punish incumbents for power shortages and expensive electricity prices.

Bédié stoked the flames of ethnic politics when he presented the idea of *Ivoirité* at a PDCI congress in August 1995 – roughly two months prior to the presidential election (Dozon 2000; Bassett 2003). The concept of Ivoirité simply refers to an Ivorian nationality (Bassett 2003; Campbell 2010). Ivoirité defined who was an Ivorian citizen based on a common history, geography, and cultural values. For Bédié and his supporters, Ivoirité aimed to foster social cohesion and national unity among Ivorians (Ogwang 2011). Besides, proponents of the concept claimed the domination of foreigners in the Ivorian economy represented a source of rising joblessness among native Ivorians and insecurity in the country (Touré 2000). On the other hand, critics averred that Ivoirité as well as the new electoral law constituted mechanisms to maintain the PDCI's political support in the south (see Boone 2007; Cogley et al. 2019). Ivoirité fueled ongoing tensions and demonstrations by opposition parties. With nationality and violence front and center of Ivorian politics, electricity provision had less political salience.

The 1995 elections took place as scheduled. The RDR and the FPI boycotted the presidential election and continued to protest in the streets because the PDCI failed to meet their demands. Bédié faced opposition only from Francis Wodié of the *Parti ivoirien des travailleurs* (PIT). Unsurprisingly, given the boycott, Bédié obtained 96.5% of the vote, whereas Wodié took

3.5% (Crook 1997, 236; Kamara 2000). Parliamentary elections occurred in November 1995, after dialogues between the ruling PDCI and opposition parties resulted in a deal to remove foreigners' names from the electoral roll (Inter-Parliamentary Union 1995). Out of the 175 seats in the National Assembly, the PDCI won 147 seats, the RDR obtained 14 seats, and the FPI got 10 (Crook 1997, 238; Toungara 2001, 67). Due to insecurity, the PDCI government canceled elections in four constituencies, including the one in which Gbagbo was running as parliamentary candidate (Crook 1997).

Electricity provision returned to the political agenda in 1997. In this year, the threat of power shortages re-emerged because of growth in electricity demand (World Bank 2017b). The World Bank (2017b) attributed this rising need for power to economic recovery in the late 1990s. To meet the increasing demand and prevent potential power shortages that could derail economic growth, Bédié's PDCI augmented generation capacity by approving a second IPP in 1997 (Traoré 2013). It used a competitive bidding process to choose Azito Énergie – the lowest bidder – to produce 300 megawatts (Malgas and Gratwick 2008; Traoré 2013). The agreement with Azito requires it to use natural gas to produce electricity because of its domestic availability (Malgas and Gratwick 2008). In the same year, the Ivorian authorities extended CIPREL's agreement and allowed the company to expand its installed capacity.

A new Minister of Energy claimed that "the CIE, a private monopoly company, occupied too large a place in the Ivorian economy" in 1998 (Lavigne 1999, 88). Bédié's government introduced a suite of institutional changes in the same year to resolve this lack of competition, in keeping with neoliberal electricity sector reforms (Lavigne 1999; Gnansounou 2008). The government closed down the remnant of the EECI and founded three new agencies, the *Société de Gestion du Patrimoine du secteur de l'Electricité* (SOGEPE), the *Société d'Opération Ivoirienne d'Electricité* (SOPIE), and the *Autorité Nationale de Régulation du secteur de l'Electricité* (ANARE) (ANARE-CI 2020b). Apart from owning the production, transmission, and distribution assets on behalf of the state, the SOGEPE managed the state's investments in them (Interview with bureaucrat 2 at CI-ENERGIES, Abidjan, 1 October 2019). Besides, the SOGEPE handled the finances of the sector and paid electricity operators, including the CIE, IPPs, and suppliers of domestic natural gas (Malgas and Gratwick 2008). On the other hand, the SOPIE had a mandate to study and plan for electricity capacity and fuel needs. The SOPIE took over the rural electrification and network repairs and expansion functions of the EECI (Interview with bureaucrat 2 at CI-ENERGIES, Abidjan, 1 October 2019).

Presidential Decree No. 98-725 of 16 December 1998 created the ANARE and stipulated its responsibilities (Republic of Côte d'Ivoire 1998; ANARE-CI 2020a). As the national regulator, the ANARE had a responsibility to supervise compliance with electricity laws (Republic of Côte d'Ivoire 1998). Moreover, it settled disputes between utilities and the state as well as between electricity firms, including the CIE, IPPs and producers of natural gas in Côte d'Ivoire. The regulator had an obligation to protect electricity consumers' interests and to resolve disputes between private providers and customers. In addition, the ANARE regulated electricity importation and exportation. The law also required the ANARE to recommend tariff levels that could ensure the financial stability of the electricity sector (Republic of Côte d'Ivoire 1998; Malgas and Gratwick 2008). Although the standard model requires an independent regulator clothed with the power to set prices, the ANARE could only proffer suggestions to the government on electricity tariffs.

Finally, in 1998, Bédié inaugurated the cash waterfall mechanism, an institutional arrangement meant to govern how electricity sector operators would be remunerated (World

Bank 2017b). Managed by the CIE, the mechanism provides for the payment of electricity operators "in the order of priority" (World Bank 2017b, 82). The CIE must be paid first, followed by IPPs, and then natural gas producers, with state electricity companies at the bottom of the reimbursement hierarchy. This chapter will revisit this mechanism later because it played an important role in the financial sustainability of the sector during the civil war.

A year after this raft of reforms (1999), the military overthrew Bédié in a coup d'état, ending nearly four decades of PDCI rule. The coup had nothing to do with the sectoral reforms. Rather, it related to what the military, led by General Robert Gueï, described as the tide of ethnic marginalization and exclusion, corruption, and economic mismanagement (Kamara 2000; Akindès 2004). Gueï promised to root out ethnic-based discrimination and allow elections scheduled for 2000 to go ahead (Nossiter 2010a; Ogwang 2011). Although Gueï condemned the 1994 electoral reform and Ivoirité at the outset, the concept resurfaced and dominated Ivorian politics after he declared his intention to contest the presidential election (Nossiter 2010a). Sensing that Ouattara's political support among people from the north and Muslims threatened his chances of winning the election, Gueï revised the country's constitution in July 2000 (Kamara 2000; Milam and Jones 2011). Under this revision, a presidential candidate and his parents had to be Ivorians by birth. The law required that a candidate must have stayed in the country for five years prior to the election date and must have not accepted citizenship of another country. Based on these changes, the Constitutional Court disqualified Ouattara's candidacy, averring that he provided inadequate evidence of his Ivorian citizenship (Bah 2010; Nossiter 2010a; Milam and Jones 2011). The court used other criteria to ban additional presidential candidates, including Bédié (Whitaker 2005).

Because Ouattara is Muslim and belongs to the Dioula ethnic group, predominantly located in northern Côte d'Ivoire, Muslims and northerners interpreted his disqualification as a move that questioned their nationality and excluded them from politics (Daddieh 2001). This exclusion triggered civil war, which lasted for much of the 2000s and the early 2010s. The next section focuses on the connection between the armed conflicts and electricity management, which then affected sectoral performance.

8.3 The Politics of Electricity Provision during Civil Wars, 2000-2011

The last section documents that contestation over nationality dwarfed electricity sector policies that Bédié implemented during the late 1990s. The military claimed it removed Bédié from office because of the political exclusion resulting from citizenship laws and Ivoirité. As shown in this section, by continuing Ivoirité and failing to stamp out discrimination from public life, the military government nourished the seed of ethnic and religious hatred. This hate exploded into a civil war, which had implications for electricity management and ultimately sectoral performance.

Pro-democracy demonstrations in Abidjan and a moratorium on foreign aid led Gueï to restore constitutional rule and to allow the 2000 elections to proceed (OECD/AfDB 2002; Whitaker 2005). With the Constitutional Court disqualifying Ouattara and Bédié, the RDR and the PDCI boycotted the elections, leaving Gbagbo as Gueï's main challenger (Toungara 2001; Inter-Parliamentary Union 2011). Gueï dissolved the National Election Commission and declared himself the winner even before the agency finished collating the results (Freedom House 2001; Toungara 2001). Gbagbo reacted by claiming victory and announcing himself president. This impasse led to a wave of protests that forced Gueï to run away from Abidjan (Toungara 2001; OECD/AfDB 2002). The electoral commission then declared Gbagbo as winner

with 59.4% of the vote, whereas Gueï obtained 32.3% and three minor candidates shared 8.3% (Freedom House 2001; Toungara 2001, 64; OECD/AfDB 2002, 105). Only 37% of voters on the electoral roll showed up to vote in this presidential election (Toungara 2001, 64).

Riots disrupted legislative polls in the north, with the electoral commission suspending elections for 28 seats (Inter-Parliamentary Union 2011). In January 2001, the electoral commission held elections for 26 of the 28 seats (Inter-Parliamentary Union 2011). About 87% of electors in these districts abstained from voting (Inter-Parliamentary Union 2011). The electoral commission canceled elections for two seats in Ouattara's home district due to violence and insecurity (Toungara 2001, 70; Freedom House 2001; Inter-Parliamentary Union 2011). In the end, out of 225 legislative seats, the PDCI won 98 seats, the FPI obtained 96 seats, independent candidates got 16, the RDR received five, and minor parties altogether got eight (Toungara 2001, 70; Freedom House 2001; Inter-Parliamentary Union 2011).[73] Merely 34% of the electorate turned out to vote in the parliamentary elections (Inter-Parliamentary Union 2011). About 350 people lost their lives in the post-election violence (Freedom House 2001).

Pressures for fresh elections that would permit opposition candidates like Ouattara to run for president continued (Whitaker 2005). Nevertheless, Gbagbo rejected the call, insisting that the Ivorian electorate duly elected him and Ouattara lacked Ivorian citizenship. In January 2001, the Gbagbo government thwarted a coup attempt (Freedom House 2001; OECD/AfDB 2002). This failed coup emphasized Gbagbo's key challenge: to unite a country torn apart by more than a decade of ethno-regional conflicts or to remain in power despite these divisions.

In September 2001, Gbagbo raised electricity tariffs by 10% and increased the value added tax on electricity from 11% to 20% (AfDB/OECD 2003, 118). According to the African Development Bank and the Organization for Economic Co-operation and Development (2003, 118), Gbagbo raised electricity prices because they lagged behind the costs of service and the power sector was choking on debt that amounted to CFAF51 billion (US$69,563,794.1) in June 2001 (AfDB/OECD 2003, 118).[74] I found no evidence of public backlash against this tariff raise, probably because Ivorians faced existential threats from ethnic and religious violence. Users would less likely engage in public demonstrations over electricity tariffs in a context characterized by increased violence and heightened risks. Indeed, only one year later, those tensions escalated into civil war.

Gbagbo's refusal to hold new elections intensified opposition from RDR partisans and the north to his rule, culminating in a civil war. In September 2002, soldiers from northern Côte d'Ivoire mutinied against President Gbagbo, who had travelled to the Vatican in Italy (Freedom House 2001; Whitaker 2005; Spindel 2021). The soldiers attacked government security installations in Abidjan, Bouaké, and Korhogo. They captured Bouaké and Korhogo and got the backing of the people from the north, but government forces repelled attacks on Abidjan (International Crisis Group 2003; Bellamy and Williams 2011; Spindel 2021). The insurgency rapidly deteriorated into a full-blown civil war, with rebel groups springing up. These rebel groups included the Patriotic Movement of Côte d'Ivoire (*Mouvement patriotique de Côte d'Ivoire* – MPCI), the Movement for Justice and Peace (*Mouvement pour la justice et la paix* – MJP) and the Ivorian Popular Movement of the Far West (*Mouvement populaire Ivoirian du Grand Ouest* – MPIGO) (International Crisis Group 2003; Human Rights Watch 2005; Bellamy

[73] The Inter-Parliamentary Union (2011) reported that the electoral commission had printed names of RDR legislative candidates on the ballot papers before the party pressed its supporters to boycott the elections. Elected RDR candidates refused to attend the investiture ceremony for the new parliament.
[74] US$1=733.14 CFAF (FAO 2010, 20).

and Williams 2011). In December 2002, the MPCI, MJP, and the MPIGO coalesced into the New Forces (*Forces Nouvelles* – FN) led by Guillaume Soro (International Crisis Group 2003). According to the FN, Gbagbo lacked legitimacy due to the disqualification of Ouattara and the exclusion of many northerners from the electoral roll during the 2000 elections (UN News 2004; Spindel 2021). The coalition thus aimed to stop political discrimination and Ivoirité (Bah 2010; Spindel 2021). It asked Gbagbo to step down and form a transition government to conduct credible elections (Bah 2010). By January 2003, government and rebel fighters had killed hundreds of civilians, with thousands of people from rebel-held areas fleeing their homes (University of Pennsylvania-African Studies Center 2003; UN News 2003). Rebels maintained control over the north, while the government retained jurisdiction over the south, essentially splitting Côte d'Ivoire into two.

The war disrupted the performance of the power sector. To begin with, the crisis devastated the sector's finances. The consumption of medium voltage industrial customers declined by more than 10% during the first six months of 2003 because of "slower industrial activity" (AfDB/OECD 2004, 115-116, see also AfDB/OECD 2006). Revenues of the CIE dropped by 15% in 2003, putting "the firm [CIE] in the red for the first time since [the privatization in 1990]" (AfDB/OECD 2004, 116). As the CIE's revenues declined, the waterfall mechanism kicked in, and the government "did not have sufficient resources to support the sector during the crisis period," debts owed to private power generators piled up (World Bank 2017b, 1; AfDB and IFC 2019, 9).[75]

The war expenditure meant low funds for electrification. The Gbagbo regime funneled state financial resources into funding its militias and their operations to ensure the regime's political survival (Banegas 2011, 460). According to Banegas (2011, 460), the FPI funded militant groups like the *Jeunes Patriotes* "to compensate for the failings of the army in the face of the rebel advance." These militias organized youths to patrol towns in southern regions. Moreover, a key financier of electrification projects, the World Bank, granted no new aid to the Ivorian power sector during the period of armed conflict (World Bank 2020a). As a result, electrification decelerated (Interview with academic 1, Abidjan, 3 October 2019). As Atoumgbré (2010; see also Krassault 2009) observed, "In 2001, 132 [new] villages saw light. Another 133 were completed the following year, in 2002. This momentum would be stopped by the war."

The war affected electricity access in another way. Gbagbo cut access to electricity and communication networks in rebel-held towns on some days during 2002-2004 (Spindel 2021; UN News 2004; Duval 2004; Le Parisien 2004). For example, in early November 2004, the FPI government decoupled Bouaké and Korhogo – the headquarters of the insurgency – from the national electricity grid (UN News 2004). This action intended to stifle the insurrection and to facilitate a ground attack (Duval 2004; UN News 2004; Radio France International 2021b). Spindel (2021, 107) interpreted the disconnection of public utilities as a punishment for "the rebellious North." The blackout disrupted the provision of health care and electricity-dependent water pumps in the north (UN News 2004).

Besides, the conflict prevented routine repairs and maintenance in the north in the absence of an effective state authority (AfDB/OECD 2004; Interview with bureaucrat 1 at CI-ENERGIES, Abidjan, 1 October 2019; Interview with a local journalist, Abidjan, 15 October 2019). This contributed to the deterioration of the electricity infrastructure in that area (Interview with bureaucrat 1 at CI-ENERGIES, Abidjan, 1 October 2019). However, I found no record of power shortages and load shedding in Côte d'Ivoire during the 2000s.

[75] Refer to Section 8.2 for more information about the cash waterfall mechanism.

How did power utilities manage to survive during the war? Three factors contributed to the survival of power utilities. First, electricity exports helped them to continue to operate (Malgas and Gratwick 2008). The period of Côte d'Ivoire's civil war coincided with acute electricity shortages in neighboring countries. Ghana, for instance, experienced electricity shortages for much of the 2000s. Togo and Benin depended on Ghana for electricity, so power shortfalls in that country affected their supply. Côte d'Ivoire benefited from their power shortages. While private producers expanded Côte d'Ivoire's power production from 2,489 gigawatt-hours in 1995 to 5,277 gigawatt-hours in 2002, domestic electricity use plummeted from 86% of total generation in 1995 to 55% in 2002 (AfDB/OECD 2004, 115). This enabled Côte d'Ivoire to export its electricity surplus to neighboring countries in need of power. For example, by the end of 2002, Côte d'Ivoire had exported nearly a third (29.7%) of its total electricity production, up from less than a quarter (23.7%) in 2001 (AfDB/OECD 2004, 115).

Second, electricity revenues from Abidjan provided a buffer against the severity of the blow dealt by the civil war to the sector's finances (Malgas and Gratwick 2008). The African Development Bank and the Organization for Economic Co-operation and Development estimated that the commercial capital of Abidjan alone accounted for 60% of the country's total electricity consumption in 2003 (AfDB/OECD 2004, 115). With stability restored in Abidjan shortly after the September 2002 coup attempt, the CIE was able to collect electricity payments in that city (Malgas and Gratwick 2008).

Third, the government shared revenues according to the cash waterfall mechanism, which the Bédié government instituted in 1998 to manage electricity revenues collected by the CIE. The cash waterfall is a distribution mechanism, which "gives priority of payment to private investors" (World Bank 2017b, 93). By paying private operators ahead of state electricity agencies, the cash waterfall mechanism partly insulated them from the financial problems that the political instability and war had caused. In short, revenues from Abidjan and exports, shared according to the cash waterfall mechanism, supported the operations of producers of domestic natural gas, private producers of electricity, and the private supplier of power (Malgas and Gratwick 2008; World Bank 2017b).

In anticipation of elections scheduled for 2005, the main opposition parties established the *Rassemblement des Houphouëtistes pour la démocratie et la paix* (RHDP), a coalition united by the "political philosophy" of Houphouët (RHDP nd; Bassett 2011). The RHDP coalition consisted of the RDR, the PDCI, the Union for Democracy and Peace in Côte d'Ivoire (*Union pour la démocratie et la paix en Côte d'Ivoire* – UDPCI) and the Movement of the Forces of the Future (*Mouvement des forces d'avenir* – MFA) (Roberts et al. 2016). Alassane Ouattara became the presidential candidate of the RHDP coalition as an agreement aimed to rebuild peace allowed him to run for president in 2005. With the aim of defeating Gbagbo, party leaders involved in this coalition cut a deal to back a candidate that would qualify for runoff elections (Bassett 2011). But Gbagbo's FPI postponed the elections scheduled for 2005 "at least six times," decisions it attributed to the insecurity in the country (Nossiter 2010b).

Under these conditions, the Ivorian state's concession contract with the CIE was up for renewal in October 2005. To recollect, Gbagbo led protests against neoliberal reforms in Côte d'Ivoire in the 1980s and early 1990s. He had resisted the concession in 1990 in part because he believed that it would enable France to manage Côte d'Ivoire's electricity (Maillard 2016). In informal interactions during field research in Abidjan, union leaders and an electricity bureaucrat claimed that, distrustful of French involvement in such strategic sectors of the Ivorian economy as utilities, Gbagbo hesitated to renew the concession (Field notes, Abidjan, 20 October 2019;

see also Maillard 2016). However, he had few options, given the difficulty of attracting new private investors because of the war and the dissolution of the national electricity company (e.g., Malgas and Gratwick 2008). He extended CIE's contract for another 15 years (Republic of Côte d'Ivoire 2005; Gnansounou 2008). The new agreement included a clause stipulating "the possibility of a revision of the contract every [five] years" (Gnansounou 2008, 26). The inclusion of this new clause probably reflects Gbagbo's opposition to the initial privatization. The CIE accepted the revised contract possibly because, after all, the cash waterfall mechanism instituted by Bédié in the late 1990s prioritized and guaranteed its remuneration. Revenues from electricity sales in Abidjan and foreign exchange from profitable sales of electricity to neighboring countries also meant it could mitigate losses caused by the war.

In 2007, a peace deal mediated in Ouagadougou by Blaise Campoaré resulted in the formation of a provisional government in which Guillaume Soro, the political leader of the FN rebel coalition, served as prime minister (International Crisis Group 2007; Bellamy and Williams 2011). The Ouagadougou agreement initiated a process for addressing nationality controversies and paved the way for elections in October 2010. Ahead of the 2010 elections, Gbagbo prioritized electrification. He spent CFAF1.4 billion (US$2,967,988) on electricity in rural and urban areas in 2009 (Ministère de l'Economie et des Finances 2010, 20).[76] He further expended CFAF16.5 billion (US$34,979,860) "on improving access to electricity, with [CFAF] 8.8 billion [US$18,655,925] going into public lighting" (Ministère de l'Economie et des Finances 2010, 20). The timing of this electricity spending suggests Gbagbo intended to use electricity provision to enhance his electoral appeal. It could also reflect renewed progress following years of hostilities.

Political tension and violence increased prior to the 2010 elections. Gbagbo dissolved Prime Minister Soro's government and the electoral commission in February 2010 (Voice of America 2010a, 2010b). He accused the electoral commission of registering foreigners to vote (Voice of America 2010a). Opposition parties decried Gbagbo's action as a way of stopping the elections and staying in power. In response to the opposition's call, supporters hit the street to demonstrate against what they described as Gbagbo's tyranny (Voice of America 2010b). The protests turned bloody when security personnel killed three activists and injured many in Gbagbo's birthplace (Voice of America 2010a).

These protests coincided with demonstrations against power outages (Voice of America 2010a). From February to May 2010, power shortages hit Côte d'Ivoire, the first time since the power crunches of the 1980s and since the CIE and IPPs began operations in the country in the 1990s (Abidjan.net 2010a; AfDB and IFC 2019). The director general of energy at the Ministry of Mines and Energy, Eddy Simon, attributed the electricity shortfall to "force majeure" (Abidjan.net 2010a). He explained neither the nature nor the cause of the force majeure. Two years later, the World Factbook (2012, 185) reported that failures of some gas turbines halted operations of some thermal plants. The African Development Bank and the International Financial Corporation (2019) found that years of underinvestment, particularly in generation capacity, contributed to the power shortfalls. The shortage of 180 megawatts of electricity meant that the CIE had to institute a load-shedding program in which it divided the country into three zones and rotated power supply among them (Abidjan.net 2010a). Some users received power from 1am to 8am, others from 8am to 6pm, and yet others from 6pm to 1am (Abidjan.net 2010a).

To resolve the shortages, Gbagbo carried out a suite of measures in 2010. First, the CIE imported 25 megawatts of electricity from Ghana as a stop-gap measure (Abidjan.net 2010a). As

[76] US$1=471.70 CFA franc in 2009 (Food and Agriculture Organization 2010, 20).

seen in Chapter 6, the power situation in Ghana had improved by this time because of private production and gas supply from Nigeria. Second, the Ivorian government expanded production capacity by amending CIPREL's contract, permitting the company to increase its installed capacity to 432 megawatts from 200 (Shearman & Sterling LPP 2012). It revised Azito's contract to enable it to expand installed capacity to 420 megawatts (Shearman & Sterling LPP 2012). The government awarded a new IPP contract to Aggreko to produce 70 megawatts of emergency thermal power (ANARE-CI 2020b).

Presidential elections meant to reunite the country under one president finally occurred on 31 October 2010. Fourteen candidates contested the elections, but three – Gbagbo, Bédié and Ouattara – remained the leading contenders (Spindel 2021; Commission Electorale Independente 2010a). Gbagbo's campaign claimed credit for re-establishing peace and promised to focus on development (Spindel 2021). Bédié pledged to develop agriculture, while Ouattara emphasized infrastructure development and free maternity care (Spindel 2021, 154).

On election day, nearly 84% of Ivorian electors showed up to vote (Commission Electorale Independente 2010a). Of the 14 candidates, three shared 95.35% of the vote – Gbagbo obtained 38.04%, Ouattara got 32.07%, and Bédié won 25.24% (Commission Electorale Independente 2010a). International observers described the elections as credible and peaceful, with pockets of violence (Clottey 2010b).

In line with Ivorian electoral laws, the Independent Electoral Commission fixed the second round of elections – between Gbagbo and Ouattara – for 28 November 2010. The opposition parties carried out the RHDP coalition agreement they had reached in 2005 (Bassett 2011, 472). Under this deal, they would support an opposition candidate eligible for runoff. The leaders of minor parties wasted no time in promising their support for Ouattara, but Bédié delayed (Spindel 2021). Bédié's share of 25% of the vote would make him the kingmaker if his supporters would listen to him. Roughly one week after the first round, Ouattara visited Bédié in his house obviously to woo him. Scarcely had the meeting ended when Bédié encouraged his followers to support Ouattara (Le Soir 2010; Abidjan.net 2010b; Spindel 2021).

Tension and violence mounted in the lead up to the second round. The use of incendiary language increased, partisans of both camps sparred in Abidjan, and two people died in electoral violence in Daloa, a town in western Côte d'Ivoire (Spindel 2021, 173). Gbagbo imposed a national curfew the night before the vote (Radio France Internationale 2010). According to him, the curfew would help to curb violence and maintain security. Ouattara condemned it as unlawful and a ploy to rig the election.

Despite tensions, the electorate turned out in their numbers to vote (81%) on election day (Commission Electorale Independente 2010b). The Independent Electoral Commission declared Ouattara winner, with 54.1% of the vote as against Gbagbo's 45.9% (Commission Electorale Independente 2010b). International observers described the elections as peaceful and credible and endorsed the results (BBC 2010). However, the Constitutional Council, which has responsibility for certifying election results, cancelled them in some districts in the north – a stronghold of the RHDP – because of alleged rigging (BBC 2010). This action turned the election outcome in favor of Gbagbo, who then refused to relinquish power. In the first four months of 2011, Gbagbo's refusal to hand over power to Ouattara provoked violent clashes, in which partisan forces killed at least 3,000 people based on their political, ethnic, and religious connections (Human Rights Watch 2011, 4; Bavier 2012; Human Right Watch 2018).

In reaction to opposition to his government, Gbagbo disconnected Ouattara's strongholds from the electricity grid and potable water supply systems (Radio France Internationale 2011;

The New Humanitarian 2011; Le Point 2011; Smith 2011; Spindel 2021). According to the private electricity provider, the CIE, "armed men entered its building and ordered the shutdown" (Smith 2011; see also Le Point 2011). A United Nations' representative in Côte d'Ivoire at the time claimed Gbagbo did this "for political reasons" (quoted in Smith 2011). As Spindel (2021, 181; see also Smith 2011) explained, cutting public utilities, coupled with the curfew, formed "part of Gbagbo's strategy, to contain the resistance by bottling up the young men from pro-Ouattara neighborhoods so they couldn't reach a central location to join a popular uprising." As happened during the early 2000s, the power cuts interrupted electrically operated water supply systems. The power cuts further hampered health care delivery and businesses (Radio France Internationale 2011).

Moreover, during the clashes, fighters razed electricity installations to the ground in Abidjan. In an informal conversation, a taxi driver recounted to me that combatants demolished electricity distribution poles and cables in the Riviéra 3 residential neighborhood in Abidjan (Field notes, Abidjan, 19 September 2019; see also Mbeki 2011). This plunged parts of the commercial city (Abidjan) into darkness. Their action agrees with the conventional wisdom that civil wars can destroy infrastructure.

Negotiations by the international community to get Gbagbo to relinquish power failed. A joint operation of French troops and the United Nations peacekeeping mission in Abidjan (*Opération des Nations unies en Côte d'Ivoire* – ONUCI) helped the New Forces rebels to remove Gbagbo from office in April 2011 (Bellamy and Williams 2011; Nossiter et al. 2011). They handed him over to the International Criminal Court (ICC) to face trial over crimes against humanity and murder. Gbagbo's removal paved the way for the installation of Ouattara as president in May 2011.

This section has demonstrated how civil war can affect electricity provision by undermining sectoral finances and devastating electricity infrastructure. It has also showed how civil wars shifted emphasis from increasing electricity access to raising revenues from electricity exports. Electricity export revenues, coupled with electricity revenues from Abidjan and the cash waterfall mechanism, helped power utilities to survive the civil war. The discussions further reveal that rulers can employ public goods and services to stifle political opposition by cutting access to services in their political rivals' strongholds. This suggests that public goods and services such as electricity play a significant role in political competition, including civil wars.

8.4 Electricity Provision in a Fragile Democracy, 2011-2021

This section analyzes the connections between postwar political dynamics and electricity sector reforms and performance under the Ouattara administration. It demonstrates that, although shifts in political alliances after the war have resulted in low electoral threats to the ruling RHDP coalition, other sources of intense political competition influence political elites' choices related to the electricity sector. The absence of any serious and autonomous opposition to the ruling coalition in the legislature has reduced opposition to institutional reforms. Yet pressures from social groups for cheap electricity prices weigh heavily on government decisions.

The removal of Gbagbo triggered significant changes in power dynamics in line with Olsonian explanations (see Chapter 1 and section 8.1). Ouattara became president in May 2011. Legislative elections held under the plurality voting system in December 2011 consolidated the power shift at the national level. Although all the parties belonging to the RHDP coalition fielded candidates separately, they together obtained an overwhelming majority of seats (219 out of 255) (Inter-Parliamentary Union 2016a). Independent candidates took 35 seats, while the electoral

commission called off elections in one constituency because of the death of a legislative candidate in that area (Inter-Parliamentary Union 2016a). The hardline faction of the FPI, known as Gbagbo or Nothing (*Gbagbo ou rien* – GOR), boycotted the legislative elections due to Gbagbo's incarceration and trial at the International Criminal Court (ICC) (Africanews 2020; TV5Monde and AFP 2021a).

These political shifts had implications for electricity sector reforms and performance. Ouattara's ascent to the presidency marked the return of an economic reformer. As seen in Chapter 7, much of the structural adjustment program in Côte d'Ivoire occurred on his watch as leader of the stabilization team in the late 1980s and prime minister in the early 1990s. In particular, he carried out the privatization of the EECI. By the time he entered office as president, the consequences of the protracted civil war had begun to bite the electricity sector more severely. As shown earlier, the sector's finances plummeted during the armed conflict. As a result, minimal investments occurred in the electricity network. Electricity installations deteriorated (Interview with a local journalist, Abidjan, 15 October 2019). Warring factions destroyed electricity infrastructure in some neighborhoods in Abidjan during the post-election armed conflict of 2010-2011. Due to limited investments in rural electrification, seven out of 10 rural residents had no access to electricity by 2011 (World Bank 2020b). Ivorian citizens found the low access rate alarming but also puzzling (Interview with a local journalist, Abidjan, 15 October 2019). As a local journalist ruminated,

> The point is access to electricity, and Ivorians don't understand that we sell electricity to other countries but in our own country we don't all have access to electricity. This is something that people don't understand. Before selling electricity to someone, you have to make sure that all your population has access to electricity. (Interview with a local journalist, Abidjan, 15 October 2019)

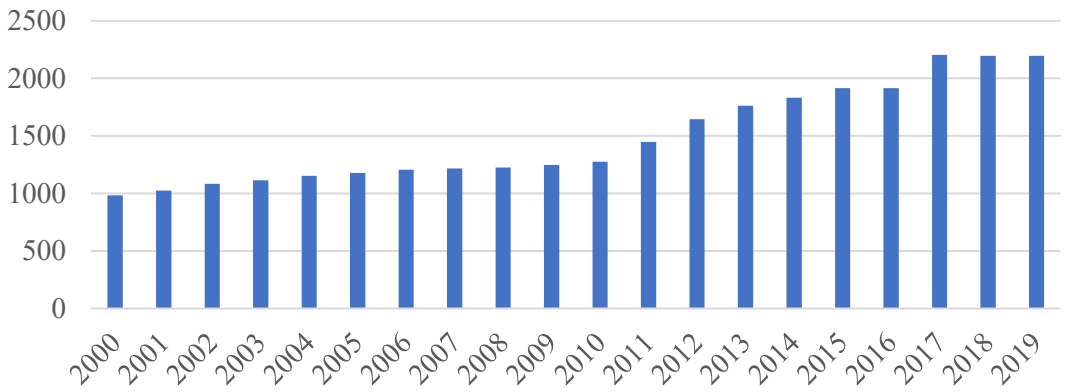
Ouattara understood that addressing these electricity challenges was critical to stimulating economic growth and reconstructing the country in the postwar period (Oxford Business Group 2020). With a clear parliamentary majority, he got his economic agenda through the National Assembly. Ouattara introduced a slew of institutional reforms and electrification policies. In 2011, he adopted the Strategic Action Plan for the Development of the Electricity Sector (*Plan Stratégique de Développement 2011-2030*). With this plan, he intended to balance profitability objectives with social ends. The plan ultimately aims at making Côte d'Ivoire the electricity center of West Africa by providing adequate and quality electricity at the lowest price to meet both domestic and regional electricity needs (Ministère des Mines, du Pétrole et de l'Energie 2014). In other words, the plan emphasizes not only profitable sales of electricity to neighboring countries, but also access at home. To achieve the social objective of extending access under the plan, he initiated the National Program for Rural Electrification (*Programme National d'Electrification Rurale* – PRONER) in 2013. Under this program, the CIE would connect all localities with 500 or more inhabitants to the electricity grid by the end of 2020 (Ministère des Mines, du Pétrole et de l'Energie 2016).

The Ouattara government found overlaps in the functions of the SOGEPE and the SOPIE (Shearman & Sterling LLP 2012). To recall, Bédié created the SOGEPE to manage the finances of the electricity sector and to maintain ownership of public electricity assets on behalf of the state. He put the SOPIE in charge of planning future installed capacity and investments in the sector. In reality, as part of managing sectoral finances, the SOGEPE had to evaluate "investments opportunities, which could be pursued" (Shearman & Sterling LLP 2012). To address the overlaps, Decree No. 2011-472 of 21 December 2011 merged the two state-owned

companies into one parastatal known as Energies de Côte d'Ivoire (CI-Energies) (van Kempen 2014; World Bank 2017b; ANARE-CI 2020b). In addition to planning electricity investments, CI-Energies has responsibility for managing electricity projects, including rural electrification, network expansion, maintenance, and major repairs on behalf of the state. CI-Energies produces electricity and manages the latest hydro dam at Soubré, discussed later in this section.

The Ivorian authorities expanded electricity generation capacity and addressed low access. In 2012, the government renewed its agreement with Aggreko – an existing IPP – for two years for an installed capacity of 100 megawatts. One year later, it allowed Aggreko to add 100 megawatts to its installed capacity, which brought the company's total installed capacity to 200 megawatts (African Press Organization 2013). The government extended the agreement again in 2015 (Power Engineering International 2015). In 2013, the government started the construction of a 200-megawatt hydro dam at Soubré and commissioned it four years later (Poindexter 2017). It further launched many new projects, such as a 112-megawatt dam at Gribo-Popoli, to augment hydro generation capacity (Oxford Business Group 2020). As a result of the spurt of sectoral investments, installed capacity increased from 1,449 megawatts in 2011 to 1,914 megawatts in 2015 and then 2,197 megawatts in 2018 (see Figure 8.1).

Figure 8.1: Installed capacity in Côte d'Ivoire, 2000-2019



Source: Data from US Energy Information Administration (2022)

Why did Ouattara prioritize investments in electricity generation capacity? Three factors explain his action. An expanded electricity capacity would enable the government to avert power shortages at home due to increased demand arising from economic recovery and electrification. At the end of armed conflicts in 2011, the Ivorian economy began to grow by an average of 8% yearly, making it one of the most rapidly expanding economies in the world (World Bank 2019). The economic growth increased domestic demand for electricity. With domestic demand increasing by roughly 10% yearly, the government and electricity managers perceived power shortages as imminent (Coulibaly 2017). The government also anticipated that electrification would accelerate domestic demand for electricity. This could strain supplies, if the government failed to augment generation capacity (Interview with a member of parliament, Abidjan, 17 October 2019). Furthermore, regional demands for Ivorian electricity had increased due in part to recurrent power shortfalls in neighboring countries like Ghana. Finally, Ouattara intended to penetrate new and potentially profitable markets by exporting electricity to Guinea, Liberia, and Sierra Leone (Coulibaly 2017). A RHDP Member of Parliament summarized the socioeconomic motivations of investing in generation capacity as follows:

> When we came [to power], we constructed a new dam, we constructed a new plant for the production of [thermal] electricity, we have found more gas etc. So, these have permitted the government to increase the number of people who benefit from electricity. Before us, the infrastructure was not available. We have built a lot of infrastructure: the Soubré dam, thermal plants at Azito – Azito 1, Azito 2, Azito 3 etc. So, we have a lot of thermal plants. We have expanded the capacity of the existing dam at Ayamé. So, this permits the government to now extend the electricity network to everybody and also foreign countries. (Interview with a member of parliament, Abidjan, 17 October 2019; author translated from French to English)[77]

But just as important, these investments had a political motivation. Socioeconomic and political goals do not compete, but they rather complement each other. The RHDP naturally seeks political advantage from its economic performance. It, for instance, campaigned on its governance record, in particular infrastructure development, during the presidential election in 2015 and the legislative elections in 2016 (Fick 2015; de Rothschild and Searcey 2015; Inter-Parliamentary Union 2016a). More specifically, the electrification policies boost Ouattara's and his party's popularity by serving previously excluded groups and his electoral base, including northern communities and northern migrants in the south.

Besides the financial investments, Ouattara's government sought to address shortcomings of sectoral laws adopted in 1985 and 1998. The electricity law of 1985 avoided competition by granting the state monopoly on electricity transmission, distribution, sales, export and import. Inefficient regulation resulted from the law of 1998 because it provided no autonomy for the ANARE and made it a mere advisory body to the government. Ouattara enacted a new electricity law (Law No. 2014-132 of 24 March 2014) intended to improve electricity regulation and provide better protection for the rights of consumers and utility operators.

In theory, the 2014 electricity law grants administrative and financial independence to a new regulator, *Autorité Nationale de Régulation du secteur de l'Electricité de Côte d'Ivoire* (ANARE-CI). The electricity law, in addition, revoked the state's monopoly that had been enshrined in the sectoral law of 1985 (Republic of Côte d'Ivoire 2014a, 39). To ensure competition, the law provides for private participation in all segments of the electricity value chain. In line with this objective, the government promulgated Decree No. 2014-291 of 21 May 2014, establishing procedures for granting concessions in all activities in the electricity sector. A noteworthy provision in this decree relates to the introduction of open and competitive tendering processes. As the law stipulated, "The selection of the concessionaire is made by open tender, which may be national or international…" (Republic of Côte d'Ivoire 2014b). This reform is a significant milestone, given that the 1985 electricity law had no provision to prevent non-competitive bidding. As a result, the privatization of the EECI in 1990 resulted from direct bilateral negotiations between the Houphouët government and a consortium of French companies and lacked any grain of competitiveness. I found no evidence of political controversies over these reforms.

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[77] Quand nous sommes arrivés, nous avons construit un nouveau barrage, nous avons construit une nouvelle usine pour la production d'électricité, nous avons trouvé plus de gaz, etc. Donc, cela a permis au gouvernement d'augmenter le nombre de personnes qui bénéficient de l'électricité. Avant nous, l'infrastructure n'était pas disponible. Nous avons construit beaucoup d'infrastructures: le barrage de Soubré, les centrales thermiques d'Azito – Azito 1, Azito 2, Azito 3 etc. Nous avons donc beaucoup de centrales thermiques. Nous avons augmenté la capacité du barrage existant à Ayamé. Donc, cela permet au gouvernement d'étendre le réseau électrique à tout le monde et aux pays étrangers.

Ahead of the 2015 presidential elections in which Ouattara sought a second mandate, he took additional measures to accelerate electricity access by eliminating expensive upfront connection fees. During fieldwork, residents of Abobo, an inner-city neighborhood in Abidjan, identified prohibitive connection costs as a motivation for widespread power theft. As one local resident put it, "The cost of connection is too expensive. ... If I don't have money, how can I do it? If I have a meter, these are my friends [pointing at other residents present at our meeting], can I leave them without electricity? No, I will tell them to go and buy cables. I will give you light" (Interview with resident 1, Abidjan, 5 October 2019; author translated from French to English).[78]

The Ouattara government and the CIE admitted that high-priced connection charges impede electricity access and, in response, initiated the Electricity for All Program (*Programme Electricité Pour Tous* – PEPT) in 2014. Under the PEPT, the CIE connects low-income households to the national grid at an initial cost of CFAF1000 (US$2) to the consumer (Ministère des Mines, du Pétrole et de l'Energie 2016).[79] Beneficiaries would pay the remainder of the total upfront connection fee of CFAF150,000 (US$303) over a period of 10 years (Yeboue 2019; Agence Ivoirienne de Presse 2019).

Additionally, Ouattara sought to address a mounting fiscal deficit and underinvestment in the electricity sector due in part to years of low tariffs (World Bank 2017b). He increased electricity prices by 10% on average three months ahead of presidential elections in 2015 (World Bank 2017b; Interview with Academic 3, Abidjan 5 October 2019). But, as we will see later in this section, Ouattara cancelled the tariff raise in 2016 due to pressures from residents in major cities and businesses (World Bank 2017b).

The presidential election went ahead in October 2015. Ouattara's RHDP campaigned on its infrastructure record, including electricity, and pledged to evenly distribute the benefits of growth, if retained in office (de Rothschild and Searcey 2015; Inter-Parliamentary Union 2016b). With the age limit preventing Bédié from running for president, he urged his supporters to vote for Ouattara (Grisot 2015; Smidt 2015; Piccolino 2016). Some leading members of the party disagreed with Bédié and criticized him for working against the PDCI's interest (Grisot 2015). Three of these nonconformists – Kouadio Konan Bertin, Amara Essy, and Charles Konan Banny – competed as independent candidates in the presidential election (Piccolino 2016). The main opposition coalition, the Alliance of Democratic Forces (*Alliance des forces démocratique* – AFD) led by Affi N'Guessan involved the moderate faction of the FPI and 11 small parties (Roberts et al. 2016). The AFD campaigned on liberating Gbagbo from detention (Piccolino 2016). Clearly, this strategy aimed to rally Gbagbo's base behind the AFD. However, Gbagbo dealt the opposition alliance a blow when he distanced himself from it a few days before the election (Koné 2015). His partisans boycotted the election (Economist Intelligent Unit 2015; Piccolino 2016).

About 53% of electors voted in the presidential poll (Commission Electorale Independente 2015), compared to the more than 80% voter turnout rates in each round of the presidential elections in 2010. President Ouattara got roughly 84% of the total votes, while his closest contender, N'Guessan, obtained about 9.3% (Commission Electorale Independente 2015). Domestic and international observers described the election as nonviolent and fair (Maïga et al. 2015; Smidt 2015; Freedom House 2016).

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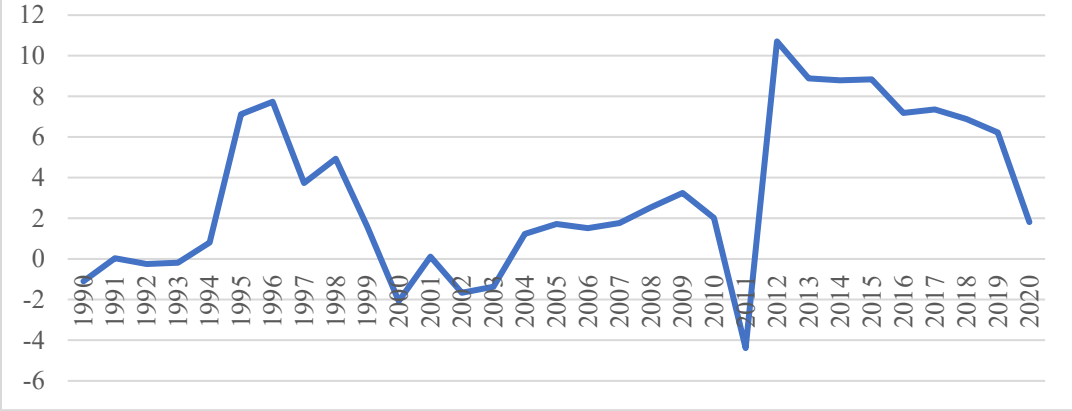
[78] « Le coût de la connexion est trop élevé. ... Si je n'ai pas d'argent, comment puis-je le faire? Si j'ai un compteur, ce sont mes amis, puis-je les laisser sans l'électricité? Non, je vais leur dire d'aller acheter des câbles. Je vais vous donner la lumière. »

[79] Historical exchange rate: US$1=CFAF494.85 (Exchange Rates UK 2022).

The sheer expansiveness of the ruling coalition played a role in Ouattara's electoral success. Ouattara received support from a range of parties coalescing under the RHDP. As seen already, the RHDP coalition involved Ouattara's RDR, Bédié's PDCI, the UDPCI, the UPCI, and the MFA (Roberts et al. 2016). As a result of the coalition's breadth, it drew electoral support across the country, including in PDCI strongholds. On the other hand, the opposition FPI remained divided (Maïga et al. 2015; Freedom House 2020). With Gbagbo standing trial at the ICC, his followers refused to back the FPI's presidential candidate and abstained from voting (Economist Intelligent Unit 2015; Piccolino 2016). This means that Ouattara faced no threats at the polls. As Maïga et al. (2015) put it, "the absence of an opponent with an electoral base capable of competing with Ouattara removed any suspense regarding the outcome" of the 2015 presidential election.

Another factor of the electoral outcome relates to Ouattara's economic accomplishments (Economist Intelligence Unit 2015; Fick 2015; de Rothschild and Searcey 2015). As Figure 8.2 depicts, GDP growth averaged 9% yearly between 2012 and 2015. This indicates a robust economic recovery, although many citizens had yet to benefit from the dividends of growth (Economist Intelligence Unit 2015). The strong economic performance reflected significant state investments in infrastructure, with electrification as one of the government's flagship policy interventions.

Figure 8.2: GDP growth (annual %) in Côte d'Ivoire, 1990-2020



Source: Data from World Bank (2021a), World Development Indicators

Finally, ethnicity played a role in the outcomes of the 2015 election. Although Ouattara won the majority of votes in 30 out of 31 regions, he obtained nearly 100% in many parts of the north. A scholar at the Houphouët-Boigny University explained the ethnic influence on Ivorian elections:

> The vote is ethnic. It is regionalized. For example, if you are a candidate from the north and I am also from the north, I will vote for you. This is true in elections at this time. Voting for Alassane Ouattara, the president, is enough by citizens in the north and voting PDCI is by the center and some parts of the south. … It is true that there are infrastructural problems, but it is important to understand this aspect of voting in the Ivory Coast. (Interview with academic 1, Abidjan, 3 October 2019; author translated from French to English)[80]

[80] Le vote est ethnique. Il est régionalisé. Par exemple, si vous êtes un candidat du Nord et que je viens aussi du Nord, je voterai pour vous. C'est vrai pour les élections en ce moment. Voter pour Alassane Ouattara, le président,

A few months after the elections, societal pressures led to some softening of the tariff increases. Residents in cities such as Daloa and Yamoussoukro protested, and businesses lobbied the government against the increases (Akwei 2016; World Bank 2017b). In reaction to these pressures, Ouattara cancelled the electricity price hikes in May 2016, announced modified tariff raises in June 2016 and pushed some of the increases beyond the 2016 legislative elections (World Bank 2017b; Interview with Academic 3, Abidjan 5 October 2019). A "10 percent capped tariff replaced the 10 percent average increase of July 1, 2015, and the subsequent [five] percent increase was postponed to July 1, 2017" (World Bank 2017b, 85). This means that the government adopted a gradual approach to raising tariffs so that users would not feel the shock of a one-time big increase. But, in July 2016, electricity bills increased more sharply than consumption and the rates announced by President Ouattara due to billing errors (Kouassi 2016). In addition, some consumers received electricity bills twice in the same month (Kouassi 2016). A local journalist observed that "these tariffs disturbed the people," who renewed protests against them in Bouaké, Daloa, and Yamoussoukro, among other cities in July 2016 (Interview with Academic 3, Abidjan 5 October 2019; see also Akwei 2016; Kouassi 2016).

The demonstrations "turned violent" (Akwei 2016; Kouassi 2016). In Yamoussoukro, the political capital of Côte d'Ivoire, demonstrators torched tires and a vehicle of the CIE. In Daloa, protestors attacked the CIE's office (Akwei 2016). The police used tear gas to break up the protests. In the city of Bouaké, security forces killed one protester and injured several others (Kouassi 2016). The Ivorian consumers association blamed the government for the demonstrations. Jean-Baptiste Koffi, the president of the consumers association, noted that "The government is responsible for the current social tension and protests in Yamoussoukro. They should stop the increases in prices to avoid the difficulties faced by consumers" (quoted in Akwei 2016). The CIE bowed to the pressure by apologizing to consumers and announcing strategies to resolve the billing errors. Among other measures, it gave users more time to pay their bills and asked its customer service representatives to show compassion to complainants (Kouassi 2016).

A renewed mandate for Ouattara, coupled with a clear legislative majority, enabled his government to revisit institutional changes. Pursuant to the electricity law of 2014, the minister of energy promulgated a deluge of decrees in 2016, following consultations with electricity stakeholders. Decree No. 2016-785 of 12 October 2016 outlined the organization, independence, and functions of the electricity regulator – the ANARE-CI – created under the electricity law of 2014. In terms of organization, the ANARE-CI has a regulatory council responsible for carrying out its regulatory functions. The minister of energy appoints members of the regulatory council through decree. With respect to independence, members of the council have security of tenure as their appointment cannot be revoked before the end of their six-year non-renewable mandate, "except for gross negligence duly noted by the regulatory council" (Republic of Côte d'Ivoire 2016a, 5). To ensure effective regulation, the decree grants powers of inquiry and enforcement of decisions to the regulator.

However, the ANARE-CI has no mandate to set electricity tariffs. With the state retaining the tariff setting responsibility, the new regulatory law requires the regulator to "propose to the State tariffs applicable in the electricity sector, including tariffs for access to networks" (Republic of Côte d'Ivoire 2014a, 45). Decree No. 2016-786 of 12 October 2016

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suffit aux citoyens du Nord et voter pour le PDCI est au centre et dans certaines parties du Sud. Il est vrai qu'il y a des problèmes d'infrastructure, mais il est important de comprendre cet aspect du vote en Côte d'Ivoire.

regulates this advisory responsibility. In proposing electricity prices to the state, the decree requires the ANARE-CI to consider many factors, including the sector's financial stability, the sector's development, and equity for consumers. Nonetheless, the state makes the call on levels of tariffs.

Alongside the implementation of electricity sector reforms, political reforms moved forward. Ouattara aimed to fix the institutional sources of political exclusion, which instigated social tensions and civil wars. Recall that contentious nationality and residency laws prevented Ouattara from contesting presidential elections in 1995 and 2000. The RHDP government drafted a new constitution and presented it for approval by a national referendum on 30 October 2016 (DW 2016b; Human Rights Watch 2016). Among other changes, this constitution eliminated the provision that required that both parents of presidential candidates must be natural-born Ivorians (Republic of Côte d'Ivoire 2016b). In its place, the draft constitution required that only one parent of a candidate must be an Ivorian citizen. Besides, it introduced the office of vice president, a senate, and a presidential term limit – two terms, five years each (Republic of Côte d'Ivoire 2016b). It additionally removed the maximum age limit, which was 75 years. The RHDP coalition hoped that this constitution would help the country to overcome division and ensure peace (Human Rights Watch 2016; DW 2016b).

Opposition parties, however, rejected the draft constitution. They accused the government of failing to seek their input and that of civil society (DW 2016a). Besides, they maintained that the constitution would give too much power to the president (Human Rights Watch 2016; DW 2016a, 2016b). For instance, they argued that a provision in the draft constitution that permits the National Assembly and the senate to approve constitutional changes would enable a president to have his way with future revisions. When opposition parties took to the streets to express their grievances, security forces cracked down on some of them, citing public safety concerns (Human Rights Watch 2016). They, however, permitted other opposition rallies. With the opposition leaders pressing their followers to abstain from the referendum, only 42% of registered voters turned out to vote (DW 2016a, 2016b). About 93% of those who voted approved the new constitution (DW 2016a, 2016b).

After the approval of the new constitution, Ivorians headed for the polls in December 2016 to choose 255 legislators, in accordance with the Independent Electoral Commission's electoral calendar (Inter-Parliamentary Union 2016a; Electoral Institute for Sustainable Democracy in Africa 2021). Ouattara's RDR and Bédié's PDCI jointly contested the elections under the banner of the RHDP for the first time (Houpert and Duhem 2016; Inter-Parliamentary Union 2016b; Bouquet 2017). The UDPCI and the UPCI, both members of the ruling coalition, fielded their own candidates, as they did in 2011 (Inter-Parliamentary Union 2016a, 2016b). N'Guessan's FPI and several minor parties competed for seats (Bouquet 2017, 240). Out of a total of 1,336 legislative candidates, 789 (59.1%) ran as independents (Bouquet 2017, 240-241; Inter-Parliamentary Union 2016b). Parliamentary hopefuls the ruling coalition overlooked, when selecting its candidates, accounted for 43.3% (342) of the independent candidates (Bouquet 2017, 240-241). This large number of independent candidates highlighted cracks within the ruling RHDP coalition. As in the presidential election in 2015, the hardline faction of the FPI refused to participate in this legislative election (Michalon 2016; Houpert and Duhem 2016). They maintained that, with Gbagbo in detention, elections without him lacked legitimacy.

The elections occurred "without incident [or] much enthusiasm" (Bouquet 2017, 241). Merely 34% of registered voters took part in the legislative polls, compared to about 36% in 2011 (Michalon 2016; Bouquet 2017, 241). The RHDP obtained 167 out of 255 of the seats

(65.5%), independent candidates took 76 seats, the UDPCI got six seats, while the FPI and the UPCI won three apiece (Inter-Parliamentary Union 2016b; Georges 2016). The RHDP lost seats to independent candidates (Michalon 2016; Houpert and Duhem 2016), although these dissenters joined the ruling coalition in the National Assembly (Bouquet 2017).

The RHDP's legislative majority meant that the ruling coalition could continue to initiate and carry out projects with little challenge in parliament. As discussed earlier, the Ivorian electricity grid was aged and inefficient primarily because of low investments during the war. This contributed to high transmission and distribution losses, averaging more than 20% a year during the war, relative to a pre-war average of 13% (World Bank 2020b). With funding from China, the government introduced a grid rehabilitation and electrification project in 2018 to address this challenge (Oxford Business Group 2020; World Bank 2017b). The Ivorian authorities intended to replace old power lines, build new power substations, and extend the electricity network to cover all parts of the country. This would support reliable supply of electricity and rural electrification.

Divisions within the ruling coalition deepened two years in advance of the 2020 elections. As discussed previously, the RHDP coalition consists of parties that uphold the political beliefs and values of Houphouët, the first president of Côte d'Ivoire. In 2018, all the political parties in the RHDP coalition signed an agreement intended to merge into a single party ahead of the 2020 presidential election (Africanews 2018; Yala 2018). But anti-merger pressures from the PDCI grassroots boiled over. According to dyed-in-the-wool PDCI supporters, the party would cease to exist (Yala 2018). They also argued that the PDCI supported Ouattara in the 2010 and 2015 elections and wanted him to return the favor by supporting a PDCI presidential candidate in the 2020 elections, a request the RDR declined (BBC 2018a, 2018b; Radio France International 2018; Telafrique 2018). In response to anti-unification protests, in 2018, Bédié's PDCI rejected the merger, decided to contest the 2020 presidential and legislative elections on its own ticket, and dismissed eight executive members that supported the merger (BBC 2018a, 2018b; Radio France International 2018; Telafrique 2018; Yala 2018).

The ruling coalition experienced a further internal rift in 2019. Guillaume Soro, who headed the Forces Nouvelles rebel coalition that removed Gbagbo from office in 2011 with the help of UN and French soldiers, became prime minister and then speaker of the National Assembly under the Ouattara government. Soro resigned in early 2019 as speaker of the National Assembly to run for president (Africanews 2019; Shaban 2019; Freedom House 2020). In the same year, he founded the Generations and People Solidarity party and announced his presidential candidacy. In December 2019, the government issued an arrest warrant for Soro because of an alleged embezzlement and a plot to remove the president from office (Bocchese 2020; Duhem 2020a). As a result, Soro went to exile in France. In April 2020, a court in Abidjan condemned him in absentia to 20 years in prison (Aboa 2020). His supporters and some observers believe Ouattara's RHDP trumped up the charges to prevent him from running for president in the 2020 elections because he stood a chance of splitting the incumbent's votes in the north (Bocchese 2020).

Six months ahead of the 2020 elections, the Ouattara government sought to ramp up electricity access. At this time, electricity access rates among low-income earners remained low. We saw in the past that the Ivorian government partnered with the CIE to institute the PEPT in May 2014 to connect one million low-income households to the grid over a five-year period. The government had extended access to 600,000 low-income households under the PEPT by 2020 (Ministère du Pétrole, d'Energie, et des Energies Renouvelables 2020; CIE 2020; Koaci.com

2020). This means that the government failed to achieve 40% of its goal of connecting one million households by 2020. In May 2020 – exactly five years after the introduction of the PEPT, the Ivorian government launched a PEPT Fund (*Fonds PEPT*) aimed at mobilizing CFAF10 billion (US$17,379,214) to connect 400,000 households to the electricity grid by the end of the year (Ministère du Pétrole, d'Energie, et des Energies Renouvelables 2020; Koaci.com. 2020).[81] This effort to marshal funds to complete the PEPT a few months before the 2020 the election suggests that the RHDP possibly hoped to campaign on its record of infrastructure development, as it had in the 2015 elections (see Economist Intelligence Unit 2015; Fick 2015; de Rothschild and Searcey 2015; Inter-Parliamentary Union 2016a).

Nonetheless, Ouattara's decision to run for president for the third time deepened political tensions and violence and thus crowded out socioeconomic programs and economic performance, including developments in the electricity sector. In March 2020, Ouattara announced he would not seek re-election, a declaration that received commendation from Ivorians and the international community (Africa Times 2020). He promised to "pass on the torch to a new generation" and then introduced Prime Minister Amadou Gon Coulibaly as his successor (Kermeliotis 2020). The announcement ended months of suspense about Ouattara's rerun and calmed nerves in the country.

But the calm was short-lived. Following Coulibaly's abrupt death in Abidjan in July 2020, after returning home from medical treatment abroad, the executives of the ruling RHDP coalition nominated Ouattara to fill the vacancy. In August 2020, Ouattara accepted the party's nomination. In Ouattara's words, "This decision, carefully considered, is a duty that I accept in the best interest of the Nation in order to continue to put my experience tirelessly at the service of our country" (quoted in Raynaldo 2020). Ouattara and his supporters maintained that the 2016 constitution that placed a two-term limit on presidents does not apply to mandates he won prior to the adoption of the constitution (Duhem 2019; Kermeliotis 2020).[82] With a few weeks to the October election, the timing of Coulibaly's passing influenced Ouattara's volte-face. As some observers argued, twelve weeks was too small a window in which to sort through alternative candidates (Paquette 2020).

Ouattara's U-turn met staunch opposition from his political rivals outside the RHDP, triggering violence in which at least 85 people died, and properties were destroyed before, during and after the election (Al Jazeera 2020; BBC 2020b). Security forces injured hundreds of people and arrested scores of opposition protesters (BBC 2020c; France24 2020; National Post 2020). In the opposition's view, Ouattara's rerun violated the constitution. In September, Bédié and other opposition figures called for "civil disobedience" to obstruct Ouattara's re-election bid (Mutizwa 2018; Voice of America 2020). Bédié's call prompted more anti-Ouattara demonstrations and rallies, with some protesters carrying a banner that read "The people say no to a third mandate" (Diaspoint 2020).

The increased political tensions and violence overshadowed the renewal of the electricity privatization deal. With the concession contract of the CIE due to end in October 2020, analysts wondered whether Ouattara would apply the new electricity law (of 2014) by using competitive bidding to find a new private provider (Africa Energy 2020). At a cabinet meeting on 30 September 2020, the government extended CIE's contract for 12 years (Abidjan.net 2020). Two key (unanswered) questions hang over this renewal. One relates to whether the government used

[81] US$1=CFAF575.40 in May 2020 (Exchange Rates UK 2020).

[82] This tactic has been used in other African countries, including Senegal in 2012 (Abdoulaye Wade), Burundi in 2015 (Pierre Nkurunziza), and Guinea in 2019 (Alpha Condé).

competitive tendering processes as provided under the 2014 electricity law. Another question concerns the reason for the modification of the contract duration from 15 years to 12 years. Ouattara's re-election bid dominated public discourses and foreclosed any public discussion of the contract extension. The answers have yet to appear in reports of the government or international financial institutions.

Political exclusion, coupled with Ouattara's rerun, sent Côte d'Ivoire to the brink of another civil war. The Constitutional Council, whose members Ouattara appointed, blocked Gbagbo (because a local court convicted him of plundering the BCEAO branch in Abidjan) and 39 other applicants from competing in the presidential elections (Radio France Internationale 2020). Gbagbo's partisans protested his elimination and boycotted the presidential election. As in the case of Gbagbo, the Constitutional Council did not permit Soro, once an ally of Ouattara, to run in the presidential poll. The Constitutional Council granted the green light to Ouattara and three other candidates, including Bédié[83] and N'Guessan (Radio France Internationale 2020). Kouadio Bertin, a dissident from the PDCI, ran as an independent candidate. Bertin's action indicates intra-party divisions, which critics blame on Ouattara. They accuse him of sponsoring internal schisms in rival parties to weaken the opposition and maintain the dominance of the ruling coalition (Interview with a representative of FESACI, Abidjan, 29 October 2019).

To avert armed conflicts, France called on Ouattara to postpone the elections and to call for dialogue with Ivorian political actors (Banda 2020; DW 2020). The UN urged the government and the opposition to ensure "peaceful and inclusive elections" (United Nations Office for West Africa and the Sahel 2020). The Economic Community of West African States (ECOWAS) also called for dialogue. In their view, violence in Côte d'Ivoire could spill over into the region, which is already a hotbed of instability and armed conflicts. But Ouattara rejected calls to put off the election (Banda 2020). As a result, N'Guessan and Bédié called on their supporters to boycott the election and "block what they described as an electoral coup" in a joint press conference (BBC 2020a).

Notwithstanding the mounting political tensions and violence, the election came off on 31 October 2020. Roughly 54% of registered voters participated in the poll (BBC 2020c), as compared to about 53% in 2015 and more than 80% in 2010 (Commission Electorale Independente 2010a, 2010b; Piccolino 2016). Nearly a quarter of polling stations did not open due to insecurity (BBC 2020c). Ouattara obtained slightly more than 94% of the total national votes and 99% in many electoral districts in his strongholds (BBC 2020c). Bertin was the only alternative candidate, although the names of N'Guessan and Bédié appeared on the ballot.

The FPI and the PDCI rejected his victory and announced the formation of a national transitional government because "maintaining Mr. Ouattara as head of state is likely to lead to civil war" (quoted in BBC 2020c). Security agencies arrested, detained and charged N'Guessan with treason for creating a parallel government. They besieged the residences of Bédié and other leading opposition figures for the same reason (Al Jazeera 2020). To resolve the mounting political tension, Ouattara held a meeting with Bédié, who called for national dialogue and liberation of prisoners of conscience (Fraternité Matin 2020; Al Jazeera 2020; AllAfrica 2020).

The political fallout from Ouattara's third-term bid makes it hard to count his victory as an accurate reflection of voters' preferences and identify the role of socioeconomic programs such as electrification. Moreover, it is clear the opposition remained uncompetitive electorally and incapable of wresting power from the ruling RHDP coalition, which "holds a virtual lock on political power…" (Freedom House 2020). With the FPI lacking internal unity, the state

[83] The 2016 constitution eliminated the age limit, which was 75 years. This made Bédié eligible to run for president.

blocking many RHDP political rivals from running for president, and other leading opposition parties boycotting the election, Ouattara's victory was nothing but guaranteed.

Political tensions and unrest subsided as President Ouattara started talks with political opponents prior to legislative polls in March 2021. In reaction to the anti-third term demonstrations and violence and opposition parties' demands, the government appointed Kouadio Konan Bertin, a PDCI dissident and independent presidential candidate in the 2020 election, as Minister of National Reconciliation (Duhem 2020b). Within a few days of this appointment, Ouattara's government engaged representatives of civil society and leaders of all political parties in a national dialogue (AllAfrica 2020). It also yielded to the opposition's call for electoral reforms by expanding the latter's representation on the Independent Electoral Commission (de Bassompierre 2021). These concessions aimed to indicate an end of political violence to the international community, a move that would enable Ouattara to attract foreign investments and economic aid for infrastructure development (de Bassompierre (2021).

These steps toward national reconciliation paved the way for the legislative elections scheduled for March 2021 to go forward. The ruling RHDP sought to maintain its parliamentary majority amid increased electoral competition from opposition parties. For the first time since Gbagbo's incarceration in 2011, his loyalists participated in the parliamentary elections because they expected the ICC to free him in March 2021 following his acquittal in 2019 (Aboa 2021; BBC 2021b; TV5Monde and AFP 2021a).[84] Gbagbo's FPI and the PDCI presented a joint ticket in some constituencies to boost their chance of winning a parliamentary majority (Africanews 2021a; Aboa 2021; de Bassompierre 2021). As Bédié explained, the electoral alliance would help to break Ouattara's grip on power (Africanews 2021a). Soro's Generations and People Solidarity boycotted the elections because, according to the party, it lacked trust in the state agencies in charge of elections (de Bassompierre 2021).

The election campaign occurred peacefully (France24 2021; TV5Monde and AFP 2021b). The incumbent RHDP appealed to voters to give it a parliamentary majority to enable the government to implement its socioeconomic programs, including infrastructure development (Aboa 2021; de Bassompierre 2021). The opposition rallied electors against what it described as Ouattara's "absolute power" and proposed to reunite Ivorians (Vendrely 2021; TV5Monde and AFP 2021a). On election day, nearly 38% of the electorate voted, as against 34% in 2016 and 36% in 2011 (France24 2021; Radio France Internationale 2021a). The incumbent RHDP won the majority of seats (137 out of 254), but it lost 30 seats (France24 2021; Radio France Internationale 2021a). The opposition took 91 seats, while 26 seats went to independent candidates (France24 2021; Radio France Internationale 2021a). The electoral commission canceled the election in one constituency and rescheduled it for June 2021 (Abidjan.net 2021).

Power shortages and power cuts struck Côte d'Ivoire a few weeks after the legislative elections in March 2021. Residents in major cities such as Abidjan, Korhogo and Yamoussoukro complained of power outages at their homes and offices each day (News24 2021). Ouattara's government attributed the electricity shortfalls (200 MW) to insufficient water in hydro dams, gas shortages, and a faulty thermal power plant (News24 2021). Besides, the COVID-19 pandemic wiped out funds for investments in electricity installations as the government prioritized public health and provided free electricity to low-income users (see CIE 2020). The association of large-scale private companies in Côte d'Ivoire, *Confédération Générale des*

[84] The ICC acquitted Gbagbo in 2019 (Aboa 2021; Aboa and Coulibaly 2021). An appeal filed by the court's prosecutor against Gbagbo's acquittal delayed his return to Côte d'Ivoire. In March 2021, the court dismissed the appeal, leaving him free to go home (BBC 2021b).

Entreprises de Côte d'Ivoire (CGECI), petitioned the government for a solution to the power shortages (archyde 2021; News24 2021). Similarly, small-scale businesses asked the government to solve the problem. In response to the popular discontents, the Ivorian government obtained a 200-megawatt thermal power plant and restored the broken-down power plant (AFP 2021). These actions and the onset of rainfall in June 2021 ended the power shortages in July that same year (AFP 2021).

This section has highlighted how civil war shaped coalitional shifts defined by a reformist coalition's ascent to power. Sectoral reforms and investments underline renewed socioeconomic development efforts à la Olson but also boost Ouattara's and the RHDP's political appeal. This section has also demonstrated politicians' responsiveness to popular backlash over electricity tariffs even in the absence of electoral threats. Violent protests over electricity tariff increases prompted Ouattara to reduce them although he faced no viable electoral challenger. The risk of deadly protests in major cities escalating into armed conflicts in a fragile post-war environment influenced the tariff policy reversal. Finally, it revealed that non-electricity issues, especially if they present existential threats, crowd out developments in the electricity sector as happened during the 2020 electoral violence.

8.5 Conclusion

This chapter looks at the links between political competition and policy choices related to the electricity sector and, ultimately, performance from late 1993 to 2020. Political competition in Côte d'Ivoire over the past three decades included a coup d'état, civil wars, protests, and elections. The political instability had implications for electricity provision. Overall, social tensions and armed conflicts not only overshadowed sectoral developments, but they also stifled investments in electrification and network maintenance and repairs for much of this period.

Contestations over nationality and citizenship dominated Ivorian elections in the 1990s, crowding out concerns with socioeconomic programs and performance. These contestations contributed to the removal of Bédié from office by the army and a failed coup attempt under Gbagbo. Political exclusion culminated in a protracted civil war. Some scholars argue that civil wars can undermine sectoral performance by curtailing investments and maintenance and causing intentional damage to infrastructure (e.g., Yepes et al. 2009). I found evidence in line with this argument. The war presented little financial room for the government and the CIE to maneuver. With the civil war expenditure draining state financial resources and economic activities slowing down, sectoral revenues fell. As a result, investments in electricity projects declined. Routine repairs and maintenance stopped in the rebel-held north and national electrification rates slowed during the war. To contain the rebellion, Gbagbo cut electricity and water supply to rebel-controlled areas. In some neighborhoods in Abidjan, combatants destroyed electricity infrastructure.

Olson (1982) predicted that wars can increase economic performance by changing political alliances in ways that enhance opportunities for growth-oriented policy change. Consistent with this prediction, the removal of Gbagbo in 2011, following post-election crises, changed the dynamics of power in Côte d'Ivoire. Ouattara ascended to the presidency on the ticket of the expansive reform-oriented RHDP coalition. The sheer legislative dominance of the RHDP has enabled Ouattara to carry out a suite of sectoral reforms and electrification projects.

Ouattara considers electricity as pivotal to Côte d'Ivoire's postwar rebuilding and economic development and invested massively in it. Economic development would in return boost his political allure. Nonetheless, the investments and sectoral reforms have yielded mixed

results. After five years of implementation, Ouattara's flagship electricity access policy – PEPT – had failed to meet its own target for increasing access. Power shortages and rationing in 2021 highlight problems with the reliability of electricity supply. Moreover, popular protests over electricity tariff hikes occur, although they do not play out in electoral politics. This could be a question of the timing of sectoral flashpoints relative to electoral cycles or limitations of electoral politics as a means of pushing these sectoral issues in Côte d'Ivoire at this time. On their own, elections are a necessary but insufficient condition for democracy.

Finally, a tide of social tensions, protests, and violence have highlighted the unpredictability and inherent instability of the Ouattara regime. With Gbagbo standing trial at the ICC, his partisans boycotted all elections from 2011 to 2020. Ouattara's third-term bid sent the country to the cusp of another civil war, as security forces clamped down on opposition protesters, including previous allies of the incumbent. Heightened political tensions and violence dwarfed the renewal of CIE's contract in September 2020. While a national dialogue has lessened the political temperature, the return of Gbagbo to Ivorian politics and the opposition's achievement in the 2021 legislative elections have intensified political competition and uncertainty. How these new political dynamics will play out and influence politicians' policy choices, including those related to electricity, remains yet to be seen.

Chapter 9

Conclusion

Many countries in Africa turned to the Bretton Woods agencies for financial assistance because of macroeconomic and climatic crises alongside the dismal performance of power utilities during the 1980s. The World Bank and the IMF pushed a similar set of sectoral policies, including the creation of independent regulators, unbundling, privatization, and independent power production, on African countries in return for loans. Yet the implementation of these policies and in turn sectoral performance differ (MacLean et al. 2016b; Afrobarometer 2019; Gore et al. 2019). What factors shape policy choices related to the electricity sector? Why do some African countries carry out sectoral reforms more quickly than others? Why do some countries perform better than others in electricity provision? To answer these questions, I first provided a historical overview of Sub-Saharan Africa's electricity sector and documented the extent of neoliberal sectoral reforms in the region. Second, I probed bivariate relationships between often-cited external factors and electricity sector performance across Africa. The bivariate analysis suggested considerable unexplained variation, which required qualitative analysis to understand the patterns of associations. I then turned to case studies of Ghana and Côte d'Ivoire to show that differences in the dynamics of political competition offer deeper insights into variation in politicians' strategies related to the electricity sector and thus sectoral performance. In this last chapter, I revisit the dissertation's argument, highlight key findings, summarize differences and similarities in sectoral policy choices of Ghanaian and Ivorian political elites, and tease out the implications and limitations of the study.

9.1 Revisiting My Argument and Key Findings

This dissertation examines differences in African governments' policy choices related to the electricity sector and ultimately sectoral performance. It argues that political competition generates incentives for politicians to pursue a range of strategies to ensure their political survival. In this regard, politicians may use public goods and services, including electricity, as tools to mobilize political support and appease political opposition (Min 2015; Ofosu 2019; Duggan and Martinelli 2020; Harding 2020; Schettini and Terra 2020). Public goods and services can have political prominence at times of high political competition such as when electoral outcomes are uncertain or during civil wars. The political relevance of public utilities can make political elites responsive to influential political actors or popular aspirations for them and promote decisions with short-term political horizons. On the other hand, public goods and services may have little or no political salience if other issues have greater importance. Civil wars, for example, can present existential threats that overshadow public debates on public utilities. Issues other than development projects may compete for the attention of politicians and the public. What hurts political survival depends on the political context. Moreover, the logic of political self-preservation implies that policy change may not occur if it will threaten political elites' political survival. Different interests may hinder policy change through a range of strategies, including mobilization, elections and lobbying. However, policy change can occur if it receives support from powerful political actors.

Two types of evidence supported my analysis: descriptive statistics and qualitative data. The large-N study in this dissertation has five independent variables and the literature on these explanations lacks a formal theory. Achen (2002) advises researchers in this situation to avoid

multivariate analysis. I thus used descriptive statistics to explore bivariate associations between external factors and sectoral performance across Africa. The analysis revealed lots of unexplained variation, which required qualitative analysis. The case studies sought to understand the sources of differences in sectoral policy choices and ultimately sectoral performance over time. I selected Ghana and Côte d'Ivoire because, although they experienced similar macroeconomic, climatic and electricity crises and received similar sectoral policy prescriptions from the Bretton Woods institutions in return for sectoral loans during the 1980s, their implementation and outcomes have varied. Côte d'Ivoire has carried out sectoral reforms more quickly than Ghana. Sectoral performance has also diverged since the 1990s. Access, especially in rural areas, has increased faster in Ghana than Côte d'Ivoire. Electricity supply has become more reliable in Côte d'Ivoire than Ghana since the mid-1990s. In Côte d'Ivoire, tariffs, especially for businesses, reflect costs of service, but Ghana's tariffs lag behind costs of service. Drawing on diverse data sources, including field interviews, media reports, reports of government agencies, non-governmental organizations and international financial institutions, as well as secondary materials, I employed process tracing to analyze interconnections between broader socioeconomic and political developments and developments in the electricity sector to understand variation in sectoral management and thus performance.

In Chapter 3, the historical overview adds value to the dissertation by deepening understanding of the macroeconomic and climatic factors that made postcolonial development schemes in general and electricity development strategies in particular unsustainable across Africa by the 1980s. It further provides insights into the neoliberal electricity sector reforms and the extent of their implementation since the 1990s. In brief, the discussion showed that many African countries have established regulatory agencies and allowed independent power production. However, large-scale sectoral private investments have yet to happen. This contrasts with the neoliberal reforms' underlying assumption that private players will be attracted to invest massively in Africa's power utilities.

The bivariate analysis in Chapter 4 contributes to my dissertation's overall goal by displaying connections between external factors and indicators of sectoral performance and highlighting cross-national differences in the performance of Africa's electricity sector. The analysis found that there exist moderate correlations between some external factors and indicators of sectoral performance, while others have weak links and intimate strong conditional relationships. They also show that different external factors have different connections with different indicators of electricity sector performance. External factors have the strongest relationships with access and electricity reliability and the weakest associations with tariffs. The patterns of relationships suggest unexplained variation that needs qualitative analysis.

To this end, my dissertation examined variation in sectoral policy choices and then performance in Ghana and Côte d'Ivoire over time. I demonstrated in the case analysis chapters that political competition helps to explain much of the unexplained variation highlighted by the bivariate analysis. Economic slump and social discontent can contribute to the overthrow of a government, which can also affect sectoral management and performance. In Ghana, for example, a coup d'état in 1966 truncated Kwame Nkrumah's massive state investment in electricity development and stalled his electrification program. On the other hand, the neglect of state investments in public utilities and the implementation of austerity measures can jeopardize a regime's survival. For instance, the PP's removal of utility subsidies for security officers triggered a coup in 1972. In another instance, Rawlings' embrace of neoliberal macroeconomic reforms destroyed the PNDC's leftist political core during the 1980s. I suggested that the PNDC

regime failed to implement neoliberal reforms in the electricity sector and instead initiated electrification policies to not only promote socioeconomic development, but also court the support of rural residents and demobilize opposition in anticipation of future electoral victories. This means that political competition can create incentives for governments to carry out policies that benefit rural communities. It further reveals the tensions between neoliberal reforms and the economic and political imperative to provide access to public services and utilities.

This politico-economic imperative has required all governments since Ghana's return to constitutional rule in the early 1990s to perform a political balancing act. The evidence provided in Chapter 6 illustrates that political competition can have conflicting impacts on sectoral reforms and thus performance. On the one hand, the re-installation of multiparty electoral competition has resulted in significant improvements in access to electricity. Competitive elections create incentives for political elites to court voters such as rural residents with development projects, including electrification. On the other hand, rapid electrification produces knock-on effects for electricity prices and the reliability of electricity supply. Ghanaian governments keep prices artificially low to appease voters, in particular the urban middle class and the rural and urban poor. While the middle class resents high utility prices (Gyimah-Boadi and Jeffries 2000), the poor can barely afford utilities. Artificially low tariffs combine with promised but unpaid subsidies, mounting debts, and under-investments in the electricity grid and generation capacity to cause power shortages. Recurrent electricity shortages and power cuts figure prominently in campaign rhetoric and media coverage as political parties claim credit and blame each other for sectoral performance. Ruling elites also walk a tightrope between sectoral policy change and keeping sectoral jobs because antagonizing labor groups is a recipe for electoral defeat. This makes neoliberal electricity sector reforms hard to implement, as seen in the anti-privatization labor mobilization and the defeat of the NDC in 2016.

By contrast, Houphouët one-party regime invested heavily in development projects such as electrification, thanks to revenues from commodity booms and foreign aid and political stability during the 1960s and 1970s. The PDCI's liberal immigration and land policies encouraged agriculture, which increased commodity exports and thus economic growth. Immigrants politically supported Houphouët not merely to show gratitude to their patron but also to continue to exercise economic and political rights, which he granted them.

I found that, although Ivorian voters had no means of removing the PDCI from power, the intensity of political competition, in particular nonelectoral pressures, rose over time and shaped sectoral management and performance. Chapter 7 shows that the PDCI allocated development projects in favor of influential southern political and economic elites, who dominated the ruling party and the government, to the disadvantage of the largely rural north. This neglect widened the north-south development gap, leading students and elites from northern Côte d'Ivoire to protest against the PDCI during the late 1970s. In response to the mobilization, Houphouët began to reallocate development projects, including electrification, to villages in the north. But Côte d'Ivoire's debt and climatic crises stalled these projects in the 1980s. The government privatized the state-owned public utility in fulfilment of a requirement of structural adjustment loans in 1990, the same year Côte d'Ivoire held the first multiparty elections since its independence in 1960. I suggested that this privatization occurred partly because, with the agitating electricity workers co-opted and anti-privatization demonstrations repressed, the ruling PDCI faced little or no electoral threat. The occurrence of privatization in Côte d'Ivoire contrasts with Ghana, where cuts to military advantages such as electricity supplies played a role in the

1972 coup and Mahama's attempt to privatize a national electricity company contributed to his defeat in the 2016 elections.

A power struggle ensued after the death of Houphouët in 1993 and has cast a long shadow over Ivoirian politics up to date. The evidence in Chapter 8 reveals that higher profile issues such as ethnicity, civil wars, and presidential term limits, dwarfed developments in the electricity sector. Bédié's move to mobilize southern votes through a nationalist policy – Ivoirité – brought ethnicity to the front burner of Ivorian politics in 1995. Ivoirité provoked political discourses and threats of violence that overshadowed improvements in electricity supply following the start of independent power production in the same year. In addition, Bédié abandoned the PDCI's rural electrification program in the wake of Ivoirité (Botchway 2000). Ivoirité further spurred political exclusion that contributed to a coup d'état in 1999 and civil war during the 2000s.

The civil war overwhelmed the electricity sector. Chapter 8 indicates that the war's impacts on the electricity sector began to be felt in 2003. The sector's finances declined since the utility provider could neither read meters nor collect bills in rebel-held northern Côte d'Ivoire (AfDB-OECD 2004; Interview with a local journalist, Abidjan, 15 October 2019). The loss of revenues meant that the Ivorian government could hardly invest in the sector and resulted in the deterioration of the electricity infrastructure (World Bank 2020b). The war further undercut domestic demand for electricity as the economy contracted (AfDB/OECD 2004). Electricity access was affected, too. Gbagbo cut access to utilities in the rebel-controlled north to control the insurgency. Gbagbo's use of electricity to demobilize political opposition underscores the influence of political competition on sectoral management.

Several years of underinvestment in electricity and other infrastructure meant that Ouattara's work was cut out for him upon assuming the presidency. I demonstrated that, in line with the expectation that civil war can trigger realignment of political groups, the main opposition parties formed an electoral coalition led by Ouattara and defeated Gbagbo in 2010. A pro-reform coalition, the Ouattara government construed investments in the electricity infrastructure as essential to drive economic growth and reconstruct the country (Oxford Business Group 2020). It thus instituted sectoral reforms and invested massively in the electricity sector. Yet the risks of violence, such as those associated with Ouattara's third term bid and the exclusion of political opponents from the electoral roll in 2020, dominated Ivorian politics and relegated electricity and other socioeconomic issues to the background.

In short, the bivariate analysis confirms the relevance of commonly mentioned external factors for sectoral performance. It also shows that different external factors have relationships with different dimensions of sectoral performance, but leave a lot of variation unexplained. The qualitative analysis highlights how political competition influences sectoral developments, which in turn encourage political responsiveness to powerful actors and popular demands for access to cheap and reliable electricity supply. Political competition therefore provides a window on the patterns of relationships and unexplained variation that the bivariate analysis indicated.

9.2 The Politics of Electricity Policy Convergence and Divergence

What factors drive African ruling elites' strategies regarding the electricity sector and, in turn, sectoral performance? This section teases out how Ghana and Côte d'Ivoire compare on electricity sector policy choices and their outcomes. It summarizes the influence of different forms and intensity of competitive pressures, including electoral threats, civil wars, and risks of civil wars, on the adoption and implementation of (a) electrification policies, (b) power pricing

policies, and (c) privatization decisions. The uncertainty of electoral outcomes encourages Ghanaian politicians to extend electricity access to rural areas to mobilize votes and to set artificially low electricity prices to appease urban voters. Low electricity prices, coupled with unpaid subsidies and governments' failure to pay their own electricity bills, result in underinvestment in power utilities and ultimately recurrent power shortages and rationing. On the other hand, existential threats, especially contestations over Ivorian identity and citizenship and civil war, curtailed electrification programs as incumbent officials prioritized regime and national stability. Low electoral threats facilitated the privatization of the national power utility in Côte d'Ivoire, whereas intense political competition discouraged ruling elites from privatizing national power utilities in Ghana.

Electrification policies diverged during 1980-2020 owing to differences in competitive pressures. In Ghana, Rawlings' government launched the National Electrification Policy in the late 1980s and the Self-Help Electrification Project in the early 1990s. According to government officials, these policies aimed to encourage rural development, bridge the north-south development gap and discourage rural-urban migration. Nonetheless, I showed that Rawlings used the electrification initiatives to build political support for his military government and to enhance his popularity in rural areas after the introduction of multiparty elections. The government had destroyed its own leftist political core by implementing neoliberal macroeconomic reforms. In addition, it had lost support among urban residents whom the austerity measures, especially the removal of subsidies on public services such as healthcare and education and the retrenchment of public sector workers, had most adversely affected. Table 6.1 shows that Rawlings lacked political support in many urban centers (see pages 109-110). With domestic pressure groups, the World Bank, and other western donors pushing Rawlings' military regime to restore multiparty democracy in the late 1980s, it headed for rural areas to mobilize political support by providing electricity and other infrastructure. This move paid off, given that Rawlings' party (National Democratic Congress) received massive electoral support in rural areas, while the majority of votes in urban centers went to the opposition New Patriotic Party (see pages 109-110 and Table 6.1). Electoral incentives have driven rural electrification since the installation of multiparty democracy in 1992 because of the uncertainty of electoral outcomes in a two-party and winner-takes-all electoral system. Table 6.2 (see page 115) presents presidential election results from 1992 to 2020. It reveals that elections are close in Ghana, with opposition parties not merely forcing ruling parties into second-round elections (2000 and 2008), but also defeating them. In one instance (2008), just 0.46% tipped the balance in favor of the opposition NDC. When elections are intensely competitive, many things can have political relevance. Electricity access is one of them. So, as electoral competition has intensified, rural electrification has also accelerated. Ghanaian politicians have incentives to provide access to electricity to build electoral support in rural areas.

On the other hand, electrification policies reflected different competitive pressures in Côte d'Ivoire. Existential threats influenced policy measures intended to extend electricity access during the 1990s and 2000s. Konan Bédié's PDCI failed to implement its rural electrification program as political contestations over Ivorian national identity and citizenship threatened the stability of the nation and pushed economic programs, including electrification, to the backburner. The identity crisis escalated into civil war when rebels took control of the north and attempted to capture the commercial capital, Abidjan, blaming discrimination and political exclusion. The civil war devastated sectoral finances and slowed rural electrification. Moreover, Laurent Gbagbo's government cut access to electricity in the north to contain the civil war.

Consistent with Olson's argument, political coalitions realigned in the aftermath of the war. The post-war government has introduced a suite of electrification policies (e.g., the Rural Electrification Program and the Electricity for All Program) to extend access to rural areas and low-income households, and to increase electricity generation capacity. The postwar economic imperative of rebuilding drove these initiatives. Besides, the electrification policies enhance Ouattara's and his party's political appeal in a fragile post-war environment by serving previously excluded groups such as northern communities and northern migrants in the south – the stronghold of the incumbent party.

Ghana and Côte d'Ivoire have similarities and differences in electricity pricing policy. The Ghanaian and Ivoirian states had responsibility to set electricity prices during the first three decades after independence. President Kwame Nkrumah of Ghana and President Félix Houphouët-Boigny of Côte d'Ivoire aimed to use access to electricity at low prices to promote industrialization and reduce poverty. This has created popular expectations for low electricity tariffs. In other words, it has become a norm that providing access to cheap and reliable electricity is a government responsibility. Electricity tariff increases thus generate popular discontents. World Bank and IMF loan conditionalities during the 1980s and 1990s included the creation of an independent regulator to set cost-recovery electricity tariffs. However, a careful examination shows an institutional difference between regulatory agencies in Côte d'Ivoire and Ghana. The Ivoirian government retained the authority to set tariffs to avoid popular backlash against expensive electricity prices. The electricity regulator merely advises the government on tariffs. By contrast, the Ghanaian government transferred the responsibility to set tariffs to an independent utilities regulator to reduce political influence on electricity pricing. Not only did this action fulfil a World Bank loan conditionality, but it also sought to resolve nationwide protests against tariff increases. Such protests have the potential to hurt a government's popularity and threaten political stability.

Yet a close inspection of electricity pricing policies in the two countries reveals a convergence, with different forms of competitive pressures leading to tariff increase reversals. In Ghana, when the utilities regulator introduced an automatic pricing mechanism for electricity in the mid-2000s, the government canceled and never executed it because the policy increased electricity tariffs. Governments further succumbed to pressure groups' demands for low electricity prices by reversing tariff hikes. In the context of competitive elections, ruling elites have incentives to appease swing voters, and electricity tariffs feature prominently in electoral campaigns. Ruling parties invite voters to reward them for providing access to inexpensive electricity, while opposition parties mobilize voters against pricier electricity tariffs.

Electricity tariffs are political hot potatoes in Côte d'Ivoire, too. The Ouattara government overturned tariff increases aimed to invest in electricity installations. Electricity prices have not become a key electoral issue in the country, but pressures from businesses and violent protests in major cities contributed to the policy reversal. The government had incentives to de-escalate violence and maintain political stability because the risk of violent protests escalating into full-scale armed conflicts remained high in a precarious post-war context. In short, the political sensitivity of electricity tariffs in the two countries means that electricity prices must mollify powerful constituencies, especially middle-class groups, businesses, and urban residents, to prevent popular discontents.

Politically motivated tariffs combined with macroeconomic problems to drive recurrent power shortages and rationing in Ghana during 1990-2019. Power utilities had difficulty in getting enough funds from artificially low electricity tariffs. Successive governments failed to

pay promised subsidies, and when they did pay, the subsidies were inadequate to cover the costs of service. Besides, public agencies failed to pay their electricity bills. As a result, power utilities suffered from enormous debts. Macroeconomic problems worsened power utilities' financial challenges. The depreciation of the local currency (the cedi) contributed to inflation and exchange-rate losses because power utilities imported most inputs, especially oil and gas and spare parts, priced in US dollars. The depreciation of the cedi meant revenue losses for power utilities. With electoral competition encouraging ruling elites to hold down electricity prices in the face of mounting debts, high rates of inflation, and depreciation of the local currency, power utilities could not undertake the required investments in electricity infrastructure and provide services to meet growing demand that resulted partly from rapid electrification.

In contrast, Côte d'Ivoire experienced fewer power shortages partly because contestations over national identity and citizenship and civil wars slowed electrification and reduced electricity consumption. Additionally, by requiring independent power producers to use domestic natural gas to produce electricity, Côte d'Ivoire insulated the electricity sector from global oil price volatilities. What is more, Côte d'Ivoire has a stable currency (the CFA franc) that has contributed to low and steady inflation. Fourteen French-speaking West and Central African countries use the CFA franc, which is backed by the French treasury, and pegged to the Euro. The CFA franc thus helps Côte d'Ivoire to avoid currency depreciation and exchange-rate losses.

Last, Ghana and Côte d'Ivoire diverged on privatization decisions due to differences in the forms and intensity of political competition. The Ghanaian government failed to privatize state-owned power utilities, despite the World Bank's push for neoliberal electricity sector reforms in the 1980s. The government sought to use electricity (and other infrastructure like roads, hospitals, and schools) to court political support in rural areas because, as discussed previously, (1) the implementation of macroeconomic reforms and austerity measures had shattered its leftist support base, (2) it lacked support among urban middle-class groups, and (3) it faced domestic and international pressures to install multiparty democracy. It hoped that a rural support base would enhance its chances of future electoral success. No Ghanaian government privatized the state-owned power utilities during the 1990s and 2000s. When government officials attempted to privatize the national distributor in 2016, electricity workers and civil society groups resisted the move. The government paid attention to these groups because of multiple reasons. The number of electricity workers is electorally relevant in close elections. The Public Utilities Workers Union (PUWU) had 8,850 (PUWU 2020) members and belonged to the Ghana Trades Union Congress (TUC), the umbrella labor organization in Ghana. The PUWU benefitted from the TUC's solidarity principle, which means that the entire TUC opposes a policy that adversely affects a member union. The TUC thus opposed the privatization of the national electricity distributor, and the electricity workers could leverage on TUC's numbers. Moreover, civil society groups supported the anti-privatization campaign of the electricity workers. As if that was not enough, the opposition NPP campaigned against the privatization and met with the TUC ahead of the 2016 elections. These moves were gambits to obtain political support from not just a 'small' number of protesting electricity workers, but also their dependents, sympathizers, the umbrella labor union, and civil society groups. Finally, the privatization of a national power utility might produce gains such as a reliable power supply in the long term, but it can generate adverse effects, especially expensive prices and dismissals of electricity workers, in the short term. The short-term negative consequences can make the government unpopular. In the context of electoral uncertainty, ruling elites balk at decisions that they deem to be politically costly, especially in election years.

As compared to Ghana, Côte d'Ivoire privatized its national power utility in fulfilment of World Bank loan requirements in 1990 – the same year it held the first multiparty elections since independence. The PDCI government faced fewer challengers capable of removing it from office. Opposition parties had no chance of winning the elections because they had a short time to build organizational structures and rally supporters across the country. The PDCI further repressed anti-adjustment demonstrations led by the socialist opposition coalition. Finally, it co-opted electricity workers by guaranteeing their jobs and conditions of service.

In sum, the forms and intensity of political competition vary across regimes in Ghana and Côte d'Ivoire over time. Different competitive pressures such as electoral uncertainty, civil wars, and the risk of civil war play a significant role in the differences and similarities in the management of the electricity sector and, ultimately, sectoral performance in the two countries.

9.3 Implications and Future Directions

This study used historical and current materials to unravel two related puzzles in the politics of development, namely, why some countries may adopt policy change in their electricity sector more quickly than others and why sectoral performance differs across countries. My findings have theoretical and empirical implications.

At the theoretical level, my study confirms a claim in the political economy literature that political competition plays a critical role in political elites' choice of policy strategies and their (in)effectiveness (e.g., Acemoglu and Robinson 2006a; Acemoglu et al. 2014, Persico et al. 2011; Rosenzweig 2015; Harding 2020). According to this literature, domestic political pressures can generate incentives for political elites to pay attention to the provision of public services and utilities. My findings show that political survival is a key consideration of political elites and the need to preserve governing coalitions, demobilize political opposition and win elections drive the strategies they choose and their outcomes.

Empirically, this study has an important implication for development strategies in developing countries. Neoliberal policy prescriptions suggest that state interventions have failed. Yet my findings imply that state-led development is a double-edged sword and more complex than neoliberal approaches assert. On the one hand, as the narratives in this dissertation show, state interventions can help to deliver better public good outcomes. Houphouët in Côte d'Ivoire during the 1960s and 1970s, Ghanaian political authorities since the 1980s, and Ouattara in postwar Côte d'Ivoire have all used state interventions to increase access to electricity. On the other hand, political competition can encourage politicians to use state interventions in ways that compromise the quality of public services and utilities provision. This study shows that political elites' manipulation of electricity prices to increase their popularity and their failure to pay subsidies and invest in the electricity grid lead to recurrent power shortages and electricity rationing. These nuances imply that policy deliberations should avoid the state-market divide and instead prioritize how the two can partner to foster development in Africa. A partnership that leverages the strengths of both worlds and minimizes their weaknesses can alleviate low access to reliable and affordable electricity, a phenomenon that throttles Africa's quest for economic expansion and human development.

My dissertation also reminds us of the complexity of development strategies, policymaking and implementation in terms of the constraints multiple social and political actors with competing interests and preferences place on governments. Electors, labor unions and other civil society organizations, industrial and commercial consumers, residential users, political parties, factions, coalition partners, subgroups within political coalitions, and party financiers

and the formal and informal strategies they employ to shape development strategies are all politically relevant. As the case studies in this dissertation show, policymakers must pay attention to these players' preferences to obtain or consolidate their political support. Political elites who disregard them risk political self-electrocution. This means that politicians, bilateral and multilateral donors investing billions of dollars in electrification projects in Africa (Power Africa 2019), academics, and practitioners, among others, need to understand varieties of social manifestation of power and the ways they shape policies and development strategies in developing countries.

Merilee Grindle (2004, 2011), Brian Levy (2014) and many others argued that, to succeed, institutional reforms must reflect a country's domestic circumstances. Some reform strategies can occur in some contexts but not in others and work better in some milieus than others. My study's findings reinforce the need for context-specific reforms because of differences in the dynamics of domestic political pressures. The Ghanaian and Ivorian experiences with neoliberal electricity sector reforms illustrate that the privatization of state-owned electricity companies may be more feasible in some contexts than others. Furthermore, they reveal that IPPs work better in reducing the frequency and duration of power cuts in some countries than others. This observation questions the continued emphasis on the execution of the standard reform package in the electricity sector or any standard policy. Focus should shift toward what works best, given a country's contextual realities.

Besides, my study has shown that political competition involves different actors in different countries and takes different forms under different regimes. While the form and manifestation of political competition may vary depending on the nature of regime, contestation occurs even in one-party systems and military regimes and is not limited to multiparty electoral systems. The case studies have revealed that even authoritarian one-party states and military governments respond to nonelectoral threats and mobilize political support by investing in development projects, including electrification.

Further research is needed regarding the implications of the dynamics of political competition presented in this dissertation. My study described multiple manifestations of domestic political pressures under different regimes – military dictatorships, authoritarian one-party systems, and electoral democracies. More research should assess the generalizability of the dynamics of political competition under these regime types and to identify and examine conditions that might mediate the connections between domestic political pressures and political responsiveness in other countries.

Similarly, comparative studies should tease out whether the dynamics identified in my dissertation hold for other policy domains in Africa. The complexity of political competition intimates that political dynamics might vary across policy domains based on the specific configuration of interests in a given policy area. Each policy domain may involve a unique arrangement of political actors and stakeholders with varied interests, resources, strategies, group size, and policy positions. Moreover, the nature of political dynamics may depend on the distribution of political authority within government agencies in a policy domain. Differences in the power of beneficiaries or losers of a policy might additionally influence the nature of political dynamics.

Given the current debates on energy transition around the world, it would be interesting to study the implications of political competition for the decarbonization of the electricity grid in Africa. I expect intense political competition to play out in this arena because the force behind the push toward net-zero carbon emissions is a global dynamic and the changes decarbonization

promises may affect every aspect of social life. I anticipate that some governments may push back because fossil fuels are major sources of revenues on which they depend to grow their economies (Harvey 2022a; Maclean and Searcey 2022). Besides, some developing countries continue to discover large quantities of fossil fuels, which they may prefer to exploit (Kambou 2021; Al Jazeera 2022). Decarbonization can deprive these countries of revenues for infrastructure investment and poverty reduction programs but also fuels for electricity generation. This can undercut citizens' demand for goods and services, including electricity, and exacerbate energy inequity and insecurity in Africa. I expect workers who may be retrenched to resist the push to decarbonize, as public servants facing dismissals and redeployment did during the implementation of Structural Adjustment Programs in the 1980s and 1990s. Businesses that may lose profits or go under might oppose decarbonization.

By contrast, I expect local, national and international pressures for decarbonization because the harms of failing to decarbonize such as increases in the incidence and severity of extreme weather events (e.g., droughts, heat waves and floods), loss of lives and livelihoods and destruction of energy sources are predicted to hit Africa hard (Serdeczny et al. 2017; AfDB 2022; Harvey 2022a). As the impacts of climate change endanger human life and threaten agriculture in communities already vulnerable to food insecurity and where most people depend on the agriculture sector for employment, domestic and international pressures may mount on African governments to mitigate climate change and its harms by accelerating the transition away from fossil fossils (Harvey and Taylor 2022; Ngila 2022; Shikanda 2022).

There is strong interest in mitigation but also a strong justice-based argument for insisting that wealthy countries bear more of the costs of this energy transition and climate change related losses in part because they emit the highest global greenhouse gas that drives climate change (Bearak et al. 2022; Citi Newsroom 2022; Singh 2022). Some analysts maintain that Africa produces an insignificant amount of greenhouse gas and should pay less for decarbonization (Citi Newsroom 2022). It is unjust for developed countries to advise Africa to cut down fossil fuel production, whereas they continue to produce more greenhouse gas and offer little financial assistance to develop renewable energy on the continent (Harvey 2022b; Bearak et al. 2022). In addition, some political leaders and activists in Africa have questioned why western countries that developed their economies on the back of fossil fuels ask poor African countries to refrain from exploiting their fossil fuels (Bearak et al. 2022; Maclean and Searcey 2022). According to them, Africa has the right to use its natural resources, especially natural gas, to improve its citizens' living standards and access to basic amenities such as electricity (Bearak et al. 2022).

Notwithstanding these contributions and implications, my study faced data problems. Ideally, I would have preferred to do a multivariate analysis of the connections between external factors and sectoral performance. However, missing data and the lack of any formal theory about relations among commonly mentioned external variables made bivariate analysis more prudent. One next step would be for someone to obtain better data and develop better measures to do a multivariate analysis that shows the effects of external factors on sectoral performance across Africa. Finally, the relatively short time for fieldwork in Ghana (10 weeks) and Côte d'Ivoire (8 weeks) impacted data collection (see Chapter 2). It limited my access to politicians and energy bureaucrats as well as possibilities for understanding diverse social responses to sectoral performance. The value of additional time would have helped me to develop more personal connections to aid data collection.

Appendix 1

Operationalization, Indicators, and Data Sources for Statistical Analysis

Some studies stress the role of external factors in electricity sector performance in Africa (e.g., Williams and Ghanadan 2006; Eberhard et al. 2016). These external factors include energy-resource endowments, economic shocks, investment climate, droughts, and civil wars. My research explores the correlations between external factors and sectoral performance to understand the drivers of variation. In this appendix, I define each external factor and describe indicators and data sources for the statistical analysis.

In general, *natural resource endowments* mean the quantity of nature's gift of resources in a country. Natural resources can be renewables (e.g., water, fish, sunlight, and wind) or non-renewables (e.g., fossil fuels, gold, bauxite, coltan, and diamond) and they often constitute commodities. Following Gosens (2017, 1007), my study focuses on natural resources relevant for energy generation. I have in mind mainly fossil fuels – oil, natural gas, and coal – and hydro. Natural resource abundance has different indicators. Some researchers rely on proven reserves (e.g., Stijns 2005; Ndikumana and Abderrahim 2010), whereas others use primary commodity exports to indicate natural resource endowments (e.g., Miguel et al. 2004; Collier et al. 2009). Nonetheless, given my interest in fossil fuels, I operationalize a country's natural resource riches by analyzing fuel exports (% of total merchandise exports) as reported in the World Bank's World Development Indicators. According to the World Bank (2022), fuel exports consist of fossil fuels and related resources.[85] A country's fuel exports can thus reflect its fossil fuel endowments. I changed the operationalization by using hydro capacity (billion kW) as an indicator of natural resource endowments. Hydro capacity reveals a country's hydro resource endowment. The Energy Information Administration database provides data on hydro capacity.

Economic shocks describe unexpected events that have significant implications for economic performance. Instances of economic shocks include financial crises and global price volatility involving sharp rises or declines in the prices of oil and gas and major non-fuel imports or exports. Social science literature has no agreed upon indicator for economic shocks. Some studies use fluctuations in global prices of oil and changes in rainfall and temperature to measure economic shocks (e.g., Kim 2016). Others employ changes in gross domestic product (GDP) growth (e.g., McKenzie et al. 2014; Olanipekun and Saka 2019) and changes in GDP per capita growth rates (e.g., Maddison 2003) to measure economic shocks, which can fuel or dampen economic growth. In addition, fluctuations in the prices of export commodities may indicate economic shocks (e.g., Bazzi and Blattman 2014). My study measures economic shock by changes in GDP per capita growth (yearly %). This indicator accounts for not only fluctuations in economic growth but also differences in population size. I used changes in GDP per capita growth because, as a broad indicator, it reflects the contributions of several sectors, including but not limited to commodity exports, to economic performance (see e.g., IMF 2012). Changes in GDP per capita can thus capture many forms of economic shocks, such as financial crises and volatilities in global commodity prices, which may in turn affect investments in and demand for electricity. The World Bank's World Development Indicators offer data on this indicator. I considered an increase or decrease of at least 2 (+2/-2) in a country's annual GDP per capita growth rate as a shock. One (1) signifies positive shock years, -1 indicates negative shock years and 0 means non-shock years.

[85] See also the United Nations Conference on Trade and Development (2021).

A country's *investment climate* refers to its political and economic conditions and their effects for businesses and then growth. In the electricity literature, some scholars employ credit ratings as proxies for investment climate (e.g., Eberhard et al. 2017). Private lenders and investors rely on major rating agencies such as Moody's in making investment decisions globally. Credit ratings help investors to understand whether governments will fulfil their financial obligations to them. In the electricity sector, information about credit risks is relevant to investors because of the widely known problem of African governments failing to pay their own electricity bills or fulfil their financial commitments to electricity companies. For this reason, my study uses Moody's credit rating, which represents a country's creditworthiness, as an indicator of investment climate. I accessed these data for the last two decades through Moody's website and from Moody's Analytic Client Service.[86] I further varied the operationalization by using the ease of doing business scores to represent investment climate. The World Bank Ease of Doing Business database provides data on the scores.

Droughts refer to "insufficient water to meet needs" (Redmond 2002, 1144; Bhaga et al. 2020, 5). The amount of rainfall that is (in)sufficient to meet hydropower production is determined by the minimum operating water level (in meters or feet) required by a dam in a given country and it is measured by volume of rain (mm). Unfortunately, however, these data are not readily available. Therefore, I identified countries that have hydro-electricity installations by means of the share of hydro in their generation mix, as reported in the United States Energy Information Administration (US EIA) database. Bhaga et al. (2020) provide data on drought years in Africa since the 1900s.

A number of studies define *civil war* as at least 1000 combat-related deaths in a year (e.g., Small and Singer 1982; Bazzi and Blattman 2014, 9). In contrast, the Peace Research Institute, Oslo and the Uppsala Conflict Data Program (PRIO/UCDP) define civil war as an armed conflict between at least two domestic groups resulting in a minimum fatality of 25 annually (Gleditsch et al. 2002, 617-619).[87] The strength of this widely cited definition lies in the threshold of 25 combat-related deaths in a year. This minimum threshold allows the PRIO/UCPD to include small-scale civil wars in which at least 25 people die, while at the same time counting large-scale civil wars defined by 1000 or more fatalities in a year (Miguel et al. 2004). My study employs the PRIO/UCPD's definition and data to identify African countries that have experienced civil wars. These data enable me to account for small-scale and large-scale civil wars with implications for electricity infrastructure and service provision.

Electricity sector performance has three dimensions: access rates, reliability, and prices. The International Energy Agency (2017, 21; see also World Bank 2021a) defines access as a household having electricity that is sufficient to power "a basic bundle of energy services," including at least lightbulbs, phone charging, and a radio. This study uses the International Energy Agency's definition of access and adopts the conventional measures of access rates of the World Bank and the International Energy Agency. These measures consist of the percentage of population – national, urban, and rural populations – with access to electricity (World Bank 2021a). According to Blimpo and Cosgrove-Davies (2019, 90), reliability refers "to access to electricity that is stable, without fluctuations in voltage, always available, and capable of supporting appliance usage subject to the voltage capacity of the grid line." This means that Blimpo and Cosgrove-Davies (2019) equate power reliability to the absence of outages and brownouts. My study departs from this understanding of reliability because electricity cannot

[86] I obtained data not available on Moody's website from Moody's Analytic Client Service via email.
[87] Gleditsch et al. (2002) detailed the criteria for identifying a civil war by the PRIO/UCPD.

always be available. Instead, I define electricity supply as reliable if power disruptions last seven hours or less in a year (Gratwick and Eberhard 2008b). Put differently, electricity is unreliable if outages cross this threshold. This is consistent with the international security benchmark of seven hours of outages per year (Gratwick and Eberhard 2008b, 3950). I count the duration (in hours) and the number of electrical outages. Following the World Bank (2021e) and other international institutions, I measure the cost of electricity production and consumer prices in American cents per kilowatt-hour. The indicators of sectoral performance are standardized and allow for comparison across nations. The international agencies' websites provide these data.

Appendix 2

Re-evaluated Specifications

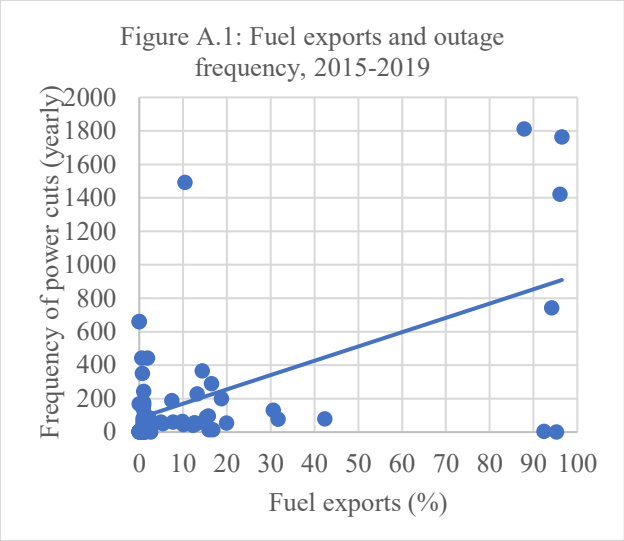
Appendix 2 checks robustness for relationships between yearly fuel exports and sectoral performance on the one hand and investment climate and sectoral performance on the other hand by excluding outliers found in the original analyses (Chapter 4). I organized this appendix in two sections. Section A2.1 examines whether outliers affect the association between fuel exports and outage frequency. Section A2.2 re-analyzes the correlations between investment climate and indicators of electricity reliability (i.e., outage frequency and outage duration).

Section A2.1

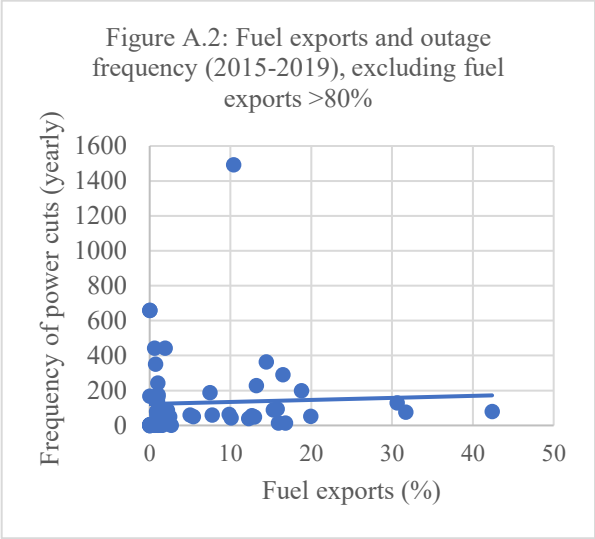
The bivariate analysis for annual fuel exports and blackout frequency in Section 4.2 of Chapter 4 showed outliers (see Figure 4.2, reproduced here as Figure A.1). While fuel accounted for less than 50% of total merchandise exports in most countries between 2015 and 2019, it constituted more than 80% of total merchandise exports in six country-years – Nigeria during 2015-2018 and Angola in 2018-2019. In addition, four data points indicated more than 1420 power cuts occurred per year, compared to less than 743 power outages annually for the rest of the samples. These four country years are Kenya in 2015 and Nigeria during 2015-2017. To determine whether these outliers influenced the relationship found in the original analysis, I conducted three sensitivity analyses by dropping (1) all 6 outliers based on fuel exports, (2) all 4 outliers based on outages, and (3) all seven outliers on both dimensions.

Figures A.2, A.3 and A.4 depict the results for the re-analyses. When eliminating the six fuel-export outliers, the strength and the statistical significance of the connection between annual fuel exports (%) and outage frequency decreased (from r_s=0.33, n=68, p-value=0.007 to r_s=0.27, n=62, p<0.04). Without the four outage outliers, the relationship changed from moderate positive and statistically significant (r_s=0.33, n=68, p-value=0.007) to weak positive and statistically insignificant (r_s=0.22, n=64, p<0.08). The strength and the statistical significance of the association found in the original analysis (r_s=0.33, n=68, p-value=0.007) decreased when I excluded all the seven outliers on both variables (r_s=0.25, n=61, p-value=0.05).

The results for the re-analyses suggest that the outliers influenced the correlation between fuel exports and outage frequency. In all cases, the relationship weakened, and in the case of the four outage outliers, the relationship proved to be the least robust as it changed from statistically significant to statistically insignificant.

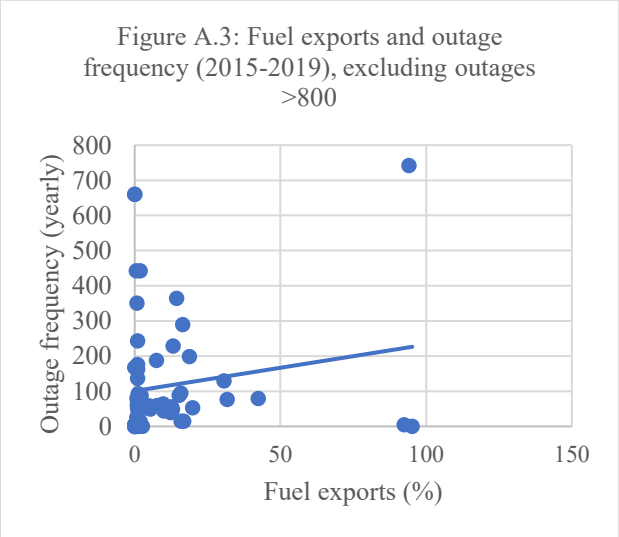


N=68 rho=0.33 t-stat=2.79 p-value=0.007

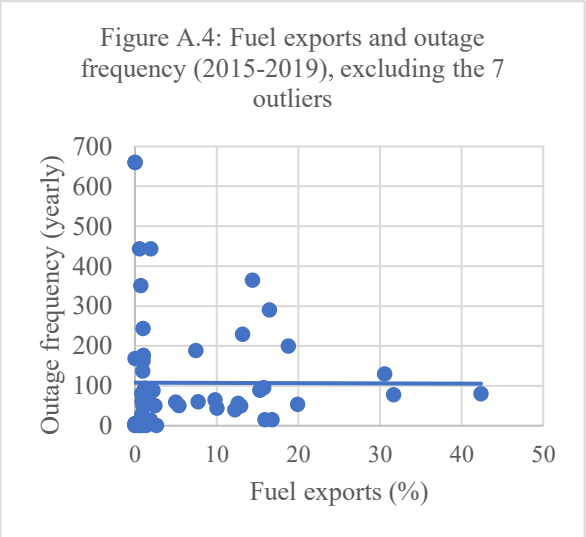


N=62 rho=0.27 t-stat=2.16 p-value=0.04

Results for the original analysis in Chapter 4 (Section 4.2)



N=64 rho=0.22 t-stat=1.77 p-value=0.08



N=61 rho=0.25 t-stat=1.99 p-value=0.05

Section A2.2

This section re-evaluates the associations between credit ratings and indicators of electricity reliability to find out the influence of outliers indicated by the original assessments. In Section 4.4 of Chapter 4, the analysis of relationships between credit ratings and sectoral performance considered two sampling strategies. One sampling strategy included all countries with data on credit ratings and power cuts and the other included only countries with private investments in the electricity sector. While outliers were only an issue for one indicator of electricity reliability when analyzing relationships with the share of fuel in merchandise exports, the original analyses showed outliers for two indicators of power reliability in the sample of countries for which I had data on credit ratings. Therefore, this section looks at both indicators of reliability – outage frequency and outage duration.

Figure 4.23, replicated here as Figure A.5, shows the scatterplot for the original analysis for the relationship between credit ratings and annual outage frequency, with outliers on outage frequency (rho=-0.41, n=51, p-value=0.003). Whereas five country years – 2015-2018 (Nigeria) and 2019 (Niger) – had power cuts ranging between 168 and 304, less than 60 power outages occurred yearly in the remainder of the sample. Reanalysis without those outliers found that rho increased and the probability value declined marginally (rho=-0.45, n=46, p-value=0.002, see Figure A.6). This indicates that the relationship is sensitive to the inclusion of outliers.

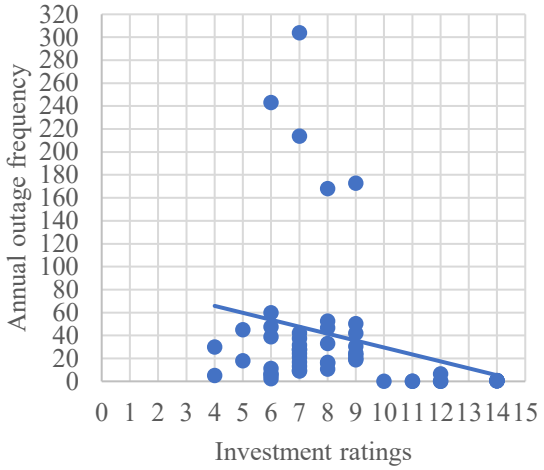
In Figure A.7 (originally Figure 4.24 in Chapter 4), we can see that outliers remain an issue even when limiting the sample to countries with sectoral private investment. Four country years, representing Nigeria during 2015-2018, had more than 168 power cuts, compared to less than 60 power cuts in most country years. Figure A.8 shows the results for the sensitivity analysis. The findings intimate a slightly stronger relationship and an increased statistical significance for investment climate and outage frequency for African countries with sectoral private investments (rho=-0.47, n=43, p-value=0.001, compared to rho=-0.42, n=47, p-value=0.003 for the original analysis). This means that the correlation remains robust with changes to the sample.

Outliers also appeared in the original analyses of the relationships between credit ratings and outage duration in African countries for which I have data on these indicators (Figure 4.25, replicated here as Figure A.9). Figure A.9 reveals five country years with more than 740 hours of power cuts during 2015-2019. These country years comprise 2015 in Kenya and 2015-2018 in Nigeria. On the other hand, power outages lasted less than 200 hours in the rest of the sample. With the outliers dropped, the association between credit ratings and outage duration for African countries with data on credit ratings and outages changed from moderate negative and statistically significant (rho=-0.48, n=51, p-value<0.001, Figure A.9) to strong negative and statistically significant (rho=-0.56, n=46, p-value<0.001, Figure A.10). This implies that the outliers weakened the relationship found in the original analysis, but the relationship is robust to the exclusion of the outliers.

Last, the analysis for African countries with sectoral private investments indicated the same outliers shown in Figure A.9 (see Figure 4.26, recreated here as Figure A. 11). Eliminating the outliers, the re-analysis shows a strong negative correlation between investment climate and the duration of power cuts (rho=-0.58, n=43, p-value<0.001, Figure A.12), compared to the moderate negative and statistically significant link found for the original analysis (rho=-0.49, n=48, p-value<0.001, Figure A. 11). The results signify a strengthened correlation.

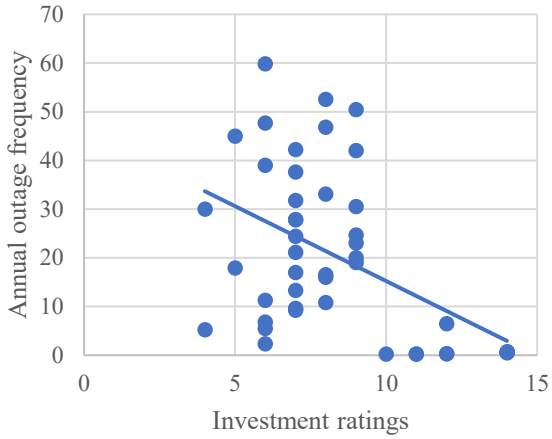
These findings imply that power cuts might occur more frequently and last longer in countries with low credit ratings. Power reliability tends to improve with improvements in investment climate in Africa. In short, these results reinforce the findings for the original analysis.

Figure A.5: Investment ratings and outage frequency, 2015-2019



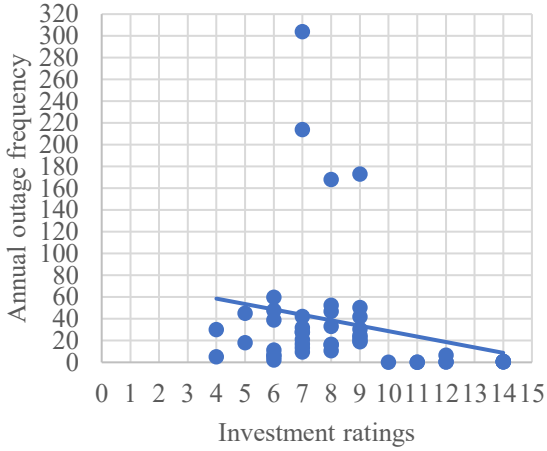
N=51 rho=-0.41 t-stat=-3.18 p-value=0.003
Results for the original analysis in Chapter 4 (Section 4.4)

Figure A.6: Investment ratings and outage frequency (2015-2019), excluding outliers in Figure A.5



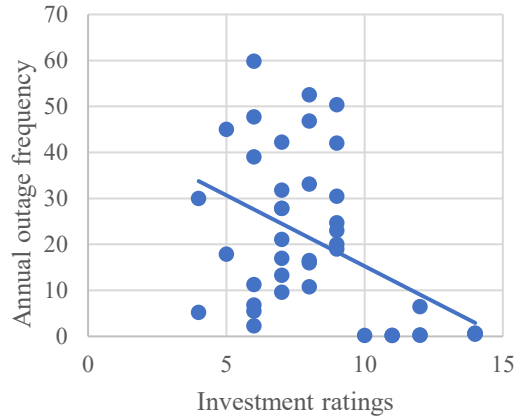
N=46 rho=-0.45 t-stat=-3.32 p-value=0.002

Figure A.7: Investment ratings and outage frequency in African countries with sectoral private investments, 2015-2019



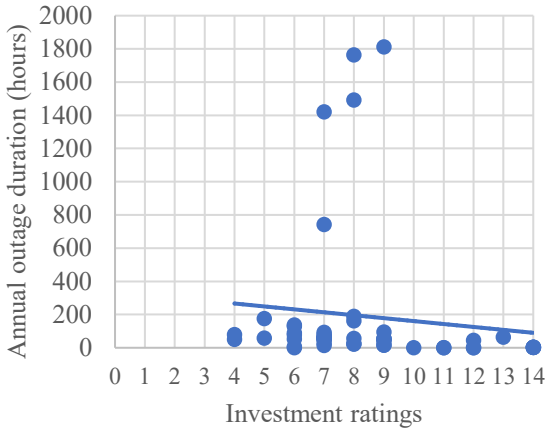
N=47 rho=-0.42 t-stat=-3.09 p-value=0.003
Results for the original analysis in Chapter 4 (Section 4.4)

Figure A.8: Investment ratings and outage frequency in African countries with sectoral investments (2015-2019), excluding outliers in Figure A.7



N=43 rho=-0.47 t-stat=-3.41 p-value=0.001

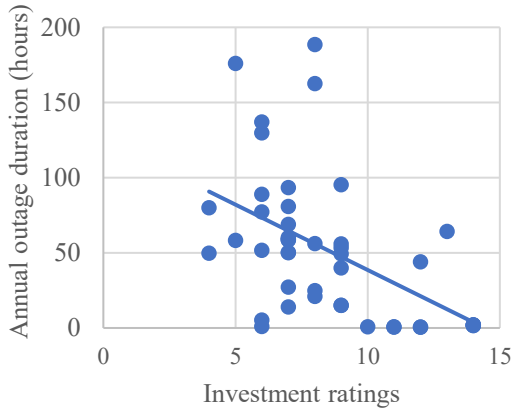
Figure A.9: Investment ratings and outage duration, 2015-2019



N=51 rho=-0.48 t-stat=-3.81 p-value<0.001

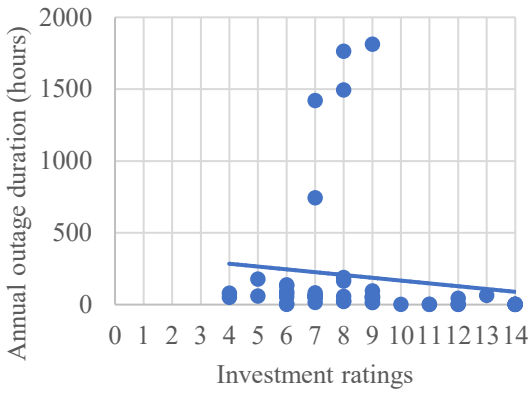
Results for the original analysis in Chapter 4 (Section 4.4)

Figure A.10: Investment ratings and outage duration (2015-2019), excluding outliers in Figure A.9



N=46 rho=-0.56 t-stat=-4.52 p-value<0.001

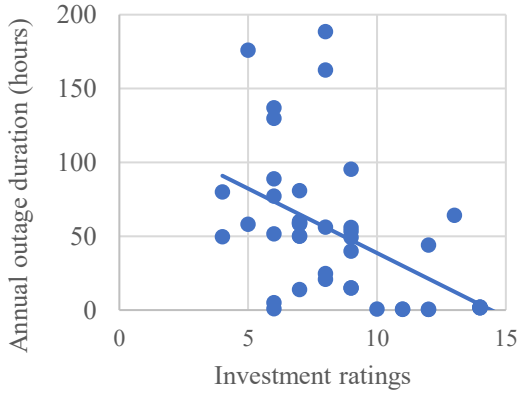
Figure A.11: Investment ratings and outage duration in African countries with sectoral private investments, 2015-2019



N=48 rho=-0.49 t-stat=-3.81 p-value<0.001

Results for the original analysis in Chapter 4 (Section 4.4)

Figure A.12: Investment ratings and outage duration in African countries with sectoral private investments (2015-2019), excluding outliers in Figure A.11



N=43 rho=-0.58 t-stat=-4.50 p-value<0.001

Appendix 3

Coding for Any Year Within 10 Years

In Section 4.6 of Chapter 4, I explored whether there is a link between civil wars that occurred in any year within a 10-year period and indicators of electricity sector performance. I expressed this model as:

> $P_t = C_{(t, t-1, \ldots, t-9)}$ Performance in year t is influenced by civil war in any year from year t through t – minus 9 (i.e., that year or any year within 10 years)

This appendix shows the coding process for a civil war in any year within 10 years, defined in a logical equation as (t, t-1, …, t-9). If a civil war occurred in any year within the set (t, t-1, …, t- 9), the variable civil war within the past 10 years is coded as 1; 0 represents the absence of civil war within this 10-year period. For countries such as Ghana that have never experienced civil war, the variable for civil war within the past 10 years is coded 0 for all years. As examples to illustrate the coding process, I have included Côte d'Ivoire, Burkina Faso, and Zimbabwe in Table A3.1. Table A3.1 presents the years within the set (t, t-1, …, t-9) for a series of years t, the value for the civil war variable $C_{(t, t-1, \ldots, t-9)}$, and the rationale for the coding for each year during 1981-2019. Côte d'Ivoire is one of my case studies and experienced civil wars during the 2000s and early 2010s. The inclusion of Burkina Faso and Zimbabwe highlights how civil wars in 1985 and 1987 in Burkina Faso result in coding of 1 for civil war within the last few years for some years in the period under consideration (1990-2019), but civil war that ended in 1980 in Zimbabwe does not.

Table A3.1: Sample of coding for Sub-Saharan African civil wars, 1981-2019

Country	**t for P_t**	**(t, t-1, …, t-9)**	**$C_{(t, t-1, \ldots, t-9)}$ (1 = civil war, 0 = no civil war)**	**Rationale**
Côte d'Ivoire	2019	2019, 2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011, 2010	1	Civil war in 2011
Côte d'Ivoire	2018	2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011, 2010, 2009	1	Civil war in 2011
Côte d'Ivoire	2017	2017, 2016, 2015, 2014, 2013, 2012, 2011, 2010, 2009, 2008	1	Civil war in 2011
Côte d'Ivoire	2016	2016, 2015, 2014, 2013, 2012, 2011, 2010, 2009, 2008, 2007	1	Civil war in 2011
Côte d'Ivoire	2015	2015, 2014, 2013, 2012, 2011, 2010, 2009, 2008, 2007, 2006	1	Civil war in 2011
Côte d'Ivoire	2014	2014, 2013, 2012, 2011, 2010, 2009, 2008, 2007, 2006, 2005	1	Civil war in 2004 and 2011
Côte d'Ivoire	2013	2013, 2012, 2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004	1	Civil war in 2004 and 2011
Côte d'Ivoire	2012	2012, 2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003	1	Civil war in 2003 - 2004 and 2011
Côte d'Ivoire	2011	2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003, 2002	1	Civil war in 2002 - 2004 and 2011
Côte d'Ivoire	2010	2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001	1	Civil war in 2002 - 2004
Côte d'Ivoire	2009	2009, 2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001, 2000	1	Civil war in 2002 - 2004

Table A3.1: Sample of coding for Sub-Saharan African civil wars, 1981-2019 (continued)

Country	t for P_t	(t, t-1, …, t-9)	$C_{(t, t-1, ..., t-9)}$ (1 = civil war, 0 = no civil war)	Rationale
Côte d'Ivoire	2008	2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001, 2000, 1999	1	Civil war in 2002 - 2004
Côte d'Ivoire	2007	2007, 2006, 2005, 2004, 2003, 2002, 2001, 2000, 1999, 1998	1	Civil war in 2002 - 2004
Côte d'Ivoire	2006	2006, 2005, 2004, 2003, 2002, 2001, 2000, 1999, 1998, 1997	1	Civil war in 2002 - 2004
Côte d'Ivoire	2005	2005, 2004, 2003, 2002, 2001, 2000, 1999, 1998, 1997, 1996	1	Civil war in 2002 - 2004
Côte d'Ivoire	2004	2004, 2003, 2002, 2001, 2000, 1999, 1998, 1997, 1996, 1995	1	Civil war in 2002 - 2004
Côte d'Ivoire	2003	2003, 2002, 2001, 2000, 1999, 1998, 1997, 1996, 1995, 1994	1	Civil war in 2002 - 2003
Côte d'Ivoire	2002	2002, 2001, 2000, 1999, 1998, 1997, 1996, 1995, 1994, 1993	1	Civil war in 2002
Côte d'Ivoire	2001	2001, 2000, 1999, 1998, 1997, 1996, 1995, 1994, 1993, 1992	0	No civil war between 1992 – 2001, inclusive
Côte d'Ivoire	2000	2000, 1999, 1998, 1997, 1996, 1995, 1994, 1993, 1992, 1991	0	No civil war between 1991 – 2000, inclusive
Côte d'Ivoire	1999	1999, 1998, 1997, 1996, 1995, 1994, 1993, 1992, 1991, 1990	0	No civil wars between 1990 and 1999, inclusive
Côte d'Ivoire	1998	1998, 1997, 1996, 1995, 1994, 1993, 1992, 1991, 1990, 1989	0	No civil wars between 1989 and 1998, inclusive
Côte d'Ivoire	1997	1997, 1996, 1995, 1994, 1993, 1992, 1991, 1990, 1989, 1988	0	No civil wars between 1988 and 1997, inclusive
Côte d'Ivoire	1996	1996, 1995, 1994, 1993, 1992, 1991, 1990, 1989, 1988, 1987	0	No civil wars between 1987 and 1996, inclusive
Côte d'Ivoire	1995	1995, 1994, 1993, 1992, 1991, 1990, 1989, 1988, 1987, 1986	0	No civil wars between 1986 and 1995, inclusive
Côte d'Ivoire	1994	1994, 1993, 1992, 1991, 1990, 1989, 1988, 1987, 1986, 1985	0	No civil wars between 1985 and 1994, inclusive
Côte d'Ivoire	1993	1993, 1992, 1991, 1990, 1989, 1988, 1987, 1986, 1985, 1984	0	No civil wars between 1984 and 1993, inclusive
Côte d'Ivoire	1992	1992, 1991, 1990, 1989, 1988, 1987, 1986, 1985, 1984, 1983	0	No civil wars between 1983 and 1992, inclusive
Côte d'Ivoire	1991	1991, 1990, 1989, 1988, 1987, 1986, 1985, 1984, 1983, 1982	0	No civil wars between 1982 and 1991, inclusive
Côte d'Ivoire	1990	1990, 1989, 1988, 1987, 1986, 1985, 1984, 1983, 1982, 1981	0	No civil wars between 1981 and 1990, inclusive

Table A3.1: Sample of coding for Sub-Saharan African civil wars, 1981-2019 (continued)

Country	**t for P_t**	**(t, t-1, …, t-9)**	**$C_{(t, t-1, ..., t-9)}$ (1 = civil war, 0 = no civil war)**	**Rationale**
Burkina Faso	2019	2019, 2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011, 2010	1	Civil war in 2018 - 2019
Burkina Faso	2018	2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011, 2010, 2009	1	Civil war in 2018
Burkina Faso	2017	2017, 2016, 2015, 2014, 2013, 2012, 2011, 2010, 2009, 2008	0	No civil year wars between 2008 – 2017, inclusive
Burkina Faso	2016	2016, 2015, 2014, 2013, 2012, 2011, 2010, 2009, 2008, 2007	0	No civil year wars between 2016 – 2007, inclusive
Burkina Faso	2015	2015, 2014, 2013, 2012, 2011, 2010, 2009, 2008, 2007, 2006	0	No civil wars between 2015 – 2006, inclusive
Burkina Faso	2014	2014, 2013, 2012, 2011, 2010, 2009, 2008, 2007, 2006, 2005	0	No civil wars between 2014 – 2005, inclusive
Burkina Faso	2013	2013, 2012, 2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004	0	No civil wars between 2013 – 2004, inclusive
Burkina Faso	2012	2012, 2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003	0	No civil wars between 2012 – 2003, inclusive
Burkina Faso	2011	2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003, 2002	0	No civil wars between 2011 – 2002, inclusive
Burkina Faso	2010	2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001	0	No civil wars between 2010 – 2001, inclusive
Burkina Faso	2009	2009, 2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001, 2000	0	No civil wars between 2009 – 2000, inclusive
Burkina Faso	2008	2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001, 2000, 1999	0	No civil wars between 2008 – 1999, inclusive
Burkina Faso	2007	2007, 2006, 2005, 2004, 2003, 2002, 2001, 2000, 1999, 1998	0	No civil wars between 2007 – 1998, inclusive
Burkina Faso	2006	2006, 2005, 2004, 2003, 2002, 2001, 2000, 1999, 1998, 1997	0	No civil wars between 2006 – 1997, inclusive
Burkina Faso	2005	2005, 2004, 2003, 2002, 2001, 2000, 1999, 1998, 1997, 1996	0	No civil wars between 2005 – 1996, inclusive

Table A3.1: Sample of coding for Sub-Saharan African civil wars, 1981-2019 (continued)

Country	t for P_t	(t, t-1, …, t-9)	$C_{(t, t-1, \ldots, t-9)}$ (1 = civil war, 0 = no civil war)	Rationale
Burkina Faso	1994	1994, 1993, 1992, 1991, 1990, 1989, 1988, 1987, 1986, 1985	1	Civil war in 1985 – 1986
Burkina Faso	1993	1993, 1992, 1991, 1990, 1989, 1988, 1987, 1986, 1985, 1984	1	Civil war in 1985 – 1986
Burkina Faso	1992	1992, 1991, 1990, 1989, 1988, 1987, 1986, 1985, 1984, 1983	1	Civil war in 1985 – 1986
Burkina Faso	1991	1991, 1990, 1989, 1988, 1987, 1986, 1985, 1984, 1983, 1982	1	Civil war in 1985 – 1986
Burkina Faso	1990	1990, 1989, 1988, 1987, 1986, 1985, 1984, 1983, 1982, 1981	1	Civil war in 1985 – 1986
Zimbabwe	2019	2019, 2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011, 2010	0	No civil war between 2010 – 2019, inclusive
Zimbabwe	2018	2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011, 2010, 2009	0	No civil war between 2009 – 2018, inclusive
Zimbabwe	2017	2017, 2016, 2015, 2014, 2013, 2012, 2011, 2010, 2009, 2008	0	No civil war between 2008 – 2017, inclusive
Zimbabwe	2016	2016, 2015, 2014, 2013, 2012, 2011, 2010, 2009, 2008, 2007	0	No civil war between 2007 – 2016, inclusive
Zimbabwe	2015	2015, 2014, 2013, 2012, 2011, 2010, 2009, 2008, 2007, 2006	0	No civil war between 2006 – 2015, inclusive
Zimbabwe	2014	2014, 2013, 2012, 2011, 2010, 2009, 2008, 2007, 2006, 2005	0	No civil war between 2005 – 2014, inclusive
Zimbabwe	2013	2013, 2012, 2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004	0	No civil war between 2004 – 2013, inclusive
Zimbabwe	2012	2012, 2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003	0	No civil war between 2003 – 2012, inclusive
Zimbabwe	2011	2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003, 2002	0	No civil war between 2002 – 2011, inclusive
Zimbabwe	2010	2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001	0	No civil war between 2001 – 2010, inclusive
Zimbabwe	2009	2009, 2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001, 2000	0	No civil war between 2000 – 2009
Zimbabwe	2008	2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001, 2000, 1999	0	No civil war between 1999 – 2008, inclusive
Zimbabwe	2007	2007, 2006, 2005, 2004, 2003, 2002, 2001, 2000, 1999, 1998	0	No civil war between 1998 – 2007, inclusive
Zimbabwe	2006	2006, 2005, 2004, 2003, 2002, 2001, 2000, 1999, 1998, 1997	0	No civil war between 1997 – 2006, inclusive

Table A3.1: Sample of coding for Sub-Saharan African civil wars, 1981-2019 (continued)

Country	t for P_t	(t, t-1, …, t-9)	$C_{(t, t-1, ..., t-9)}$ (1 = civil war, 0 = no civil war)	Rationale
Zimbabwe	2005	2005, 2004, 2003, 2002, 2001, 2000, 1999, 1998, 1997, 1996	0	No civil war between 1996 – 2005, inclusive
Zimbabwe	2004	2004, 2003, 2002, 2001, 2000, 1999, 1998, 1997, 1996, 1995	0	No civil war between 1995 – 2004, inclusive
Zimbabwe	2003	2003, 2002, 2001, 2000, 1999, 1998, 1997, 1996, 1995, 1994	0	No civil war between 1994 – 2003, inclusive
Zimbabwe	2002	2002, 2001, 2000, 1999, 1998, 1997, 1996, 1995, 1994, 1993	0	No civil war between 1993 – 2002, inclusive
Zimbabwe	2001	2001, 2000, 1999, 1998, 1997, 1996, 1995, 1994, 1993, 1992	0	No civil war between 1992 – 2001, inclusive
Zimbabwe	2000	2000, 1999, 1998, 1997, 1996, 1995, 1994, 1993, 1992, 1991	0	No civil war between 1991 – 2001, inclusive
Zimbabwe	1999	1999, 1998, 1997, 1996, 1995, 1994, 1993, 1992, 1991, 1990	0	No civil war between 1990 – 1999, inclusive
Zimbabwe	1998	1998, 1997, 1996, 1995, 1994, 1993, 1992, 1991, 1990, 1989	0	No civil war between 1989 – 1998, inclusive
Zimbabwe	1997	1997, 1996, 1995, 1994, 1993, 1992, 1991, 1990, 1989, 1988	0	No civil war between 1988 – 1997, inclusive
Zimbabwe	1996	1996, 1995, 1994, 1993, 1992, 1991, 1990, 1989, 1988, 1987	0	No civil war between 1987 – 1996, inclusive
Zimbabwe	1995	1995, 1994, 1993, 1992, 1991, 1990, 1989, 1988, 1987, 1986	0	No civil war between 1986 – 1995, inclusive
Zimbabwe	1994	1994, 1993, 1992, 1991, 1990, 1989, 1988, 1987, 1986, 1985	0	No civil war between 1985 – 1994, inclusive
Zimbabwe	1993	1993, 1992, 1991, 1990, 1989, 1988, 1987, 1986, 1985, 1984	0	No civil war between 1984 – 1993, inclusive
Zimbabwe	1992	1992, 1991, 1990, 1989, 1988, 1987, 1986, 1985, 1984, 1983	0	No civil wars between 1983 and 1992
Zimbabwe	1991	1991, 1990, 1989, 1988, 1987, 1986, 1985, 1984, 1983, 1982	0	No civil wars between 1982 and 1991
Zimbabwe	1990	1990, 1989, 1988, 1987, 1986, 1985, 1984, 1983, 1982, 1981	0	No civil wars between 1981 and 1990

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