

VARIA

Public Electricity Supply in Portuguese Guinea, 1930-1974

Manfred Stoppok

Department of Social Anthropology, University of Bayreuth, Germany

manfred.stoppok@uni-bayreuth.de

Abstract: Guinea-Bissau has a chronically underperforming electricity sector that fails to provide most of the population outside of the capital, Bissau, with access to electricity – nowadays considered a basic human need. Little is known about the evolution of this large socio-technical system. Archival research reveals the conditions under which the electricity supply and distribution system was set up. Between the 1930s and 1950s, a system of isolated mini-grids was established in the capital, Bissau, and the towns of the interior. It was expanded in the 1960s and adapted to military needs during the Bissau-Guinean war of independence (1963-1974). Maintenance was a major challenge for the colonial administration. The systems of isolated mini-grids suffered from poor technical quality of the installations, poor maintenance, lack of administrative management capacity, and consumers not paying for their consumption. Post-colonial Guinea-Bissau inherited an electricity sector with systemic challenges that persist to this day.

Keywords: Electrification; Guinea-Bissau; History of Technology; Portuguese colonialism; history of electricity

Introduction

Electricity is a scarce resource in Guinea-Bissau. From the end of the civil war in 1999 until 2015, even the capital, Bissau, suffered from prolonged, almost complete blackouts: peripheral districts could be without electricity for weeks, while the city centre suffered blackouts lasting several hours or even days.¹ While supply and production have stabilised in Bissau since 2015, rural areas and secondary cities in the interior of the country continue to face the lack of a resource that the United Nations (UN) considers a basic human need.

In contrast to the desperate situation of the electricity sector in recent decades, the situation in colonial Portuguese Guinea is remembered as a time when Bissau and all the secondary cities and administrative posts in the interior had a stable electricity supply. A time when things worked, were organized, and people in these places had access to this service. This narrative is told mainly by the older population, who emphasise the functioning infrastructure during the colonial period and the failure of subsequent governments to build infrastructure since independence in 1973/74.² The Portuguese minority adds a claim to the narrative: things worked during their rule, while Bissau-Guineans were not able to maintain the system they had inherited, so they were better off under Portuguese rule.³ Former and current employees in the electricity sector confirm the general reliability of the electricity supply, but stress the incomparably small size of the towns at the time and the limited access of the population to the service, which only improved with rural electrification projects after independence.

At the end of the colonial era, Bissau had a small but functional electricity supply and distribution system. The interior was served by a system of dispersed generators that provided electricity to towns and settlements, at least at night. According to the narrative, this system was run down after independence: mismanagement, corruption, theft and technical incompetence are said to be the main reasons for the almost complete collapse

¹ Electricity supply followed the network of political power: near the residences of presidents or ministers, electricity supply was more stable than in other areas. Agents of the national electricity company EAGB sold alternative power connections, known as the “ministers’ line,” which promised a more reliable supply than the regular line. Members of the government intervened directly at the power plant, ordering stable supplies for certain hotels when government meetings or conferences were being held there (interviews with Bissau power plant staff 2023-2024).

² PAIGC (Partido Africano para a Independência da Guiné e Cabo Verde, African Party for the Independence of Guinea and Cape Verde) declared independence on 24 September, 1973, while Portugal did not recognise it until a year later, on 10 September, 1974. 24 September is still the national holiday.

³ These memories are told by the people as they reflect on the colonial past and post-independence development. It is not a formal narrative in newspapers or other media. I reproduce this narrative here based on various conversations during my regular stays in Guinea-Bissau between 2008 and 2012 and during field research for this article from November 2022 to March 2023.

of electricity supply in the country until the late 2000s. This collapse occurred despite significant efforts to stabilise and expand the electricity distribution system between the 1970s and 1990s.

Travelling around Guinea-Bissau, past the remains of colonial public street lighting, electricity poles and the ruins of former power plants in Bissau and many towns in the interior, it seems a compelling and logical narrative that the country's political instability and failed attempts at development began after independence in 1973/74.⁴ However, the question remains as to the circumstances under which this large socio-technical system was set up, how it functioned and who it served at the end of colonial rule, i.e. what was the starting position of the electricity sector when Guinea-Bissau gained independence. Based on archival sources (Arquivo Histórico Ultramarino, Lisbon) and ethnographic fieldwork in Bissau (General Directorate of Energy; National Electricity and Water Company, EAGB) and at the power plants in Canchungo, Bissorã, Bafatá, Gabú, Bolama and Bubaque in the interior of the country, the article traces the evolution of the public electricity supply and distribution system of Guinea-Bissau, then known as Portuguese Guinea. What were the conditions for electrification? Why and how was the system of dispersed generators set up to supply the interior with electricity?

The analysis of technical reports highlights the challenges faced in establishing public electricity supply and the technical status of the electricity sector infrastructure. Selected case studies from Bolama and Bissau, as well as general reports from the interior of the country, show the characteristics of the electricity system, which is nowadays remembered as having provided sufficient and reliable service to the connected institutions and the population. In this way, the initial conditions of electrification in Guinea-Bissau in 1974 are presented and certain characteristics of the electricity supply and distribution system are explained.

Electricity and the Global History of Electrification

Sustainable energy supply and its link to climate change is one of the most important issues in our world today. Electricity supply plays a key role in the current development discourse (Sustainable Development Goal 7—Access to affordable, reliable, sustainable and modern energy for all). However, the history of electricity supply as such has been much less the

⁴ *Coups d'états* in 1980, 2003, 2009 and 2012 and several attempts, the last in February 2022; civil war in 1998/99.

focus of research.⁵ Nevertheless, the electrification of Europe,⁶ the US,⁷ and, for example, Russia has been studied from different perspectives.⁸ In the last twenty-five years, a growing body of literature has emerged on the history of electrification in the African context, but African countries remain understudied.⁹

This growing interest followed a development “on the ground:” climate change policy and the associated global energy transition to renewable energy sources became a megatrend of the early twenty-first century. As people became more aware that such a transition would affect societies around the world in very different ways, the energy problem gained increasing attention in the social sciences and history.

I start from the premise that it is necessary to understand the emergence and governance of electricity systems (viewed as large socio-technical systems) in order to gain insights into current and envisioned energy transitions, such as the process of electrification, on the African continent. Recent studies at the intersection of history and anthropology have contributed to our understanding of political action and related social practices and

⁵ David L. Morton, “Reviewing the History of Electric Power and Electrification,” *Endeavour* 26, no. 2 (2002): 60-63.

⁶ Thomas Parke Hughes, *Networks of Power: Electrification in Western Society, 1880-1930* (Baltimore: Johns Hopkins University Press, 1993). Brian Bowers, *Lengthening the Day: A History of Lighting Technology* (Oxford: Oxford University Press, 1998).

⁷ Bill Beck, *Interconnections: The History of the Mid-Continent Area Power Pool* (Minneapolis, MAPP, 1988); Keith R. Fleming, *Power at Cost: Ontario Hydro and Rural Electrification, 1911-1958* (Montreal: McGill-Queen's University Press, 2014); Conor Harrison, “Race, Space, and Electric Power: Jim Crow and the 1934 North Carolina Rural Electrification Survey,” *Annals of the American Association of Geographers* 106, no. 4 (2016): 909-931; David Eli Lilienthal, *TVA, Democracy on the March* (New York: Harper, 1944).

⁸ Jonathan Coopersmith, *The Electrification of Russia, 1880-1926* (Ithaca and London: Cornell University Press, 1992).

⁹ Kate B. Showers, “Electrifying Africa: An Environmental History with Policy Implications,” *Geografiska Annaler. Series B, Human Geography* 93 (2011): 193-221; Adewumi D. Adebayo, “A Socioeconomic History of Electrification in Southern Nigeria, 1898-1972” (PhD diss, University of Cambridge, 2020); Moses Chikowero, “Subalternating Currents: Electrification and Power Politics in Bulawayo, Colonial Zimbabwe, 1894-1939,” *Journal of Southern African Studies* 33, no. 2 (2007): 287-306; William J. Hausman, Mira Wilkins, and John L. Neufeld, “Global Electrification: Multinational Enterprise and International Finance in the History of Light and Power, 1880s-1914,” *Revue Économique* 58 (2007): 175-190; Hanaan Marwah, “Electricity Access Inequality in Sub-Saharan Africa, 1950-2000,” *African Economic History* 45, no. 2 (2017): 133-144; Hanaan Marwah, “Who's Got the Power? The Electrification of Africa,” in *The History of African Development: An Online Textbook for a New Generation of African Students and Teachers*, ed. Ewout Frankema et al. (African Economic History Network, 2014, E-book); Emmanuelle Auriol and Aymeric Blanc, “Capture and Corruption in Public Utilities: The Cases of Water and Electricity in Sub-Saharan Africa,” *Utilities Policy* 17, no. 2 (2009): 203-216.

consequences.¹⁰ Other historical work has shown how a country can be trapped in a colonial electricity geography or the path-dependency of African power pools.¹¹

Scholarly work on the historical development of electricity for specific countries or places in Africa remains incomplete,¹² or follows the rays of large-scale electricity generation projects such as dams,¹³ while the process of electrification in regions far from centres of industrial production or such large-scale projects remains largely untouched. One of the few exceptions is Hasenöhl's study of rural electrification in the British Empire, where she highlights the long-term effects of colonial power grid design on inequalities in access to electrification.¹⁴

The literature on Lusophone Africa follows this general pattern with studies of Angola and Mozambique, where major industries were established or large-scale hydroelectric projects were realised.¹⁵ Large-scale power projects in Southern Africa, such as Cahora Bassa in Mozambique, were heavily influenced by South African demand for electricity.¹⁶ Studies on the history of electrification in São Tomé, Cape Verde and Guinea-Bissau are not available.

¹⁰ Jonas van der Straeten, "Measuring Progress in Megawatt: Colonialism, Development, and the "Unseeing" Electricity Grid in East Africa," *Centaurus* 63, no. 4 (2021): 651-674. Antina von Schnitzler, "Travelling Technologies: Infrastructure, Ethical Regimes, and the Materiality of Politics in South Africa," *Cultural Anthropology* 28, no. 4 (2013): 670-693. Idalina Baptista, "'We Live on Estimates': Everyday Practices of Prepaid Electricity and the Urban Condition in Maputo, Mozambique," *International Journal of Urban and Regional Research* 39, no. 5 (2015): 1004-1019. Akhil Gupta, "An Anthropology of Electricity from the Global South," *Cultural Anthropology* 30, no. 4 (2015): 555-568. Tanja Winther, *The Impact of Electricity* (Oxford: Berghahn, 2010).

¹¹ Kathleen J. Hancock, "Electric Regionalism: Path Dependence, Development, and the African Power Pools," *Review of Policy Research* 41, no. 2 (2023): 347-368. David A. McDonald, *Electric Capitalism. Recolonising Africa on the Ppower Ggrid* (Cape Town: HSRC Press, 2009).

¹² Philip Akpen, "Electricity and Water Supply in Colonial Nigeria: A Case Study of Makurdi Town (1927-1960)," *Journal of the Historical Society of Nigeria* 16 (2005/2006): 48-71. Ute Hasenöhl, "Rural Electrification in the British Empire," *History of Retailing and Consumption* 4, no. 1 (2018): 10-27.

¹³ Stephan F. Miescher, "'Nkrumah's Baby': The Akosombo Dam and the Dream of Development in Ghana, 1952-1966," *Water History* 6, no. 4 (2014): 341-366. Henry Olivier, *Great Dams in Southern Africa* (Cape Town: Purnell, 1977). Julia Tischler, *Light and Power for a Multiracial Nation* (London: Palgrave Macmillan, 2013). Christopher Gore, *Electricity in Africa* (Rochester, NY: James Currey, 2017).

¹⁴ Ute Hasenöhl, "Rural Electrification in the British Empire," 11.

¹⁵ Ana Paula Silva, "Electrifying Colonial Africa: Portuguese developments." *Encyclopédie d'histoire numérique de l'Europe* (online), 26.06.2020, consulted on 17.11.2021. <https://ehne.fr/en/node/21296>. Ana Paula Silva, "Barragens, Planos e Ambiente na Eletrificação das Colónias Portuguesas em África," in *Ciência, Tecnologia e Medicina na Construção de Portugal*, eds. Ana Simões and Maria Paula Diogo, (Lisbon: Tinta-da-China, 2021). Allen F. Isaacman and Barbara S. Isaacman, *Dams, Displacement, and the Delusion of Development: Cahora Bassa and Its Legacies in Mozambique, 1965-2007* (Ohio University Press, 2013); Domingos Joaquim Francisco et al., "Pathways to Sustainable Development: An Overview of the Progress and Obstacles of Hydroelectric Power Production in Angola," *The Journal of World Energy Law & Business* 17, no. 5 (2024): 309-321.

¹⁶ Isaacman and Isaacman, *Dams, Displacement, and the Delusion of Development*.

It is therefore difficult to develop a comparative perspective of energy development and energy transitions over time.

Nevertheless, all African countries have developed an electricity generation system. And all of them are under pressure to adapt or expand their systems to meet Sustainable Development Goal 7, which emphasises access to electricity for all and a shift to renewable energy sources for power generation. Electricity planning is considered a prerequisite for effective electrification, but academic literature focuses on a few countries. Guinea-Bissau is one of thirteen African countries for which no academic literature on electricity planning has been identified.¹⁷ As important as planning is for successful electrification, it is crucial to know more about how the different systems have developed historically. Academic work looking at the conditions under which systems were built can be found, for example, in Hughes's study of electrification in the US. He showed that successful system builders, such as Samuel Insull in Chicago, had to align the interests of stakeholders in government, investment firms, educational institutions and the public with his company in order to gain support for a regional monopoly that allowed the creation of an electricity supply system.¹⁸ This involved balancing a wide range of factors and power interests. Hasenöhl emphasises the great potential that historical research offers for discussing current energy transitions, as they always have been and continue to be embedded in larger societal transitions and subject to asymmetrical power relations.¹⁹ In a similar vein, Hirsch and Jones consider the potential contributions of history to energy research and policy. In particular, they draw on deceptive analogies in history, the cultural dimension of energy systems, invisible infrastructure and energy transitions.²⁰

Following these lines of research, I analyse and illustrate the conditions under which the electricity generation and distribution system—a large socio-technical system—in Guinea-Bissau was set up during Portuguese colonial rule and show its entanglement with wider societal developments. This will allow us to understand the evolution and continuities in the Bissau-Guinean electricity sector after independence and to move away from simplistic explanations of corruption and technical incapability.

¹⁷ Philipp A. Trotter, Marcelle C. McManus, and Roy Maconachie, "Electricity Planning and Implementation in Sub-Saharan Africa: A Systematic Review," *Renewable and Sustainable Energy Reviews* 74 (2017): 1189-1209.

¹⁸ Hughes, *Networks of power*.

¹⁹ Ute Hasenöhl and Jan-Henrik Meyer, "The Energy Challenge in Historical Perspective," *Technology and Culture* 61, no. 1 (2020): 295-306.

²⁰ Richard F. Hirsch and Christopher F. Jones, "History's Contributions to Energy Research and Policy," *Energy Research & Social Science* 1 (2014): 106-111, on 107.

Methodology

This article is based on archival research in Lisbon combined with ethnographic research in Bissau.²¹ The archival documentation found in Lisbon on the electricity sector in what was then Portuguese Guinea is extensive:²² technical project plans for the electrification of buildings or neighbourhoods, tender documents for the purchase of generators or other materials, maps of low, medium and high voltage lines in Bissau and a few technical reports by engineers who inspected or consulted on the electricity sector in the province. The documentation on the electricity sector in the interior of the country is limited to these consultancy reports.

Despite the extensive technical documentation of the electricity sector, documents that discuss the social background of electrification are rare. Therefore, questions about who had access to electricity, who discussed it, who was supposed to benefit from it and who was not, as well as other sociological considerations have to be answered on the basis of the technical documentation.

In Bissau, archival records or project documentation have been largely destroyed.²³ Collections in the National Archives (AHN) that may contain information on the colonial energy sector are barely indexed.²⁴ Although a growing body of literature on electricity in Africa has emerged over the last twenty-five years, the situation for Guinea-Bissau remains the same as described by Coquery-Vidrovitch in her 2003 essay:²⁵ despite archival material, researchers have to work with economic sources (e.g. the World Bank).²⁶

²¹ In the framework of the post-doc research grant “Disruptive processes in the electricity sector of Guinea-Bissau – a history of electrification, de-electrification and re-electrification (1890-2020)” funded by Fritz Thyssen Foundation (Az.40.22.0.011EL).

²² Arquivo Histórico Ultramarino (AHU) and Centro de Documentação da EDP in Lisbon. Overall, five weeks of research in July and August 2022 and March 2023.

²³ The General Directorate of Energy (DGE) moved to newly built government quarter, “Palacio do Governo”, in the outskirts of Bissau, in 2012. Only a fraction of documents stored were relocated and are now stored in the individual offices of employees. The military took over the former premises of DGE in the centre and vandalized and burnt documents in the backyard. This happened to many ministries and directorates when moving to the new government quarter.

²⁴ The National Historical Archives (AHN) at the National Institute of Studies and Research (INEP) in Bissau were not systematically accessed. The archive’s collections lack a detailed index since the archives were damaged during the conflict of 7 June (Guinea-Bissau’s civil war) in 1998/99, hence accessing these collections requires extensive time efforts. It remains unknown if any documentation about the electricity sector exists within the collections.

²⁵ Catherine Coquery-Vidrovitch, “Electricity Networks in Africa: A Comparative Study, or How to Write Social History from Economic Sources,” in *Sources and Methods in African History: Spoken, Written, Unearthed*, ed. Toyin Falola and Christian Jennings, 346-360 (Rochester, NY: University of Rochester Press, 2003), 346-360.

²⁶ Documentation encountered at different entities in the energy sector: Direcção Geral de Energia

The following description is based, despite technical plans and brief notes, on a number of consultants' reports by engineers (archival material) and official publications on the development of Portuguese Guinea, e.g. yearbooks and other published reports.

Development of the Electricity System in Portuguese Guinea

Establishment of Public Electricity Supply in Major Towns – The 1930s

It is not documented when the first electric lamp was lit in Guinea-Bissau as it is in Portugal, in Cascais in 1878. For the period up to 1930, electricity is mentioned only a few times in the archival material examined for this study. In general, Portuguese Guinea was a predominantly rural area with only a few small towns, including the capital Bolama and the growing economic centre of Bissau. In addition to these towns, so-called administrative posts had been established throughout the country. These places consisted of little more than a few administrative buildings, a few merchant houses and perhaps a health centre or missionary school.²⁷ The physical geography of the country, characterised by its extensive mangrove forests on the coast and along the five major rivers that flow into the sea through estuaries, required major investments in infrastructure in order to gain access to and control over the territory (Figure 1). A particular feature of Portuguese colonial rule was the division of the population into so-called *civilizados* (citizens), to whom infrastructure was allocated, and *indígenas* (native subjects). In 1926 only 6,973 people were classified as *civilizados*;²⁸ of these, 12% were classified as “white,” 67% as “black” and 20% as “mixed”. Only 300 people living in the colony had Portuguese nationality in 1924.²⁹ These figures give an idea of the size of the urban settlements in Portuguese Guinea at that time.

(DGE), Electricidade e Aguas da Guiné-Bissau (EAGB), in current project offices (World Bank, African Dev. Bank) as well as in the ruins of former power plants in different cities of the country. These documents refer to post-independence Guinea-Bissau; however, they highlight the continuity of the system established before.

²⁷ Armando Augusto Gonçalves de Moraes e Castro, *Anuário da Província da Guiné* (Bolama: Imprensa Nacional, 1925).

²⁸ Christoph Kohl, “Limitations and Ambiguities of Colonialism in Guinea-Bissau. Examining the Creole and “Civilized” Space in Colonial Society,” *History in Africa* 43 (2016): 169-203, on 180.

²⁹ Moraes e Castro, *Anuário da Província da Guiné*, 105.



Figure 1: Map of Guinea-Bissau with district capitals and selected towns in the interior; highlighted locations are mentioned in the article. Source: Based on UN Geospatial, Guinea-Bissau Map (2018), <https://www.un.org/geospatial/content/guinea-bissau>.

The public administration of Bolama, the capital of the colony from 1879 to 1941 (but with only a thousand inhabitants) on the small island with of the same name off the coast,³⁰ announced in 1914 that it was seeking proposals for the electrification of the city. However, there was no response to this call. No specific reasons were given; it seems that the administration was struggling to build and maintain other infrastructure, such as water supply.³¹ However, the idea of establishing public electricity service in Bissau and Bolama appears in various documents.³² In Bissau, which became a city in 1914, an ice factory owned by a French businessman supplied the commercial buildings and illuminated a small

³⁰ In 1879 Portuguese-Guinea became an autonomous colony; before it had been administered from the Cape Verde islands.

³¹ Fausto Duarte, org., *Anuário da Guiné Portuguesa 1946* Bissau: Governo da Província da Guiné, 1946), 305–6.

³² Guiné-Portuguesa - Fomento, 1920, PT/AHU/ID-OP/OP15336, Arquivo Histórico Ultramarino (AHU). O Governador da Colónia, Carta ao Ministro das Colónias, July 30, 1919, PT/AHU/ID-OP/OP15534, Arquivo Histórico Ultramarino (AHU).

part of the tiny town, now known as “Bissau Velho”.³³ It is reasonable to assume that Bolama may also have had a single business that needed electricity to run machinery, such as the National Press, back then, but this is not recorded.

The first place where some form of public electricity supply (though not for individual or household use) is mentioned is the island of Bubaque. The 1925 yearbook of the province of Guinea mentions Bubaque as the only place where all the institutions had electric light, supplied by a generator at the back of the administration building. No further details of the service are given. At the time, Bubaque had the only factory in the province (run by a German company) producing palm and groundnut oil.³⁴

Official publications such as the colony’s yearbook show how infrastructure development was imagined at the time. The yearbook describes Bissau as a place with no urban planning and bad architectural taste. Houses were neither ordered, nor styled as they should be (in the author’s opinion), and there was not even a sewerage system. The new market, the cemetery and the electrification project are mentioned as exceptions to the poor general state of the city. In particular, the electrification project is highlighted as a major step forward for the city. In the mid-1920s, for example, Bissau did not have public electricity supply.³⁵ The way in which the yearbook refers to electricity and other urban infrastructures shows that these were prestigious projects. Properly urbanised cities and administrative structures were thought to contribute to the prestige of the colony as part of the Portuguese colonial project of “civilization,” rather than primarily intended to serve a particular population.

The first public electricity networks in Portuguese Guinea were inaugurated in Bissau (March) and in Bolama (May) in 1930, fifteen years after the administration had received the first proposal to electrify the city.³⁶ Bafatá—the third major city in the colony—³⁷ gained access to electricity in August 1932. The 1946 yearbook described the inauguration of the public electricity supply in Bafatá a decade earlier as “a beautiful promise to bring the benefits of civilization to the land emerging in the interior of the colony.” By 1935, it was mandatory for most houses in Bafatá to have electricity.³⁸ The town was supplied by a small 18 kW diesel generator. Payment for the service was done in the form of a flat fee, depending

³³ Fausto Duarte, org., Guiné-Portuguesa, *Anuário da Guiné-Portuguesa 1948* 1948 (Bissau:, Governo da Província da Guiné, 1948), 376.

³⁴ Moraes e Castro, *Anuário da Província da Guiné*, 38.

³⁵ Ibid., 96.

³⁶ Duarte, *Anuário da Guiné Portuguesa 1946*, 305–6.

³⁷ No population data for the city; the sub-section of Bafatá (231 km²) had 2,316 inhabitants, while the entire district had 57,121 inhabitants. Of these, only 400 were referred to as *civilizados*.

³⁸ Duarte, *Anuário da Guiné Portuguesa 1946*, 397.

on the number and wattage of bulbs used in a household (108-150 escudos);³⁹ sockets were extra (24 escudos each). The city's annual consumption was estimated at 40,080 kWh.⁴⁰ This process was accompanied by the relevant legislation for electricity in Bafatá.⁴¹

The establishment of these three public electricity distribution systems marked the first phase of electrification in Portuguese Guinea in the early 1930s, although individual generators had served some small commercial services or industries in Bissau and Bubaque even a decade earlier.

Electrification of Regional Capitals – The Late 1940s and 1950s

Over the next decade almost nothing happened in terms of public electricity supply. Neither in the capitals of Bolama (until 1941) and Bissau (since 1941), nor in the interior. Only after the Second World War, when Portugal had to justify its colonial presence, did the district capitals gain access to electricity. However, this was not achieved through an electricity network that extended from the urban centres to the periphery, but through a system of small decentralised generators at the places where electricity was to be supplied.

Again, the yearbooks of 1946 and 1948, published to show the progress of the colony's effective occupation and development, also provide information on the development of the electrical infrastructures. In 1946, in the section on public works, the use of material for the electrification of Catió, Canchungo, Varela, Mansôa and Gabú is mentioned.⁴²

In the late 1940s and early 1950s, urbanisation plans were drawn up for settlements or towns in the interior. The emphasis was on the construction of roads, water wells, agricultural infrastructure, churches and public buildings. The settlements were still very small and even the urbanisation plans displayed only a few streets grouped along an avenue with a central square where public buildings were concentrated. Only Bolama and Bissau were classified as cities, Farim and Bafatá as towns, and the rest as settlements or villages.⁴³ Electricity supply and distribution did not play a major role in these urbanisation plans. Hardly any of these plans show a power plant or distribution network.

³⁹ The Portuguese Guinean Escudo was the currency between 1914 and 1975.

⁴⁰ Duarte, *Anuário da Guiné Portuguesa 1946*, 414-15.

⁴¹ *Instalação eléctrica em Bafatá - Portaria n.º 6, de 4-2-935 (B. O. n.º 45)* and *Luz eléctrica (Bafatá)-B. O., n.º 5, de 935*. Guiné-Portuguesa, *Anuário da Guiné Portuguesa 1946*, 607-8.

⁴² Duarte, *Anuário da Guiné Portuguesa 1946*, 14.

⁴³ *Ibid.*, 72.

In 1948, the inauguration of a power plant in Canchungo was announced for the near future.⁴⁴ The existence of a power plant whose engine soon broke down is also reported.⁴⁵

Catió is mentioned as having received electric lighting and a power plant in 1948. Together with the installation of a nursery, a market and a radio-telegraph station, the 1948 annual report describes Catió as “entering into a new phase of progress since the implementation of its urbanisation plan in 1947.”⁴⁶ Places like Catió have to be thought of as very small administrative posts. Basically, Catió consisted of the buildings of the aforementioned infrastructures and the houses of some traders but little more. The entire administrative sector of Catió was inhabited by only 139 so-called “civilized” people, while 44,710 residents were classified as “indigenous”.

Farim, the district capital in the north and the only place other than Bafatá to be recognized as a town, was in 1946 a place which had 81 buildings, 37 of which had a tiled roof. A power plant is mentioned, and the generator is said to be in the process of being installed, allowing the settlement to be illuminated in the near future.⁴⁷

In Varela Beach, a small power plant was under construction, along with a water tower, a nursery, some public buildings and leisure facilities. There is no mention of electricity in São Domingos and Suzana, the two neighbouring settlements in the district.⁴⁸

From a legal point of view, the development of the electricity sector was accompanied by further legislation and regulations on the supply, installation and subsidisation of electrical energy.⁴⁹ The import of electrical material was tax-free.⁵⁰ Nevertheless, electricity remained to be a minor issue. What is striking, however, is the virtual absence of the subject of energy in the archival material until the late 1940s. While, for example, the detailed *Anuários da Guiné Portuguesa* of 1946 and 1948 present all the details of the colony—information about the ports, roads, hospitals, telegraph station, postal service, sports and general administrative services among many others—but the sections on electricity are short and contain limited information. In over 800 pages, the words “electricity” or “electric” are mentioned only about 40 times, “telephone” or “radio” about 50 times, while the words “water”, “road” and “bridge” are mentioned 160, 200 and 66 times respectively. This shows

⁴⁴ Duarte, *Anuário da Guiné Portuguesa 1948*, 614.

⁴⁵ Ibid., 605.

⁴⁶ Duarte, *Anuário da Guiné Portuguesa 1948*, 682.

⁴⁷ Ibid., 571.

⁴⁸ Ibid., 779.

⁴⁹ Duarte, *Anuário da Guiné Portuguesa 1946*, 605–14.

⁵⁰ Duarte, *Anuário da Guiné Portuguesa 1948*, 837.

that the colonial administration struggled to provide access to water and to build general transport infrastructure. In the absence of these, electricity was not a priority.⁵¹

There is no record of a detailed electrification plan, although there were sketchy ideas about a national electricity grid and a hydroelectric power station at Saltinho (1950).⁵² The only detailed report on the electricity sector in the interior dates to 1969. Therefore, what happened in the cities of the interior between the late 1940s and the late 1960s remains vague. Table 1 shows the development of electricity supply in Bissau and the cities of the interior between the 1920s and the 1960s.

	Until 1945	1946-1949	Until 1969	Installed Generation Capacity 1969
Bafatá	X (1932)	X	X (1954)*	295 kVA
Bissau	X (1930)	X	X	4,300 kVA (1972) ¹
Bissorã			X (1953)	100 kVA
Bolama	X (1930)	X	X	210 kVA
Bubaque	(X) (1920s)	X	X	56 kVA
Canchungo		(X)	X	106 kVA
Catió		X	X	107 kVA
Farim		X	X	153 kVA
Fulacunda			X	60 kVA
Gabú		(X)	X	110 kVA
Mansôa		(X)	X	76 kVA
São Domingos			X	55 kVA

* New generator house/power plant was inaugurated in 1954

Table 1: Electrification of District Capitals in Portuguese Guinea. Source: author's compilation based on José Correia da Cunha Barros, *Problemas eléctricos na Provincia de Guiné - Visita efectuada de 18 a 30 de Junho de 1969*, July 16, 1969, PT/IPAD/MU/DGOPC/DSE/1579/00782, AHU.

⁵¹ Duarte, *Anuário da Guiné Portuguesa* 1946.

⁵² Carlos Quintela Góis, *O problema energético da Guiné*, July 20, 1962, PT/IPAD/MU/DGOPC/DSE/1579/00963, AHU.

Most districts did not have access to electricity until the late 1940s. The remaining two district capitals had access by the end of the 1960s. The capacity of the local power plants ranged from 50 to 75 kVA in Bubaque, Mansôa, Fulacanda and São Domingos, to 100 and 160 kVA in Gabú, Farim, Catió, Canchungo and Bissorã, while only Bolama and Bafatá had more than 200 kVA. Compared to the capital, Bissau, with 4,300 kVA in 1972, all these systems were very small.⁵³

In addition to the district capitals, the smaller settlements and administrative posts also gained access to electricity in the 1950s and 1960s. The struggle for independence, the ensuing war and the general political circumstances shaped this development, as the following section will show.

The Militarisation of Electrification During the War of Independence (1963-1974) – The Interior in the 1960s and Early 1970s

In the 1960s, the military played a dominant role in the process of electrification of the interior of Portuguese Guinea. Again, this development was influenced by major political events: in 1956, the leader of the independence movement, Amílcar Cabral, founded the African Party for the Independence of Guinea and Cape Verde (PAIGC). The Pidjiguiti massacre in the port of Bissau in August 1959, in which more than twenty-five striking dockers were killed, was a turning point. In the aftermath, Cabral and the PAIGC concluded that peaceful protest would not bring about change in Portuguese Guinea and began to prepare for violent resistance to Portuguese colonial rule. The eleven-year struggle for independence began in 1963 and ended with the independence of Guinea-Bissau in 1973/74.⁵⁴

As a result, the colony had to host an increasing number of military troops. The number of metropolitan (Portuguese) troops rose from 3,736 in 1961 to over 8,336 at the start of the war in 1963 to 25,610 at the end of the war in 1973. In addition, another 6,425 locally recruited troops were serving with Portuguese troops in 1973. In total 30,000 Portuguese troops fought against 10,000 PAIGC fighters.⁵⁵ Thus, within a decade the total military presence had increased sevenfold. The demographic situation had changed significantly, bearing in mind that in 1950 the overall so-called “civilized” population had numbered

⁵³ Current power generators for public construction sites can easily reach 25 kVA.

⁵⁴ The Portuguese Colonial War started in Angola with attacks of the People’s Movement for the Liberation of Angola (MPLA) in 1961 and in Mozambique with attacks of the Liberation Front of Mozambique (FRELIMO) in 1964.

⁵⁵ João P. Borges Coelho, “African Troops in the Portuguese Colonial Army, 1961–1974: Angola, Guinea-Bissau and Mozambique,” *Portuguese Studies Reviews* 10, no. 1 (2002): 129–150, on 136.

only about 8,000 inhabitants.⁵⁶ Clearly, this was the only part of the population for which infrastructure such as electricity was provided. Although this is hardly expressed directly, the calculation of future electricity demand by the engineer Carlos Quintela C6io, for example, suggests that this was the case. C6io only included the so-called “civilized/assimilated” population in his forecast of future electricity demand.⁵⁷ In 1961, this formal division was abolished. However, this did not have a major impact on the electricity sector, as there were no formal plans in the first place.

Infrastructures had to be built to accommodate the troops (housing, logistics, food), to control the territory (roads, bridges, airstrips, communications) and to resist guerilla attacks by the PAIGC. The military had its own engineering brigade involved in building infrastructure for its own use and as a counter-insurgency strategy, including works in the electricity sector.⁵⁸

The provision of generators to several military camps in or near district capitals, administrative posts and other settlements was part of the military expansion in the province. The extent of the military’s role in the operation of the generators can be seen in the 1969 report by engineer da Cunha Barros.⁵⁹ This report is the most comprehensive information and overview of the power plants in the entire province. Electricity supply had expanded from the early 1950s, when only the district capitals had access or were in the process of getting access. His report lists seventy-four places in Portuguese Guinea, out of which sixty had access to electricity, including the capital, Bissau.

	Civil administration	Military	Civil and military	None or not men- tioned
District Capital (12)	6	0	6	0
Administrative Post (42)	6	21	2	13
Settlement (20)	0	19	0	1
Total (74)	12	40	8	14

Table 2: Electricity generation in Portuguese Guinea in 1969. Source: author’s summary based on the report by engineer da Cunha Barros, *Problemas el6ctricos na Provincia de Guin6*.

⁵⁶ Kohl, “Limitations and Ambiguities.”

⁵⁷ Quintela G6is, *O problema energ6tico da Guin6*, 7–12.

⁵⁸ *A Engenharia na Guin6*, 1968, PT/CAVE/CINE/16MM/1141, Centro de Audiovisuais do Ex6rcito. Gabinete de Estudos Arqueol6gicos da Engenharia Militar, *A Engenharia Militar na Guin6 - O Batalh6o de Engenharia* (Lisboa: Direc66o de Infra-Estruturas do Ex6rcito, 2014).

⁵⁹ Cunha Barros, *Problemas el6ctricos na Provincia de Guin6*.

All district capitals had either a civil administration-operated generator or both a civil administration-operated generator and a military-operated generator (Table 2). Of the forty-two administrative posts mentioned, only six had only one generator run by the civil administration, two by the civil administration and the military, twenty-one were run by the military only and for a further thirteen no records were available. The generators in these administrative posts ranged in capacity from 5 to 50 kVA, with the majority between 15 and 35 kVA.

Compared with the situation in the late 1940s, when six towns had public electricity supply (Bafatá, Farim, Bolama, Bissau, Bubaque and Catió) and four more were planned or nearing completion (Gabú, Canchungo, Varela, Mansôa), meaning that nine out of twelve district capitals had at least a limited electricity supply, there had been little progress in the (civil) electrification of the province. In twenty years, only ten more generators were installed under civilian management, including in the three remaining district capitals of Bissorã (1953), Fulacunda and São Domingos.

The military, on the other hand, installed generators in at least forty-eight places throughout the country. Most of these were very small generators designed to meet the needs of military camps. However, the military and the administration cooperated, and the civilian population benefited to a limited extent from electricity supply, mainly in the form of public lighting at night, where location and capacity allowed.

From today's perspective, however, the key question is to what extent did the population have access to, or benefit from, the installed generation capacity. Did the military generators supply electricity to the civilian population or administration? The few records available suggest that in some cases they did, but in others they did not. In Contubóel, a village near Gabú in the east, a single-phase cable from the small 20 kVA generator was used to supply electricity for civilian use, while in Encheia, a village on the Mansôa River, the generator was reported to have supplied the military and the public administration. For other locations, there is no information on civilian use.⁶⁰ In the cases where the military camps were located within settlements, a limited supply was often provided to the local administration, the health centre and some street lighting in the areas adjacent to the camps, while isolated military camps in strategic locations largely produced for their own use. Although little systematic information is available, former Portuguese military personnel confirmed this general pattern for several locations.⁶¹

⁶⁰ Cunha Barros, *Problemas eléctricos na Provincia de Guiné*.

⁶¹ Luís Graça, "Guiné 61/74 - P23647: O nosso blogue como fonte de informação e conhecimento (96): Os geradores nos quartéis também forneciam eletricidade para a população civil? (Manfred

Guileje was an example of a small settlement with a strong military presence. The population lived partly in the area protected by a barbed wire fence in huts, while the military forces occupied some permanent buildings (Figure 2). Thus, the military and the village formed a kind of unit. In such cases, public lighting was available to all residents at night, while the homes of the civilian population were not connected to electricity.



Figure 2 - Diorama of Guileje military camp in the museum of Guileje. Source: Carlos Schwarz and Luís Graça, “Guiné 63/74 - P2584: Guileje: Simpósio Internacional.”⁶²

The diorama, located in the Museum of Guileje, in southern Guinea-Bissau, shows an interesting detail: the generator house (and associated noise and pollution) is located between the huts (which had no electricity), while its purpose is to supply electricity to the permanent buildings (Figure 2).

The extension of electricity into the interior of Portuguese Guinea in the 1960s, although limited, was largely driven by the military and their needs. Military camps had generators

Stoppok, Investigador Alemão, a Fazer Um Estudo Sobre a História da Energia Elétrica Na Guiné-Bissau, 1890-2020),” (27.09.2022), <https://blogueforanadaevaotres.blogspot.com/2022/09/guine-6174-p23647-o-nosso-blogue-como.html>.

⁶² Carlos Schwarz and Luís Graça, “Guiné 63/74 - P2584: Guileje: Simpósio Internacional (1 a 7 de Março de 2008) (23): O diorama está pronto e é uma obra-prima (Pepito / Luís Graça),” (26.02.2008) <https://blogueforanadaevaotres.blogspot.com/2008/02/guin-6374-p2584-guileje-simpso.html>.

of various sizes, usually running at night, to provide light for the camps. If administration, hospitals or traders were nearby, they also benefited. Public lighting was also provided for areas adjacent to the military camps. In this sense, more places were supplied with electricity during the war in the 1960s than ever before or since. A system of dispersed generators of different brands was successfully maintained for a few years, despite technical problems. However, there was a lack of long-term vision for maintenance and its purpose. Although these materials were left behind when Guinea-Bissau gained independence in 1974, it is not surprising that this system could not be maintained, because the purpose of its existence had disappeared. The military had used these units to defend their presence. There was no electrification plan as such. The expansion of the system of dispersed generators was rather a result of the war. Rural electrification, with the aim of connecting and supplying electricity to the local population, did not take place until the end of the colonial period.

The third phase of electrification (the militarization of electrification), which occurred simultaneously and was linked to the expansion of the civilian administration's power generation capacity, defined the characteristics and challenges of the electricity supply and distribution system. In the following section, I describe the challenges of establishing electricity as a public good, the difficulties of expanding the network and production capacity, and the challenges of maintaining the system.

Systemic Challenges in the Electricity Sector: Bolama, Bissau and the Interior

Difficulties in Setting Up the System – Bolama's Electricity Supply in 1935

Today, access to electricity is a symbol of progress and associated with economic development, hence a service that accelerates social change. More than ninety years ago, Bolama received public electricity supply in May 1930, just two months after the inauguration of the system in Bissau. However, building and maintaining the small electricity system was a challenge for the local administration. Five years after the introduction of the public electricity supply, the city council's evaluation report didn't sound very positive. Although the report was written in 1935, parts of it read like a report about a failed development intervention in post-colonial Guinea-Bissau: poor planning and project implementation, lack of maintenance and a population that did not comply with regulations and did not behave as the project designers had expected.

In 1935, Bolama's small power plant was equipped with a small 65 kW generator. While the generator was in good condition, the distribution network and electricity meters were

poorly installed and in a state of disrepair. The city council reports the poor experience of the staff responsible for maintaining the power plant. In 1935, however, the council did manage to employ two technicians who produced a detailed report on the state of the electricity supply and distribution network.⁶³

The new power plant technicians were faced with a number of technical challenges relating to the distribution network (in particular the electricity poles), the switchboard (which was not new at the time of acquisition) and the installation of electricity meters (which were reported to have been installed carelessly and in need of a general revision). Even twenty out of the twenty-five electric lamps in the power plant were not working and the material stored, e.g. one hundred lamps, was not suitable for street lighting as their wattage (25 W) was too low to light the streets.

The number of customers fell from 152 in 1934 to 133 in 1935, making it financially difficult for the administration to maintain the power plant. The annual deficit of the Electricity Department was growing, and revenues covered only about 65% of annual expenditure. Many households were connected to electricity, but not all used it, while others refused to install it, despite a law requiring them to do so.⁶⁴ As a result, the city council called on the state to help cover the growing annual deficit.⁶⁵

In general, electricity was mainly used for public lighting (71%) and public buildings (13%), while only 10% were used by private households. Nevertheless, they accounted for 50% of the plant's revenue. Ten years later, electricity supply in Bolama had developed only slightly. In 1946: two generators of 46 kW and 65 kW were installed in the power plant. There is no detailed information about the schedule of electricity supply. Electricity for households could be paid as a lump sum or was metered—both options existed. An annual subsidy of 46,000 escudos was paid by the municipality in 1946,⁶⁶ roughly equivalent to the deficit already mentioned in 1935.

This sketch of the first fifteen years of public electricity supply gives an idea of the challenges faced by the public administration in providing the service. Even when Bolama was the colony's capital, electricity was not a profitable business. The population's interest in being connected to electricity seemed to be limited, which was reflected in the stagnating

⁶³ Colónia da Guiné e Comissão Municipal de Bolama, *Relatório dos Serviços e Contas da Comissão Municipal: Desde 1 de Julho de 1934 a 30 de Junho de 1935* (Braga, 1935), 54-60.

⁶⁴ Diploma Legislativo n.º 801, de 16 de Outubro de 1933. Houses with a rent equal or superior to 200 escudos monthly had to install electricity.

⁶⁵ Colónia da Guiné and Comissão Municipal de Bolama, *Relatório dos serviços e contas da Comissão Municipal*, 59-60.

⁶⁶ Duarte, *Anuário da Guiné Portuguesa 1946*, 309-10.

number of clients until 1935. Problems in recruiting qualified staff, non-compliance with regulations and non-payment for services led to a permanent deficit at the power plant. The local administration called on the “State” to cover this deficit. These challenges continue to characterise the electricity sector in Guinea-Bissau. The Bolama case study is therefore an interesting case in order to understand the challenges of introducing electricity in places without industry as the main consumer, as is the case to date in electrification trials in the towns of the interior of present-day Guinea-Bissau (Bambadinca 2015, Contúboel 2017, Bissorã 2017/19).

Maintaining and Expanding a Precarious System – Bissau From the 1930s to the early 1970s

In March 1930, Bissau launched its public electrical supply. In the contract of 17 March, 1930, the ‘Sociedade Industrial Ultramarina’ was granted the concession to supply electricity to Bissau for twenty years. Little is known about the specific conditions under which the system operated in the years that followed. The yearbooks of 1946 and 1948 give a brief description of the power plant in Bissau, which had remained the same since 1930: two MAN generators of about 75 kVA each were installed in the small power plant near the present-day Lino Correia stadium. The public lighting system, which operated for eleven and a half hours from 5:30 p.m., had the following extensions: 318 poles controlled by eight automatic switches. A total of 173 100 W lamps, 181 75 W lamps and 88 40 W lamps. Private consumers had to pay a (refundable) deposit at the beginning of the contract. The city council paid a lump sum of 270,000 escudos to the electricity company for the consumption of the public lighting system. The colony government paid another 60,000 escudos for the consumption of the public service.⁶⁷ The yearbooks, which were aimed at a public or even an international audience, highlighted the progress made in establishing a functioning administrative structure, building infrastructure and improving education and health. The description of the electricity service in Bissau remains brief and functional, with no mention of shortcomings.

In 1950, at the end of the twenty-year concession granted to the Sociedade Industrial Ultramarina (Overseas Industrial Company) to provide electricity to Bissau, the municipality took over the Bissau power plant. In a letter to the Minister of Colonies⁶⁸ and an attached project plan,⁶⁹ Governor Rodrigues Serrão highlighted the problems of Bissau’s electricity

⁶⁷ Ibid., 237. Guiné-Portuguesa Duarte, *Anuário da Guiné Portuguesa 1948*, 390–91.

⁶⁸ Raimundo A. R. Serrão, Serviço de Distribuição de Energia Eléctrica, September 16, 1950, PT/AHU/ID-OP/OP12699, AHU.

⁶⁹ Resenha da central eléctrica de Bissau cuja produção se pretende elevar, 1950, PT/AHU/ID-

supply. Contrary to the information in the 1946 and 1948 yearbooks, details of the state and level of service are given.⁷⁰ The distribution network was aerial and divided into four sections; public lighting was divided into eight sections, automatically switched on and off by relays.⁷¹ The generators had a total capacity of only 144 kW (2x72kW), were outdated and insufficient to meet even the basic needs of the city. In order to connect private homes and businesses, public lighting had to be reduced each year. Compared to 1930, over 60% less electricity was available for public lighting, so public lighting was drastically reduced (Figure 3).⁷² Some streets were left without any public lighting at all, while in the rest there was only dim lighting, as the 100 W bulbs had been replaced by 40 W bulbs to save electricity. Large parts of the lamp reflectors were corroded and had to be replaced.⁷³ Public lighting did not reach all neighbourhoods: Santa Luzia, Alto Crim and parts of Chão de Papel were still without public lighting, while others had never had electricity.

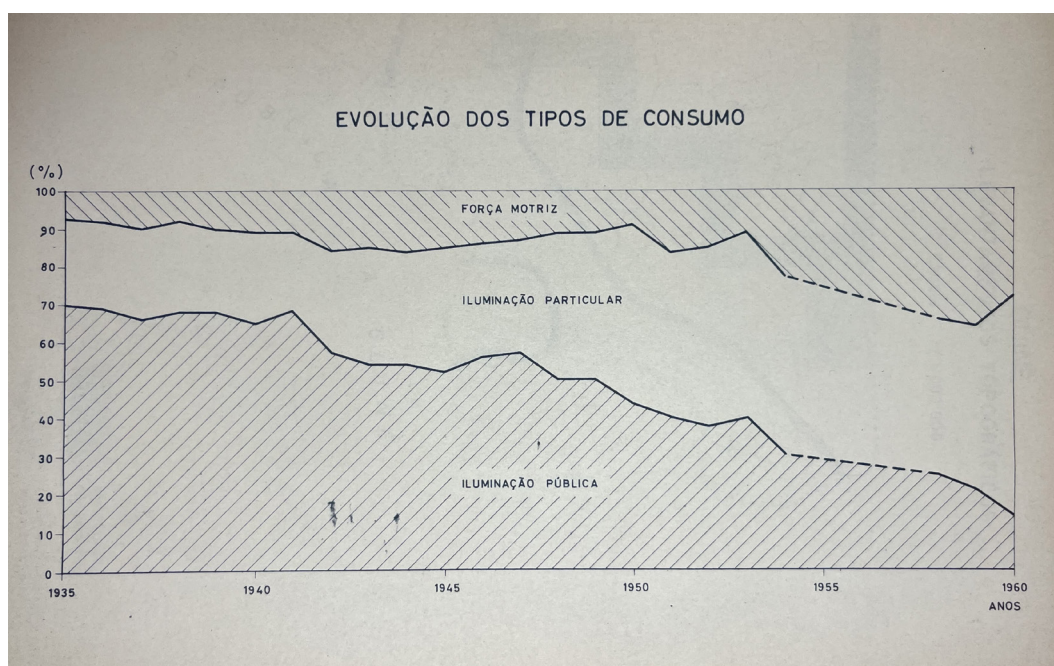


Figure 3 - Evolution of the shares of the consumption of electricity in Bissau.

Source: Quintela Góis, *O Problema Energético da Guiné*.

OP/OP12699, AHU.

⁷⁰ Serrão, Serviço de Distribuição de Energia Eléctrica.

⁷¹ Resenha da central eléctrica de Bissau cuja produção se pretende elevar.

⁷² Serrão, Serviço de Distribuição de Energia Eléctrica.

⁷³ Resenha da central eléctrica de Bissau cuja produção se pretende elevar.

The above aspects of the general problems of electricity supply become visible in Figure 3: the share of public lighting in total electricity consumption slowly decreased from 70% in 1935 to 30% in 1950, while the share of private consumption increased. However, total annual generation remained stable over the whole period, because the generators installed were still those of 1930. The peak load within the network in 1950 was estimated to be around 100 kW.⁷⁴ The two generators had been running in parallel during peak hours for a number of years, but even then, the voltage was falling. Bissau was growing, but there was no capacity to connect all the new buildings immediately. Even the governor's palace and the cathedral could not be connected without increasing the capacity of the power plant.⁷⁵ In this sense the colony was moving backwards, as Governor Rodrigues Serrão put it.⁷⁶

Although the desperate situation and urgent need for additional generating capacity had been highlighted by the administration as early as 1950, it took another two years before the administration finally decided in 1952 on the equipment to be installed at the new power plant. Two generators of a capacity of 440 kW each were ordered.⁷⁷

The new power plant was inaugurated in 1955. It replaced the one built in 1930 at what is now the Lino Correia stadium in Praça and is located next to today's slaughterhouse in Chão de Papel. The two generators, each with a capacity of 440 kW, were sufficient for the free expansion of consumption until 1961, when the limited capacity of the plant caused voltage drops in some parts of the network. Although another generator with a capacity of 1,500 kW was installed in 1966, there were still restrictions on the expansion of electricity consumption (limited capacity, voltage drops). A larger generator of 2,200 kW, almost doubling the installed capacity, was due to be installed in 1970.⁷⁸ A plan of the power plant dated 1972 shows that this generator was finally installed (2400 kW), and the city council launched a tender for the purchase of another generator with a capacity of 1,760 kW (Table 2).⁷⁹ There is no record of whether the generator was installed before independence in 1973/74.

⁷⁴ Resenha da central eléctrica de Bissau cuja produção se pretende elevar. The recently built solar power plants in Bambadinca (2015) and the village Contuboeil (2017) in the interior of Guinea-Bissau have a capacity of 312 kWp and 110 kWp respectively, making them even larger (Bambadinca) or almost the same size (Contuboeil) as Bissau's power plant in 1950.

⁷⁵ Resenha da central eléctrica de Bissau cuja produção se pretende elevar.

⁷⁶ Serrão, Serviço de Distribuição de Energia Eléctrica.

⁷⁷ Câmara Municipal de Bissau, Descrição do material proposto para o apetrechamento da central eléctrica de Bissau, June 24, 1952, PT/AHU/ID-OP/OP12699, Arquivo Histórico Ultramarino (AHU).

⁷⁸ O Problema do Abastecimento de Energia Eléctrica na Cidade de Bissau, February 23, 1970, MU/DGOPC/DSUH/1878/00774, Arquivo Histórico Ultramarino (AHU).

⁷⁹ Câmara Municipal de Bissau, Fornecimento, transporte e instalação de um grupo electrogénico de 2000 kVA para a central termo-eléctrica da câmara municipal de Bissau, 1972, PT/AHU/ID-OP/OP12021, Arquivo Histórico Ultramarino (AHU).

These generator sets formed the backbone of the Bissau power plant until the early 1980s.⁸⁰

Period	1930-1955	1955-1966	1966-1970	1970-1972/75
Installed Generators	2x72 kW	2x440 kW (Deutz)	2x440 kW 1x 1500 kW (Deutz)	2x440 kW 1x 1500 kW 1x 2400 kW (Deutz)
Overall installed generation capacity	144 kW	880 kW	2380 kW	4780 kW

Table 3: Bissau power plant from 1930 to 1975 – generators and overall installed generation capacity.

Despite these investments and the inauguration of the new power plant, the general state of the network and the new generators installed did not meet the standards at that time. An information note from Lisbon dated 23 February 1970 and the report by engineer Cunha Barros cite a poor distribution network, inadequate for the capacity required by consumers, and an inadequate cooling system for the generators at the power station as the reasons for the problems in the electricity sector.⁸¹ The inadequate cooling system of the motors led to excessive heating, therefore limiting the operating capacity below the maximum possible and causing high consumption of fuel and lubricants. From an administrative point of view, the lack of statistical data delayed planning and the slow implementation of projects contributed to the poor state of the electricity supply and distribution in Bissau.⁸²

In conclusion, an analysis of the documents relating to Bissau's electricity generation and distribution system during the colonial period shows that, from 1930 to the early 1940s, Bissau had a sufficient supply of energy for the population which the Portuguese colonial administration referred to as “civilised.” From the early 1940s until the inauguration of the new power plant in 1955, the supply was insufficient, access was limited and the system lacked investment. For another short period, from 1955 to 1961, Bissau's new power plant produced enough electricity for the growing city. From 1961, however, demand outstripped production. Although new generators were installed in the following years, investments

⁸⁰ Arlindo N. C. da Silva, personal communication, February 22, 2024.

⁸¹ Cunha Barros, Problemas eléctricos na Provincia de Guiné - Visita efectuada de 18 a 30 de Junho de 1969. O Problema do Abastecimento de Energia Eléctrica na Cidade de Bissau.

⁸² O Problema do Abastecimento de Energia Eléctrica na Cidade de Bissau.

were made, and the distribution network was extended, the installed generation capacity could not keep up with the growing demand of a city whose population quadrupled from 18,000 in 1950 to 70,000 in 1970 (an increasing proportion of this population was supposed to have access to electricity).⁸³

Glorifying Development – The System of Dispersed Generators in the Interior

The challenges of maintaining the dispersed generator system established in the 1950s and 1960s in the interior were similar to those encountered in Bissau. The distribution networks and power plants were outdated and technically poorly maintained. However, official publications as the colonial yearbooks of 1946 and 1948, and later the *Boletim Cultural da Guiné Portuguesa* (Cultural Bulletin of Portuguese Guinea), celebrated the achievements of the colonial government. Although the sections on electricity supply are short, they show that electricity was always a prestigious project. Every new infrastructure was announced in these yearbooks, and in 1948 even the existence of oxcarts at the administrative posts was highlighted. We can therefore imagine the general state of infrastructural development in the colony.

Archival documents reveal the technical challenges and describe a system in a deteriorating, precarious state.⁸⁴ Engineer Cunha Barros's report, from 1969, describes the situation in some inland cities in detail:⁸⁵ the Bolama plant consisted of three generators in apparently good condition. However, the distribution panel was in a very poor condition with completely damaged meters. The manager was planning to rebuild the distribution network, but there was no written project for this. A new 130 kVA generator had been ordered, but Cunha Barros could not understand why the administration had chosen such a capacity; the tender documents were not accessible.

In Canchungo, the distribution panel and distribution network were in a desperate state. In Gabú he found a relatively new generator with a good distribution panel, but it had arrived in the province with completely deteriorated electrical equipment. This generator was connected to another older switchboard without any safety fuses. Another generator had been out of service for some time and was waiting for spare parts.

In Farim he encountered four generators of different brands. Two old Listers, one in good condition, the other in maintenance waiting for spare parts. A Caterpillar was running, while another Deutz, although new, had already broken down due to poor assembly. The

⁸³ Joseph Ernst Kasper, *Bissau - existenzsichernde Strategien in einer westafrikanischen Stadt* (Bern: Peter Lang, 1995), 92.

⁸⁴ O Problema do Abastecimento de Energia Eléctrica na Cidade de Bissau. Quintela Góis, O Problema Energético da Guiné.

⁸⁵ Cunha Barros, Problemas eléctricos na Provincia de Guiné.

air-cooling system had not been installed properly and was generating excessive heat, which had damaged the engine. However, this problem had already been solved by the time he visited the power plant, which he described as the cleanest plant he had visited, although it was equipped with outdated material in only satisfactory conditions.

The distribution panel and network as well as the two generators (a 20 kVA Mercedes Benz and a 28.7 kVA Lister) in Bissorã were outdated and in poor condition. In addition to the lack of material to solve the problems of the power plant, he mentions a high degree of amateurism in this place. In Ingoré and São Domingos, the situation of the small power plants was similar to the others visited. In one of these places, an alternator had been connected to a motor with wires tied to wooden stumps without any alignment, putting both at risk.

The power plants of the interior of the country were made up of generators of different brands, of different capacities and, in most cases, in poor condition. Such a system was difficult to manage, as maintenance and spare parts could not be organized efficiently. In order to reorganize the electricity sector of the province, the administration would have to decide on a specific brand and three or four different capacities (e.g. 25, 50, 100, 150 kVA) of the generators to equip the power stations in the interior. A centralised management and maintenance service would be an asset for the efficient reorganization of the energy sector.⁸⁶

It is striking that Cunha Barros's description at the end of the 1960s could still be a description of the system in the 1990s, while an up-to-date description would have to note that even fewer cities in the interior have public electricity distribution at all. The system of dispersed generators of different brands, with its specific problems, continues to this day, but some of his advice, like the creation of a central management service, were implemented soon after independence in 1973/74.

A National Network or Maintaining the System? Three Options at the End of the Colonial Era

The electrification of Portuguese Guinea did not follow any comprehensive plan. There were plans for a limited national electricity network and generation capacity apart from thermal generators (Figure 4) but they were not realised. The decentralised system of dispersed generation, under the responsibility of each municipality or the military, continued until independence in 1973/74.

⁸⁶ Cunha Barros, Problemas eléctricos na Provincia de Guiné, 7-8.

The idea of building a dam at Saltinho had already been presented in a study by the engineer Abecasis in 1950.⁸⁷ Quintela Cóió revived and expanded these plans in 1962.⁸⁸ His plan is one of the few documents on the demand for electricity in Bissau and the interior to be found in the archives.

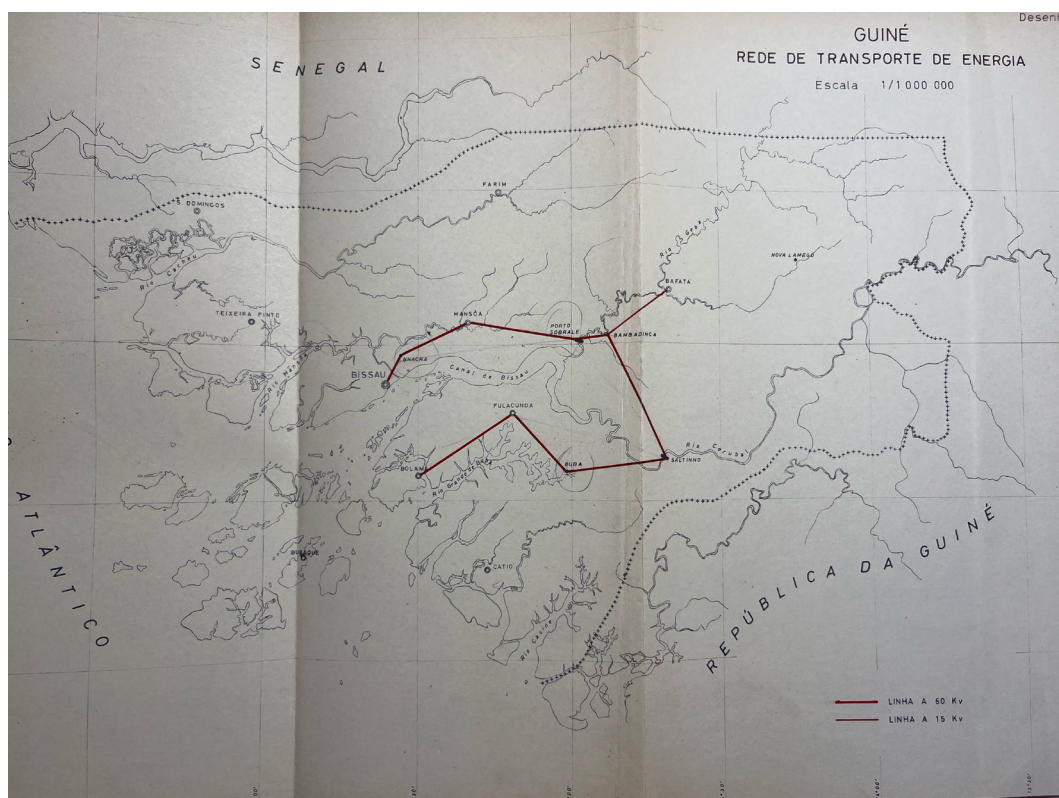


Figure 4: National electricity network based on a hydroelectric power plant at Saltinho, proposed in 1962. Source: Quintela Góis, *O problema energético da Guiné*, 42.

Even the 230-page master plan for the colony's development, presented in 1972, devotes just two pages to the energy sector at the time and in the future, and remains brief and vague. The plan calls for immediate action to provide electricity for public and industrial use in Bissau and for public lighting in the main settlements in the interior. The high cost of the service is identified as a key challenge—a feature of Guinea-Bissau's electricity supply to date.

⁸⁷ Quintela Góis, *O problema energético da Guiné*, 1.

⁸⁸ Ibid.

At the end of the colonial period, there was no detailed overall plan for electrification, only an intention to stabilise and expand the electricity system. Three options were outlined to meet the growing demand for electricity: (1) expanding the existing system of local generators, providing the necessary production capacity according to the development plans foreseen; (2) creating a high-voltage distribution network fed by a few large thermal power plants; (3) creating a high-voltage distribution network powered by a hydroelectric plant (possible site Saltinho, a project further studied in the 1980s, never realised, but still on the agenda) or a tidal power plant, as the tidal range reaches levels of 6-8 m.

The creation of a national grid, serving the whole province and supplied by a few power plants, would be a definite solution to the electricity problem, but at the time not even the necessary technical feasibility studies had been carried out for such a large-scale project.

Although the first option did not appear to be the most economical in the long run, it was the simplest and quickest solution. Therefore, the report concluded that the current system should be improved by striking a balance between investing in a short-term and a long-term solution to the energy problem, i.e. by commissioning the necessary feasibility studies for a definitive solution to the challenges facing the province's electricity sector.⁸⁹ This was a very vague statement, meaning that the status quo would continue until further notice.

At the end of the colonial era, the Bissau City Council was said to be constantly struggling with all its responsibilities: housing, urban planning, health, water supply, sewerage, the slaughterhouse, and city cleaning, in addition to the poor electricity sector. The Bissau power plant had four groups of generators (Table 3). Expansion was planned, and the development plan mentioned the reconstruction of the power plant and the distribution network in Bissau, adopting to a capacity of more than 10 MW.⁹⁰ This figure remained the target for the next forty years. It was only reached and permanently exceeded (15 MW) in 2015 when power generation was outsourced by the national electricity company (EAGB) to a private international company.

Conclusion

The introduction of electricity was not an easy endeavour for the colonial administration. Between 1930 and the mid-1940s, only three cities had a public electricity supply—Bolama, Bissau and Bafatá—, while Bubaque and other places with small scale industries had a limited administrative or industrial production of electricity, but no public service as such.

⁸⁹ Província da Guiné, *Prospectiva do Desenvolvimento Económico e Social da Guiné*, 159–60.

⁹⁰ *Ibid.*, 201.

Total consumption and the number of clients increased only slowly. The economy at that time was a rural, non-electrified economy.

After World War II, the Portuguese government increased investment in its colonies, which led to the electrification of district capitals in the interior. Until the late 1960s, all major towns in the interior had a limited supply of electricity through small, isolated grids connected to generators that ran at night. Only in Bissau was there a 24-hour electricity supply. While the Portuguese colonial administration promoted a narrative that celebrated every small achievement in infrastructure, archival reports from the period show that the electricity sector's infrastructure was in poor technical condition. Maintenance, lack of technical capacity and cost recovery were the main challenges facing the system.

The war for independence led to a very specific development in the electricity sector: the military controlled the generators in two-thirds of the places. Military needs were the main driver for bringing electricity to remote places. Thus, electrification went hand in hand with military occupation. Of the total generation capacity outside the capital, Bissau, only 50% was controlled by the civilian government.

Compared to the situation that has prevailed in Guinea-Bissau for decades, the electricity system under colonial rule was more reliable where it existed. However, it was not a system designed or intended to provide electricity to the majority of the resident population. It was a system for a small proportion of the population, who had a reliable supply of electricity at night. In this sense, the remembered glorious past of stable and reliable electricity for all in colonial Portuguese Guinea is more of a myth.

If we look at the starting conditions for the further electrification of Guinea-Bissau in 1974, the situation can be described as follows: the state inherited an electricity supply and distribution system that had grown from the roots. Each town had set up its own small power plants, which had grown in line with local demand. There was no central planning or maintenance unit. Many generators had been installed in remote locations in former military camps, disconnected from the needs of the population. Maintaining the system had already been a challenge for the Portuguese colonial administration.

In other words, all the major post-independence challenges in the electricity sector—technical, political and in terms of client behaviour—were already inherent in the colonial system. The government subsidised public electricity supply, government institutions often did not pay for electricity and clients were not metered but often paid a lump sum based on the appliances in their homes. The system of generators of different brands dispersed around the country was expensive and difficult to maintain. This was a minor problem

in times of war and massive military budget support, but it was not sustainable for the independent post-colonial state.

These challenges remain in post-colonial Guinea-Bissau more than fifty years later. Despite claims to the contrary, it remains an open question in Guinea-Bissau for whom, for what purposes and under what conditions electricity should be provided to the various public and private entities of the population and industry.

Acknowledgements

I'd like to thank everyone who participated in the academic writing session at the University of Bayreuth's Department of Social Anthropology as well as the anonymous reviewers for their valuable feedback and constructive criticism during the writing process. For their help, I am thankful to the General Directorate of Energy in Bissau, especially to the former workers of the power plants in Bissau, Canchungo, Bafatá. For their assistance beyond their service, I would also like to express my gratitude to the staff of Arquivo Histórico Ultramarino (AHU) in Lisbon.

Competing interests

The author has declared that no competing interests exist.

Funding

Research was funded by Fritz Thyssen Foundation in the framework of the post-doc project: "Disruptive Processes in the electricity sector of Guinea-Bissau – a history of electrification, de-electrification and re-electrification (1890-2020)" (Az. 40.22.0.011EL).