

SYMPOSIUM ON INFRASTRUCTURING INTERNATIONAL LAW

INTERNATIONAL LAW AND REGIONAL ELECTRICITY INFRASTRUCTURE: THE WEST AFRICAN POWER POOL

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In nearly all regions, politico-legal projects for regional organization and integration often prioritize infrastructure construction and maintenance. In West Africa, the development of a regional organization by the post-colonial independent states, in particular the Economic Community of West African States (ECOWAS) formed in 1975, has enabled states to allocate certain powers to formal and informal regional political institutions with the aim of building state effectiveness and capacity and hence increasing public support and popular legitimacy. In this Essay, I argue that regional organizations serve as governance structures whose infrastructural and institutional mechanisms contextually address the needs of states and their citizens. This account particularly applies to West African electricity arrangements overseen through an unusual ECOWAS-linked regional infrastructural organization, the West African Power Pool (WAPP). The case of WAPP demonstrates how the energy infrastructure shapes and modifies regional institutional rules and practices.

Power Pools and Electricity Markets: West Africa

Power pools are “multilateral arrangements with members ceding operational control over their generating units and transmission facilities to a common operator.”¹ The first power pool seems to have been the 1927 Pennsylvania-New Jersey-Maryland interconnection in the United States. By the 1990s, aid and development agencies such as the World Bank were actively promoting inter-country power pools. These require both an inter-company (or inter-utility) agreement and some form of inter-state agreement.² West Africa was claimed to be particularly suitable for a power pool because of the combination of low per-capita electricity use, fast-rising demand, and population growth pointing to a need for more generation and transmission capacity and the potential for cross-border arrangements (some of which already existed) to supply electricity from generation-surplus to generation-deficit areas.³ Whether West African publics were as convinced as the World Bank—that constant electricity supply and markets were such a high development priority—is open to question.

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¹ FEDERAL ENERGY REGULATORY COMMISSION (FERC), [ENERGY PRIMER: A HANDBOOK OF ENERGY MARKET BASICS](#) 39 (2015); see also Douglas Gegax & John Tschirhart, *An Analysis of Interfirm Cooperation: Theory and Evidence from Electricity Power Pools*, 50 S. ECON. J. 1077 (1984).

² See WORLD BANK, [BUILDING REGIONAL POWER POOLS: A TOOLKIT](#) (2005).

³ ANTON EBERHARD, ORVIKA ROSNES, MARIA SHIKARATAN & HAAKON VENNEMO, [THE WORLD BANK, AFRICA'S POWER INFRASTRUCTURE: INVESTMENT, INTEGRATION, EFFICIENCY](#) (2011).

West Africa has a history of inter-country electricity trading. One established pattern saw electricity moved eastward from Cote d'Ivoire to Nigeria (through Ghana, Togo, and Benin). Nigeria also traded with its northern neighbor, Niger, using a transmission line that was constructed in 1983. And in 2006, Nigeria began to trade with its next-door neighbor to the west, Benin, after the construction of the Ikeja-Sakete transmission line.⁴ The *Organisation de la Mise en Valeur du Fleuve Senegal* (Organization for the Development of the River Senegal) line connecting Senegal, Mali, and Mauritania to a hydropower plant in Senegal enabled trading from 2002,⁵ and the *Organisation pour la Mise en Valeur du Fleuve Gambie* (Organization for the Development of the Gambia River) connected the Gambia, Guinea, Guinea Bissau, and Senegal. Thus, cross-border electricity markets existed, but they were highly inefficient, with three main drawbacks. First, the markets were haphazard with no clear rules. Second, they were politically motivated with supply not necessarily assured and countries not always paying their bills on time.⁶ Third, the limited reach of the markets contributed to even greater disparities between countries that were engaged in trading and those that were not.

In order to address the deficiencies of existing cross-border electricity markets, WAPP was created in 1999 and formalized in 2005.⁷ WAPP's main mandate is the creation and operation of a regional electricity market. As a power pool, it is expected to integrate the resources of its members and ensure a reliable supply of electricity within its sphere of operation. Market participants include generators, transmission systems operators, bulk marketers, and, sometimes, distributors and large-scale consumers. As a pool, WAPP is expected to ensure that the infrastructure or hardware required for transmitting electrical power across state lines exists and is properly maintained. This includes the maintenance of a coordination center to collect data on load flows and provide load forecasts that would form the basis for the pool transactions. In order to enhance the reliability of supply, the data and transactions that arise from the pool would form the basis for matching electricity demand with supply in countries across the region, especially if transactions are based on short-term markets such as day-ahead or intra-day markets. What had been a disjointed marketplace was finally overlain by WAPP's connected regional market in 2018, when the pool was formally launched following more than a decade of institutional and procedural consolidation to establish regional rules and processes for the relevant transactions; nevertheless, complexities and limitations remain.

Thinking Institutionally About WAPP

“Thinking infrastructurally”⁸ involves paying attention to major technical, economic, social, and organizational dimensions of the large-scale socio-technical interlinked networks under study.⁹ Thinking infrastructurally about efforts to improve electricity in West Africa includes “thinking institutionally,” in this case, about WAPP and its

⁴ This formed part of the initial WAPP priority projects.

⁵ The 200MW Manantali Hydro Plant (commissioned in 2002) in Senegal was constructed to expand Senegal's supply and transmit to neighboring Mauritania and Mali. Note that Mauritania is not an ECOWAS member state, but it is part of the regional power exchange, particularly because of its involvement in the *Organisation de la Mise en Valeur du Fleuve Senegal*, which now comes under the WAPP exchange system.

⁶ Observers have noted how even when countries refused to pay outstanding bills, public utilities were still instructed by political leaders to keep supplying electricity. Interviews by the author with WAPP officials in Cotonou, Republic of Benin, in June 2017. This is one area where the introduction of an independent systems operator could enhance efficiency.

⁷ WAPP began working out of an observatory in Cotonou, hosted by the government of the Republic of Benin, with support from utility companies in the region, donors, and partners.

⁸ Benedict Kingsbury, *Infrastructure and InfraReg: On Rousing the International “Wizard of Oz,”* 8 CAMBRIDGE INT'L L.J. 171 (2019).

⁹ WORLD BANK, *WORLD DEVELOPMENT REPORT: INFRASTRUCTURE FOR DEVELOPMENT* 2 (1994).

relation to ECOWAS. Following James March and Johan Olsen, I understand institutions as comprising rules and organized practices that are embedded in structures of meaning and resources.¹⁰ This comprehensive understanding of institutions encompasses formal aspects and informal behaviors, motivations, and processes that drive social relations and political actors. These elements are crucial to appreciating the role and function of WAPP, which has been driven by these formal and informal confluences of rules and practices from its very inception.

In its 1999 decision establishing the West African Power Pool, the ECOWAS Authority of Heads of State and Government noted that the West African “energy sector . . . is one of the least developed in the world, despite the abundant energy potential in the sub-region” and that there was “unequal distribution of the energy potential across the various member states.”¹¹ Under the decision, the pool was to be run by a coordination body comprising energy ministers and directors-general of electricity companies in member states.¹² This coordination body was to be responsible for setting up the power pool and its institutional arrangements. Usually, power pools are not centrally focused on increasing generation capacity, which in contexts such as the Nordic countries (the best-practices model being the Nord Pool) already exists or will be built nationally. Since this was not the case in West Africa, WAPP had to incorporate the planning and financing of generation projects into its mandate in order to ensure the viability of the pool.¹³

In 2005, the ECOWAS Authority approved and adopted the Articles of Agreement of WAPP. As its main objective, the pool “exists and operates for the benefit of the bulk electric transmission system and to ensure the reliability of the entire region’s supply.”¹⁴ This objective is of fundamental importance to the public and also to states aiming to maintain their legitimacy. The infrastructural nature of electricity generation and transmission enables WAPP officials to define WAPP’s work in primarily technical rather than political terms. This is buttressed by WAPP’s membership arrangements as well as by its relative financial and bureaucratic independence from ECOWAS.

WAPP’s membership principles differ from the other specialized institutions of ECOWAS in that membership does not comprise ECOWAS member states or any states at all. Instead, WAPP members are private and public utility companies from ECOWAS member states, with the possibility of membership or observer status for non-ECOWAS utilities. WAPP’s corporate membership, and the relative absence of political intervention by governments or ECOWAS in WAPP’s institutional structure and routine operations, distinguishes it from other ECOWAS institutions and accentuates the technical focus of the pool. The utility members of WAPP, whether public or private, have technical and commercial missions, but domestically, they may be restrained in their undertakings by political decisions and operations. This may lead to national political interests operating in the background of WAPP’s decision making.¹⁵ This makes the role of WAPP as an ECOWAS specialized institution important, in that it allows for the political organs of ECOWAS to weigh in where necessary, while the core focus of the pool can remain technical.

¹⁰ See James G. March & Johan P. Olsen, *The New Institutionalism: Organizational Factors in Political Life*, 78 AM. POL. SCI. REV. 734 (1984) (for the introduction to new institutionalism in politics); see also James G. March & Johan P. Olsen, *Elaborating the New Institutionalism*, in *THE OXFORD HANDBOOK OF POLITICAL INSTITUTIONS* 5 (Sarah A. Binder, R. A. W. Rhodes & Bert A. Rockman eds., 2008).

¹¹ [Decision A/DEC.5/12/99 Relating to the Establishment of the West African Power Pool](#), pmb. (Dec. 10, 1999).

¹² *Id.* Art. 2.

¹³ Author’s interviews with the Director of WAPP’s Department of Planning, Investment Programming, and Environmental Safeguards in Cotonou, Republic of Benin and over Skype (June and November 2017, respectively).

¹⁴ [Articles of Agreement of the West African Power Pool: Organization and Functions](#), Art. 1 (2005).

¹⁵ Government actions may affect revenue collection by utilities, and cross-border payments. Government decisions on project financing and partnership may determine the level of funding available to utilities, especially for generation. On the Bui Dam in Ghana, see [EVOLUTION OF DAM POLICIES: EVIDENCE FROM THE BIG HYDROPOWER STATES](#) 232 (Waltina Scheumann & Oliver Hensengerth eds., 2014).

ECOWAS does not contribute to the financing of the WAPP secretariat or of WAPP activities and programs, as the member utilities are responsible for funding the institution. In addition, member states, by themselves or through the political organs of ECOWAS, have limited control over the administration of the WAPP secretariat. Nonetheless, having ECOWAS as an umbrella organization lends political credence to WAPP activities and facilitates cooperation under the overall West African regional project. Being an ECOWAS specialized institution grants WAPP special visibility from the perspective of potential investors, especially international donors such as the World Bank and the African Development Bank that have regional funding envelopes devoted to projects backed by regional institutions like ECOWAS.

Thus WAPP presents an interesting example of how thinking infrastructurally highlights the institutional rules and processes that define an organization. The objectives of the power pool define its role as a technical infrastructural establishment that is meant to develop the facilities for electricity generation and transmission across the region as well as administer the market for electricity exchange across state lines. At the same time, its social and political targets are guided by ECOWAS through its institutional structure, which is responsible for accomplishing the economic, political, and social objectives of the community.

WAPP and the International Law and Policy of Regional Infrastructure

While states are pivotal to the supply of infrastructure, domestically and internationally, non-state actors such as financial institutions and multinational corporations play an important role in the transnational and international networks and institutions that drive infrastructure. WAPP is a clear example of how the influence of international financial institutions drives the push for infrastructure and how infrastructure shapes and modifies regional institutional rules and processes. This has resulted in a medley of public-private arrangements driven by the technical processes and legal agreements that structure this regional infrastructure project.

Agreements between power companies provide some of the legal foundations for specific electricity arrangements involving WAPP. However, transnational trade networks require agreements between the governments of the different countries involved for access to territory and, in some cases, access to funds. The 2003 ECOWAS Energy Protocol provides rules regarding competition, transit, and sovereignty over energy resources, and serves as the basis for cooperation among ECOWAS member states in the development, trade, and transfer of energy resources, including electrical energy.¹⁶ The protocol is administered by the Meeting of Energy Ministers of ECOWAS member states, which is responsible for considering and adopting “programmes of work to be carried out by the ECOWAS Executive Secretariat.”¹⁷

WAPP serves as the central planning body for the nascent energy market in the region, but its role is further compounded by the energy status of ECOWAS member states. WAPP sees one of its main roles as the collection of information and the coordination of processes among its members—utility companies—to facilitate the operation of the energy market that spans several states. But in order for WAPP to carry out these functions, there must first be a certain level of infrastructure to facilitate the relevant processes, and this infrastructure includes generation plants and transmission lines. Thus WAPP also spends a significant amount of its resources promoting the construction of the infrastructure necessary to build an effective regional market. Consequently, WAPP is involved in planning activities that include: conducting feasibility studies, organizing investment forums to connect members with potential investors, and facilitating negotiations between members and donors—much of this targeted

¹⁶ [ECOWAS Energy Protocol A/P4/103](#), Annex A (Jan. 31, 2003) includes “electrical energy” under the types of energy materials and products governed by the Protocol, thus bringing the activities of WAPP under the purview of the Protocol. It provides a detailed account of the rules governing cooperation amongst contracting party in the trade, transfer, and development of energy sources.

¹⁷ *Id.* Art. 31, para. 2(d).

toward generation and transmission projects and the construction of base infrastructure to support a thriving electricity market. This is a unique role that pools in other regions with more developed power systems have not had to play, especially when it comes to addressing significant national deficits that feed into regional deficits.

Superimposed onto this regional framework are global environmental and development agendas, for which regional organizations like WAPP and ECOWAS serve as both interlocutors for, and fora in which to address, West African matters. Environmental issues in the electrical energy sector are of only limited concern for states in West Africa, which contribute less than 1 percent of global emissions. The global push toward net-zero generation and renewable electrical energy still has to be contextualized to meet West African objectives of addressing a critical power shortage and protecting the environment. Thus, while there are regional efforts toward introducing off-grid solutions and renewable energy resources, thermal and hydro generation have been recognized as the most affordable means for addressing the region's needs for now. WAPP promotes these mechanisms and contextualizes them to meet the needs and conditions of ECOWAS member states. Consequently, WAPP represents a prioritization of regional infrastructural needs by creating expansive—and novel—ways of developing and operating a power pool to address critical challenges and designing international institutional mechanisms to drive those infrastructural arrangements.

Conclusion

The evolution of a new form of institutional engagement to absorb the infrastructural needs of the region's states and citizens reveals how international—in this case, regional—institutional law can transform itself for infrastructural purposes. WAPP presents as a corporate entity with limited political interference, but its relationship to the hierarchical structure of ECOWAS with its political leadership, technical management, and socioeconomic targets reveals a bi-directional pull toward technical efficiency on the one hand and political expediency on the other. The structure of WAPP must be able to deliver not only technical features such as grid management, voltage boosters, and shield wiring to reduce transmission loss (as well as the organizational forms and practices to embed the supply of infrastructure within the existing regional institutional framework), but also provide for the socio-infrastructural needs of the states and citizens of West Africa. One of the next urgent extensions for WAPP is to move beyond its focus on improving electricity generation capacity, supply, and transmission—which certainly enhances but does not definitively establish the legitimacy of the electricity sector—to address huge disparities among West African people in terms of electricity access and affordability. WAPP's success vis-à-vis West African publics may depend on social projects so that the regional population who have limited or no access to electricity will be willing to participate in a sector that they might find unaffordable and—perhaps—unnecessary. The story of WAPP is thus an illustration of contextual adaptation, not only of technical requirements to suit the infrastructural needs of a region and its people, but also of governance structures that can facilitate the supply of infrastructure within an existing regional institutional framework.