



ECA POLICY BRIEF

Opportunities to harmonize regulatory systems for infrastructure development: The case of power pools for service delivery and structural transformation in Africa

The present Policy Brief outlines some of the key recommendations derived from the study on “Effective Regulatory Systems for Service Delivery and Structural Transformation in Africa: Infrastructure Development and the Case of Power Pools”, which was conducted by the Economic Commission for Africa (ECA).

1. Effective regulation can help to unlock Africa’s power sector: exploring power pools as an institutional mechanism

Regulation is at the heart of expanding access to electricity on the continent: its importance of regulation in the development of the power sector is recognized, particularly with regard to achieving objectives of accessibility and affordability. The potential for increased private investments, which are possible through conducive business environments enabled by effective regulation, provide the impetus to accelerate the pace of regulatory reforms.

In the area of electricity, the establishment and formation of power pools is known to alleviate some of the issues of accessibility, reliability, and affordability that are faced currently on the continent. The rationale behind setting up power pools in Africa, as anywhere in the world, is the expansion of the market for electric power beyond national borders, which would then stimulate investment capacity in countries with a comparative advantage in generation.

Power pools as an institutional mechanism offer an opportunity to contribute to improved energy supply for structural transformation. There is ample evidence on the benefits of power pools, and hence the need to further develop and strengthen the sector. Power pools are therefore critical in the development of the energy sector in the following ways: facilitating regional power trade contributing to the harmonization of regulations at the regional level; and through their functions, which require the convening of representatives of different member States. Power system interconnections, through power pools, can also contribute to sustainable development, particularly when alternative sources and a diversified energy mix are harnessed. But despite their potential, they remain an underdeveloped and a minimally utilized institutional mechanism.

Existing power pools are not operating at their optimal level and regional power trading is limited (Eberhard *et al.*, 2011).¹ The Southern Africa Power Pool (SAPP) is the more advanced. It has bilateral contracts between member countries, a functional competitive Day Ahead Market, and an established institutional set-up, with operational market rules and regulations. The East African Power Pool (EAPP), while being the last power pool to be established, has the potential to become fully operational, alongside the design and development of its power market institutions and rules. Still most power pools in Africa are yet to fully fulfil the requirements and conditions for operationalization (ECA, 2003 and ECA, 2005).² As of 2016, for example, regional

1 Eberhard, Anton, Orvika Rosnes, Maria Shkaratan, Haakon Vennemo. 2011. “Africa’s Power Infrastructure Investment, Integration, Efficiency.” Vivien Foster V and Briceño-Garmendia C, Series Eds. The World Bank, Washington, D.C.

2 Economic Commission for Africa. 2005. The Challenges of Operationalizing Power Pools in Africa.” Addis Ababa; Economic Commission for Africa. 2003. “Assessment of Power Pooling Arrangements in Africa.” Addis Ababa, Ethiopia.

trading has not taken off in the Economic Community of West African States (ECOWAS) through the West African Power Pool (WAPP), although provisions exist “on paper”. Even with a clear mandate and the existence of guidelines in WAPP, rules to enable power trade are only being put in place now. There is yet to be a regional market as most trading is happening bilaterally between member States. The WAPP needs a regional control centre and a market operator, to settle transactions as it endeavours to become fully functional.

From a regulatory standpoint, the lack of a regional legal and regulatory framework for electricity trading and an appropriate mechanism for dispute resolution are major constraints. The rationale for regulation is extensive, but in the case of utilities, where monopolies and natural monopolies exist, regulation counters the tendency to raise prices and lower output through predatory pricing, and it can harness the benefits of scale economies. Legislation and contractual legislation arrangements are also required to manage issues related to the exchange of energy within and among many countries. Currently, some of the power pools, such as the Central African Power Pool (CAPP), remain fragile in terms of institutional set up. In comparison, the COMELEC (Comité Maghrébin de l'Electricité) has the highest connectivity and the best infrastructure, and it is also linked to the Middle East and Europe. Yet, although power pools have been in existence for many years, their role as drivers of regional power projects remains challenged.

The issue of regulation is new to the continent and in the case of power pools, which involve multiple stakeholders across various jurisdictions, regulation is needed to maximize the efficiency and effectiveness for the various needs and interests. A regulatory system is the combination of institutions, laws, and processes that give government control over the operating and investing decisions of enterprises that supply infrastructure services.³ Discussion on regulatory systems makes a distinction between three aspects or elements of regulation. These include: 1) Rules, which are concerned with issues such as taxability, laws, licensing, and contracts; 2) Regulatory bodies and 3) Regulatory process. Regulation of power trade takes place at three levels: national, regional and regulatory associations, which are a loose network of national regulators within a specific power pool. While independence is a critical attribute of the regulator, its effectiveness remains paramount. It is thus important to focus more on the functionality and effectiveness of regulatory bodies than on their autonomy or independence.

3 Kapika, Joseph and Anton A. Eberhard. 2013. “Power-sector Reform and Regulation in Africa: lessons from Kenya, the United Republic of Tanzania, Uganda, Zambia, Namibia and Ghana.” Human Sciences Research Council, Cape Town, South Africa.

Findings from the EAPP indicate that regulatory substance (the “what” of regulation) is at an advanced stage, but also that the regulatory governance (the “how” of regulation) and regulatory impact leaves much to be desired. A study conducted by the EAPP⁴ confirmed that the national energy policies of all member States support regional power trade. While the harmonization of operational standards is very important to enhance this trade, full harmonization has not been made a priority to enable interconnectivity. Emphasis has so far been on ensuring that utilities trade across borders. Nonetheless, harmonization on technical parameters is required for the system to remain sustainably synchronized and smooth flow of cross border trade.

2. Opportunities to harmonize regulation exist: ascribing roles and responsibilities to the range of stakeholders at all levels

Current trends in investments and regional frameworks indicate a positive outlook for African infrastructure, particularly for the power sector, where the development of power pools is underway. The importance of regulation in the development of the power sector is a recognized fact, particularly with regard to achieving the objectives of accessibility and affordability. Current efforts by the African Union and its partners through the Africa Power Vision (APV), provides an overarching vision of powering Africa. The APV is consistent with Agenda 2063 (adopted by the African Union) and derived from the continent's priority energy projects outlined in the Programme for Infrastructure Development in Africa (PIDA)⁵, which complements the vision of African countries to create fully functional, integrated and competitive power pools. At the global level, the Sustainable Development Goals which are intended for integration into national development plans, place emphasis on infrastructure development. An African Union, continent-wide Strategy and Action Plan on the development of a Harmonized Regulatory Framework for the Electricity Market in Africa exists as a means for improving the quality and security of energy supply on the continent, more needs to be done. In addressing the challenges and opportunities, actionable recommendations for enhancing regulatory harmonization include:

4 Eastern Africa Power Pool. “EAPP Regional Power System Master Plan 2014.” Volume I: Main Report. December 2014. Energy Analyses.

5 The Programme for Infrastructure Development in Africa (PIDA) focuses on 51 cross sectoral programmes divided into over 400 projects that are to be implemented between 2012 and 2040 to promote regional infrastructure. With respect to energy, the PIDA Energy Vision aims to connect the continent's power pools to enable a large increase in interregional energy trade and hence, reduce electricity prices for the wider public.

- **Updating the status of progress on regulation in all power pools**

Along the lines of making a compelling case for building and strengthening regulatory frameworks for power pools, and for the harmonization of regulatory regimes, there is need for comprehensive analysis of all power pools. Applying up-to-date data and information will help to distinguish which regulatory system is best for the given context. Given that the power pools are at different stages of development, this information can also help to highlight advances from lessons can be learned.

- **Clarifying roles and functions in terms of harmonization**

The regulatory system involves a range of stakeholders in energy regulation, including utilities, national regulators, and consumers, among others, from the subregional to the regional level. It is important to differentiate the players from the referee, specifying who is best placed to harmonize the regulations.

- **Promoting energy reforms inclusive of harmonization, starting at the national level**

A conducive legal and regulatory environment for private participation, which would include legally empowering the power pools to act on behalf of regional economic communities (RECs), and governments, particularly on power deals, can help improve profitability and capacity in Africa. A private-sector entity seeking to invest in a regional project would have to deal with one entity instead of with many countries. Regional institutions and operators of the respective national grid systems should consider defining a common legal and regulatory framework to facilitate achievement of regional objectives. The agreements signed among the participating national power utilities must define ownership of assets and other key rights, such as the development of future sub-stations as well as putting in place, and enforcing rules of practice that cover technical planning, operations, and commercial aspects of power system integration.

- **Deepening regional power trade markets**

Advantages to cross-border power trade are immense. Priority should thus be given to extending the reach for trading opportunities. Support in the form of political will could be given to existing efforts by the power pools, such as the WAPP and CAPP, which are trying to integrate and operationalize the regional market. This is in addition to investing in the necessary hardware and software that will support electricity trading and exchange.

- **Building cross-border interconnection facilities**

In order to be operational, power pools require cross-border interconnectivity. The integration of national power grids demands cross interconnection facilities through which national power utilities can exchange energy. Pool interconnection facilities comprise not only a transmission line but also supportive platforms, including switch gears and control equipment. Power pools must also acquire and deploy other hardware and software systems (metering, data collection and real-time processing of information) to ensure the functioning of individual national power grids from a common operational and commercial platform. Building cross-border interconnection facilitates harmonization and smooth delivery of the requisite energy across borders.

- **Leveraging opportunity presented through a diversified energy mix**

Power pools can provide an opportunity to incorporate alternative energy sources. For example, Kenya's Vision 2030 adopts this approach for sustainable development and inclusive growth through rural electrification. Such opportunities can contribute to increased power generation capacity by blending hydropower, nuclear, geothermal, solar and thermal energy sources.

- **Operationalizing independent regional regulators**

As the regional market grows, and in line with the provisions of the African Union Action Plan for Harmonized Regulatory Framework for the Electricity Market in Africa, consideration should be given to an independent regulator with a regional mandate. The regional independent regulator would be the one initiating, in conjunction with power pools regional planning standards for regional projects, alongside a methodology to determine the beneficiary utilities that will have to support the implementation cost.

The regulator has to supervise and control the various aspects pertaining to the operation of power pools including, but not limited to, compliance with electricity codes and technical standards, controlling the use of transmission lines as well as regulating the price of transmission lines and facilitating the entry of Independent Power Producers (IPPs) and other private actors, thus progressively promoting competition in the pool.

This regulator would also ensure that tariff methodologies are cost-reflective, taking into account transportation and distribution costs. Countries thus need to amend their electricity legislations to empower the regulator, enabling them to make binding decisions on the power pools. A regional approach to regulation brings with it the requisite

certainty about the enforcement of standards further improving the investment climate for private investors.

- **Capacitating the power pools in their efforts on regulatory harmonization**

Power pools need continued strengthening through training and capacity-building of personnel. This is to reinforce and also acquire critical skills in interconnected power system planning and operations, competitive market operations, structuring, and the negotiating of power deals with the private sector, for example, Power Purchase Agreements (PPAs), in addition to general power utility performance management.

- **Advancing and expanding financing mechanisms**

There is need to address the challenge of transmitting of donor funds from government to autonomous subregional entities such as power pools. Whereas power pools have often drawn the power generation master plans, it is the member States that have commonly received the financing for projects. Technical support in designing “bankable” projects for infrastructure development in the energy sector is also needed, and also to support power pools in generating their own income from the market. This can be facilitated through setting up specialized units in power pools or RECs with experts, who can design “bankable” projects that can enable access to available funds. Financing through grants and loans and other vehicles is critical to make regulatory bodies operational. Some countries and RECs have already started considering infrastructure bonds. African countries can use Central Bank reserves for infrastructure development. There is also an emerging idea of using pension funds and infrastructure bonds. Political will of member States is needed to enhance guarantees for the financing of power pools, such as those provided by the Power Africa Initiative.

- **Strengthening partnerships including bilateral and multilateral agencies**

The multiple roles of these agencies cannot be overemphasized. They not only provide catalyst funding for the power projects to take off, but they are also involved in providing technical support in the formation of these power pools. The World Bank and African Development Bank, for example, have been supporting a number of African governments to fund some of the power projects being undertaken in their countries. Continued engagement with these bodies is needed to mobilize project funding, provide technical and advisory support (which is neutral), and independent counsel capable of fostering common understanding and encourage consensus among the partner states.

- **Tapping into opportunities for harmonization presented by existing mechanisms such as the Continental Free Trade Area**

The harmonization of legal and operational frameworks for infrastructure development, and in particular in the energy sector, can take place alongside ongoing continent-wide efforts for regional integration, including the Continental Free Trade Area (CFTA). Despite not being a precondition for the establishment of regional power pools, harmonization of these frameworks encourages private investment participation in the power sector as it assures a high degree of certainty and predictability about transmission-line access, revenue flow and the resolution of any disputes that may arise. Ongoing harmonization is thus an entry point also for power pools.

- **Aligning ongoing efforts with Programme for Infrastructure Development in Africa**

The Programme for Infrastructure Development in Africa (PIDA) Energy Vision aims to connect the continent’s power pools enabling an increase in interregional energy trade. The implementation of the PIDA Priority Action Plan (PIDA-PAP) until 2020 is expected to boost energy trade within and between the power pools. This approach will have a positive impact on: the cost of the generation due to economies of scale (implementation of big projects serving many countries); energy mix (countries with dominant hydro potentials supplying those with dominant thermal (gas and coal) potentials); increased access to modern energy services, which in turn will trigger increased access to clean water and improved health care. Alignment with existing mechanisms also enhances opportunities for monitoring and evaluating progress, establishing gaps, paving a way forward with effective recommendations that can be readily implemented.

- **Linking good governance with regulatory harmonization**

The quality of regulation is a reflection of the state of economic and political governance in a particular country. It is therefore important to link regulation with good governance. Countries with a good governance record tend to build more effective regulatory systems that are transparent and accountable. Effecting regional-level regulation should thus go hand in hand with enhancing and improving the general governance profile at the national level.

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