

POWER TO AFRICA VOLUME 4:

Ethiopia – Part 1



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In this fourth instalment of our Power to Africa series (which follows instalments focusing on Nigeria, Ghana and Kenya), we look at the challenges and opportunities facing the power sector in Ethiopia.

Following the same format as our previous reports, this instalment will be divided into two parts:

- the first will focus on the challenges facing the power sector in Ethiopia, and how the legislative and policy framework has been reformed to address these; and
- the second part will explore the positive developments and opportunities in the sector.

Introduction

Ethiopia is one of the “African Lion” economies (analogous to the “Asian Tiger” economies); it is the fifth largest economy in sub-Saharan Africa and the fastest growing economy in the world, with ambitions to become a middle income country by 2025.

With this rapid economic growth, and the second largest population in sub-Saharan Africa, domestic demand is increasing rapidly.

This is placing huge pressure on Ethiopia’s power transmission and distribution systems, which are in need of modernisation.

Ethiopia has traditionally relied upon hydropower as its key source of power. This overreliance on one form of energy generation could prove problematic, as it exposes the country to potential supply shortages in the event of drought, or other unforeseen circumstances.

Ethiopia’s reliance on hydropower, allied with a poor transmission and distribution system, unreliable

electricity supply and the lack of access for rural populations has pushed the Government of Ethiopia (GoE) to invest in and reform its power sector in order to achieve its ambitions.

Challenges

Ethiopia wishes to become a middle income country and to both fully serve its local electricity demand, and establish itself as a major power exporter and green economy leader within the East Africa region. However, it faces a number of challenges in achieving these goals. The most fundamental of these challenges to its power sector are set out below.

Over supply and lack of demand

Ethiopia has no shortage of power supply. The table below shows that generation has outstripped net consumption in each of the last 3 years, and is expected to continue to do so in 2018.

	Generation (TWh)	Net consumption (TWh)
2015	11.33	9.20
2016	13.69	11.30
2017	13.99	11.80
2018	15.25	12.90

Source: BMI Power Report

While consumption is due to increase rapidly, with the World Bank estimating that demand for power will increase by 30% per annum, several projects are scheduled to come online which will more than

match this increase, most notably the 6,000 MW Grand Ethiopian Renaissance Dam (GERD) (explored below) and the already operational 1,870 MW Gibe III dam project.

Rather than facing a shortfall in supply, as is usually the case in Sub-Saharan countries, Ethiopia faces a lack of demand. Therefore, Ethiopia currently has an oversupply of power, a problem that is only likely to increase as the GERD begins to put power onto the grid.

While an oversupply is a positive development as Ethiopia looks to become an energy exporter, currently it does not have the infrastructure to effectively export its power. The consequence is that the grid will become overloaded, with some power generators likely having to switch off.

To meet this supply, Ethiopia will need a dramatic increase in demand. As stated above, annual demand for power is likely to be 12.9 TWh in 2018. The GERD alone is likely to provide 16.15 TWh, on top of the 15.25 TWh already available. In order to efficiently utilise this excess capacity, infrastructure must be put in place that can export power to neighbouring countries.

The Eastern Electricity Highway Project (EEHP) is an example which will be discussed in the second part of this instalment. Whilst these politically popular large scale infrastructure projects are undeniably important, on a more local scale, the lower capacity domestic transmission and distribution systems are in a poor state.

In order to handle the predicted capacity over the coming years improvements to the whole transmission and distribution system must be made a priority.

Accessibility and reliability of electricity supply

Currently, only 27.2% of the population of Ethiopia has access to electricity. The situation is even worse in rural areas, where only 8% have access to electricity. The consequence of this is slower economic growth and a growing economic gap between urban and rural areas.

Even when electricity is available in rural areas, many citizens continue to rely on traditional forms of fuel. According to allAfrica, more than 90% of households continue to rely on traditional fuels for cooking, even where they have access to electricity.

Where there is adequate access to electricity, the supply is often unreliable and there are frequent outages. The World Bank estimates that in 2015, private companies suffered an average of 8.2 power outages per month, with each lasting an average of 4.6 hours. It is believed that outages cost African countries an estimated 1-2% of their GDP each year.

This shows that there is a real need for investment in transmission and distribution infrastructure to ensure that electricity reaches more of the population, and, for the areas already served by electricity, to ensure transmission and distribution lines are improved to avoid outages.

Overreliance on hydropower

The vast majority of Ethiopia's generation capacity is from hydropower, which makes up approximately 90% of the country's installed generation capacity. This proportion is only likely to increase, with the 6,000 MW GERD scheduled to become operational in 2018, and the 1,870 MW Gibe III project already beginning to generate power.

This dependence exposes Ethiopia to potentially huge economic risk, as Mulugeta Aseye of EEPCo acknowledged in an interview with the Guardian in 2013; "rainfall in Ethiopia varies considerably from year to year, therefore an overdependence on hydropower makes the energy supply very unstable". Variable rainfall, drought, and the unknown future consequences of climate change in the long term could each lead to a dramatic fall in generation capacity. This is the principal reason for the GoE looking to diversify its power sources.

State-led investment model

Ethiopia has traditionally had a state-led investment model which served to limit the arrival of private investors in the power sector due to concerns in respect of the bankability of projects.

The GoE has now recognised the importance of private sector participation and, as outlined below, is implementing policies to increase transparency, unbundle public entities and to encourage private investment.

Foreign Exchange

Foreign exchange reserves in Ethiopia are heavily depleted, with gross reserves only covering 1.7 months of imports as at July 2016. This is principally because of weak export performance and high demand for foreign currency.

It is hoped that the construction of the EEHP, to be discussed in the second part of this instalment, will go some way towards replenishing foreign exchange reserves, with most of Kenya's international transactions being conducted in dollars.

Governance and policy agenda

The challenges set out above demonstrate that the power sector in Ethiopia is in need of reform. Therefore, the GoE has committed to wide ranging reforms, which are set out below.

Unbundling

One key reform already enacted has been to the key public institutions involved in the energy sector. Formerly, the public utility, the Ethiopian Electric Power Corporation (EEPCo), had a monopoly on the domestic energy market, however it was inefficiently run due to its size and the lack of competition. EEPCo was therefore split into two entities, Ethiopian Electric Utility and Ethiopian Electrical Power. Their functions, as well as those of other key players, are set out below:

- Ethiopian Electric Utility owns, operates and manages electricity distribution networks across Ethiopia;
- Ethiopian Electric Power is responsible for generation and transmission of electricity in Ethiopia;
- Ethiopian Energy Authority regulates the energy sector and is mandated to issue licences for generation, to transfer, distribute and sell electricity, including importing and exporting electricity; and
- The Ministry of Water, Irrigation and Energy assists with the meeting of targets set by the GoE for energy, largely achieved through its procurement committee.

The Growth and Transformation Plan II

Going forward, the GoE's ambitions for reform and growth are principally laid out in the Growth and Transformation Plan II (GTP). Its most notable targets include:

- increasing power generation capacity from 4,180 MW in 2014/15 to 17,208 MW in 2019/20;
- increasing electricity coverage from 60% in 2014/15 to 90% in 2019/20;
- increasing the total length of power transmission lines from 16,018km in 2014/15 to 21,728km in 2019/20;
- increasing per capital energy consumption from 86 KWH in 2014/2015 to 1,269 KWH in 2019/20; and
- reducing power loss from 23% in 2014/15 to 11% 2019/20.

The overarching objectives of the GTP policy framework are to:

- ensure a reliable supply of energy at affordable prices, particularly to support Ethiopia's agricultural and industrial development;
- heighten renewables-based, carbon neutral development, thereby increasing energy access and efficiency; and

→ achieve public and private sector participation.

To meet these goals, the GoE wishes to enact reforms which will facilitate private sector investment and enhance transparency.

The GoE is also reliant on foreign aid to achieve its goals. Power Africa has proved to be key in supporting Ethiopia's energy strategy development by providing technical assistance in cooperation with Sweden, Norway and the World Bank.

Conclusion

Ethiopia is a rapidly emerging economy with ambitions to becoming an African economic powerhouse. Integral to this ambition is its desire to be a self-sufficient exporter of energy.

The GoE faces many challenges to achieving this goal, including an overly state centric system, unreliable power supply, poor connectivity and an overreliance on hydropower. However, the unbundling reforms already undertaken, and the ambitions set out in the GTP are anticipated to have a highly positive effect on the power sector in Ethiopia.

The opportunities and prospects that may arise from the GTP and in the market more generally are explored in the second part of this instalment.

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