

Developing Bujagali, the Largest Private Sector Investment in Uganda

The 250 MW Bujagali project in Uganda is providing electricity in a vastly underserved market while boosting economic return for the entire country. This example of private sector investment in developing countries can be expanded throughout the world.

By Ryan Ketchum

Together, the 52 countries on the continent of Africa make up about 3% of the global economy. However, according to *The Economist*, 25 of these countries are expected to see annual average growth rates of 5% or more over the next five years. Thus, tremendous opportunities exist for investment in infrastructure in Africa.

Decades of underinvestment and mismanagement in Africa have resulted in poor performance in many sectors, with electricity being a particularly telling example. Out of a total population of just over 1 billion, half a billion people in Africa lack access to electricity, and electrification rates of less than 10% are not uncommon in the 49 countries that make up Sub-Saharan Africa. Unreliable and inadequate electricity adds to the cost of doing business, as companies must pause production during blackouts or operate their backup generators, which are usually diesel-powered and cost about US\$0.35/kWh at today's oil prices. Electricity problems also encourage the continued use of fuel sources — such as charcoal and kerosene — that result in deforestation, disease and carbon emissions.

However, the governments of many African countries are gradually taking the actions required to promote investments, such as passing clear and modern legislation that facilitates foreign direct investment. In many cases, the electricity sector is one that deservedly receives much of their attention.

The situation in Uganda

Uganda provides a compelling example. For several years, this country has suffered from a shortage of electricity generating capacity. In 2006, the country experienced a power supply deficit ranging from 90 to 210 MW, necessitating 24 hours of rotating load shedding. By May 2011, with most of Uganda's generation consisting of hydropower, unusually low levels of water on Lake Victoria

resulted in only 310 MW of capacity being readily available — an amount inadequate in the face of an estimated peak demand of 450 MW. Rolling blackouts and the resulting sharp rise in electricity prices caused the government of Uganda to resort to paying millions of dollars per month in subsidies to enable the Uganda Electricity Transmission Company to purchase electricity generated by emergency diesel-fired plants. The Uganda Manufacturers Association estimates that, together, these issues reduced Uganda's economic growth in 2009 by about 5% per year.

On August 1, 2012, the US\$900 million, 250 MW Bujagali Hydroelectric Dam — the largest private sector investment ever undertaken in the region — achieved commercial operation, signifying a monumental change for Uganda's power generation. The project is structured as a public-private partnership owned by Sithe Global of the USA, Industrial Promotion Services of Kenya (which is owned by the Aga Khan Fund for Economic Development), and the government of Uganda. The project company, Bujagali Energy Limited, developed, financed and constructed the project. Bujagali Energy will operate the project for a period of 30 years from the commercial operations date, after which the project will be transferred to the government of Uganda for nominal consideration.

Government-owned Uganda Electricity Generation Company, the project's sponsors, and their advisors worked for more than a decade to overcome the formidable obstacles that stood in the way of the successful development of the project, which is on the Victoria Nile River. Many financial institutions, including the World Bank, have aggressively advocated for structural reforms to the electricity sectors of developing, emerging, and least-developed countries. The World Bank concluded that the process of establishing electricity tariffs had to be de-politicized before utilities would

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be able to charge cost-reflective tariffs. To accomplish this, the bank advocated the establishment of independent regulators with an explicit mandate to regulate the sector in a manner that balanced the interests of consumers and investors.

As such, the first step in the project's development was to undertake a complete restructuring of the Ugandan electricity sector. In 1999, the government of Uganda split the Uganda Electricity Board (UEB) into three separate utilities with clear focus areas: owning and operating generating plants, the transmission system, and the distribution system (which was privatized before work on the Bujagali project commenced). The Ugandan Parliament also passed the Electricity Act 1999, which established the Electricity Regulatory Authority of Uganda and granted the authority the power to regulate the now separate generation, transmission, and distribution sectors.

Yet these changes only went some of the way toward balancing the various interests involved in such a complex project. Indeed, while many emerging African countries established independent regulators in the 1990s, many were not effective at de-politicizing the tariff-setting process and balancing the interests of investors and rate-payers as politicians, investors, and rate-payers had hoped.

By 2003, it had become clear that independence was not enough and that a clearly specified regulatory contract must be negotiated by the political authorities for projects to gain public acceptance and retain it for the long term.

In January 2004, the government of Uganda launched a request for proposals (RFP) seeking investors to develop the Bujagali project. The RFP contained a detailed set of formulas that collectively established a detailed tariff methodology that was annexed to the power purchase agreement (PPA). The tariff methodology contained cost openers for the capital cost of the project and for costs associated with servicing of the project loans.

This structure offered several advantages over the alternatives. It enabled the

project's sponsors to undertake a truly competitive bid to procure an engineering, procurement and construction (EPC) contract after the PPA had been executed; it enabled geo-technical risks to be allocated primarily to ratepayers, which avoided a risk premium being priced into the EPC contract; and it enabled the sponsors to arrange the financing after the PPA had been executed. Collectively, these advantages heightened private sector interest in undertaking the project. Given the tariff's structure, the bid evaluation criteria included an explicit internal rate of return on the equity invested in the project, a cap on the development costs the sponsors would seek to recover, and a fixed monthly operations and maintenance charge.

In July 2008, MWH of the USA was awarded a contract to provide technical assistance to the owner, design review, construction drawing review and assistance during start-up and commissioning of the project. Alstom Hydro supplied five 51 MW Kaplan turbine-generators, the balance of plant, and hydromechanical equipment under a contract from turnkey civil works contractor Salini Hydro Ltd. of

Italy. Jyoti Structures Africa constructed the transmission lines and substations to link the project to the national grid.

The Bujagali Hydroelectric Project has demonstrated that regulation by contract can be successfully applied to independent power projects. Uganda successfully

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avoided the trap into which many countries with newly-established regulators fall. This was possible largely as a result of the willingness of Uganda's Electricity Regulatory Authority to engage in a dialogue as to the types of tariff structures that would be consistent with the authority's obligation to balance the interests of consumers and investors, but to ultimately permit that tariff structure to be embodied in a contract that is subject to international arbitration.

The strength of this structure is evidenced by the number of lenders



Five 51 MW Kaplan turbine-generator units were installed in the powerhouse of the 250 MW Bujagali project in Uganda, the largest private sector investment ever undertaken in the region.

that ultimately helped finance development of the facility. Lenders on the project include: the International Finance Corporation, the European Investment Bank, KfW, German Investment Corporation (DEG), African Development Bank, Agencie Francaise de Developpement, Proparco, FMO, Standard Chartered, and ABSA Capital. The commercial loans are supported by a partial risk guarantee issued by the International Development Association. MIGA provided political risk insurance.

Uganda's efforts have paid off. *The Economist* has identified the country as one of a select few in Africa that are at the forefront of reform, and Uganda's economy is now expected to achieve growth rates of 7.5% to 10% during the 2012 to 2016 period.

Aside from increasing the supply of reliable electricity and lowering energy costs and air pollution, the Bujagali project created about 2,000 new jobs during the peak of construction. It also resulted in significantly improved community

services for nearby villages, including water supply, education, and health facilities, along with other social improvements such as livelihood restoration and agriculture enhancement.

Advances in Rwanda

Rwanda is another example of a country that has made tremendous strides in implementing reforms that promote investment. For example, in Rwanda, four steps are involved in establishing a new company, and the process can be completed in just a few days. In Kenya, the same process requires that an investor perform about 30 steps.

With a capacity of 85 MW, Rwanda's electricity system serves only about 10% of its population. Utility Energy, Water and Sanitation Authority plans to connect another 40% of the population to the electricity system and to expand capacity to almost 1,000 MW by 2017.

To help achieve this, Rwanda is — together with Energies des Grands Lacs (EGL) (a regional organization for energy

sector cooperation in the Great Lakes countries), Burundi, and the Democratic Republic of Congo (DRC) — developing a 145 MW cross-border hydro project on the Ruzizi River, which forms the border between DRC and Rwanda. EGL and the three countries are developing the project under a long-term PPA with a tariff structure that is similar to that used for Bujagali. Ruzizi III Regional Hydroelectric Project is thought to be one of the first cross-border independent power projects in Africa to involve three countries that will use the electricity.

Conclusion

These projects demonstrate that there are creative solutions that will solve the chronic problems of underinvestment in infrastructure. They are waiting to be found by governments and investors with the creativity to reach for them. The rewards of faster economic growth and a commensurate reduction in poverty are within reach and are gradually being realized. ■