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PUBLIC-PRIVATE PARTNERSHIPS BRIEFS

Ghana: Takoradi 2 Power Plant



Overview

Ghana's growing economy has strained its power sector in spite of a high national electrification rate. In response, the Takoradi International Company, which owns and operates the Takoradi 2 power plant, sought financing to convert and expand the plant to allow it to run on both natural gas and light crude oil using technology that would increase capacity by 50 percent without using additional fuel.

IFC supported the project with an \$80 million loan as well as a \$15 million loan from the IFC-Canada Climate Change Program. The OPEC Fund and a consortium led by FMO provided additional financing to fund the project.

This series showcases how the World Bank Group supports the development and implementation of public-private partnerships. This support comes in the form of public sector loans, private sector finance, sector and transaction advice, guarantees, and output-based aid.

Background

Demand for electricity in Ghana has been steadily increasing in step with its growing economy. While the country enjoys a relatively high electrification rate of 61 percent, growth in demand has stretched the power sector, which mostly relies on hydro-generated power from Lake Volta. This has led to unmet demand and unreliable supply, spurring the government to pursue power sector reform.

The Takoradi Thermal Power Plant is located near the town of Aboadze, just east of Takoradi on the south-western coast of Ghana. It was built as two separate 330 MW combined cycle combustion units. Takoradi 1 (T1), operational since 1999, is owned by the Takoradi Power Company, a wholly-owned subsidiary of the state-owned power utility company, the Volta River Authority (VRA). In 2000, the Takoradi International Company (TICO), a joint venture between Abu Dhabi National Energy Company PJSC (TAQA) (90 percent) and the VRA (10 percent), completed construction and began operating the second combustion unit, Takoradi 2 (T2). T2 accounts for 15 percent of Ghana's installed power production capacity.

To increase the efficiency and capacity of T2, TICO proposed converting and expanding the plant to operate in combined cycle mode with the addition of a 110 megawatt steam turbine and generator. The plant previously ran on light crude oil, but increasing offshore gas finds in Ghana, and Nigerian gas now flowing to Ghana through the West African Gas Pipeline, made dual fuel capability feasible.

Project Description

Key features of the T2 expansion project include the addition of two heat recovery steam generators, a 110 megawatt steam turbine generator, two 60 meter stacks, and a seawater desalination plant. In addition, a once-through cooling water system supports operations at both T1 and T2, thereby removing reliance of T2 on freshwater. The cooling system includes a sub-sea intake structure located 2.5 kilometers offshore, intake conduits, onshore

works including a pump house and intake and discharge chambers, and sub-sea outfall conduits and diffusers situated approximately 1.2 kilometers offshore. This final phase of T2 is expected to increase the generating capacity of the facility by 50 percent without additional fuel requirements and without increasing greenhouse gas emissions. This increases the overall capacity of T2 from 220 to 330 megawatts; the increased efficiency also lowers the cost of electricity generated by T2. All power generated at the site is to be sold via an existing off-take agreement with the VRA under terms of a revised 25-year power purchase agreement. The total project cost is approximately \$325 million. Completion is expected in 2015.

World Bank Group Role

IFC provided an \$80 million loan to TICO to help expand its gas-fired Takoradi 2 power plant. In addition, IFC provided a \$15 million loan to TICO from the IFC-Canada Climate Change Program, which is part of Canada's commitment to support climate change action in developing countries. The OPEC Fund for International Development provided an additional \$22.5 million for the project, and a consortium of international development finance institutions led by FMO of the Netherlands provided \$330 million in debt financing. TAQA also made a \$25 million equity investment into the project.

The financing demonstrates IFC's longstanding commitment to the Ghanaian electricity sector, and also complements IFC's work in the country's oil and gas sector.

Outcomes

- Increases the generation of electricity from 220 to 330 megawatts, contributing to greater power generation capacity in the country to spur economic growth.
- Provides the first commercial project financing for an independent power project in Ghana, demonstrating how the private sector can help increase supply and reduce the cost of power generation in West Africa.
- Expands power generation capacity and efficiency without increasing greenhouse gas emissions.

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