

Fact Sheet: Morupule B Coal-fired Power Station Project (Units 5&6)

October 20, 2017

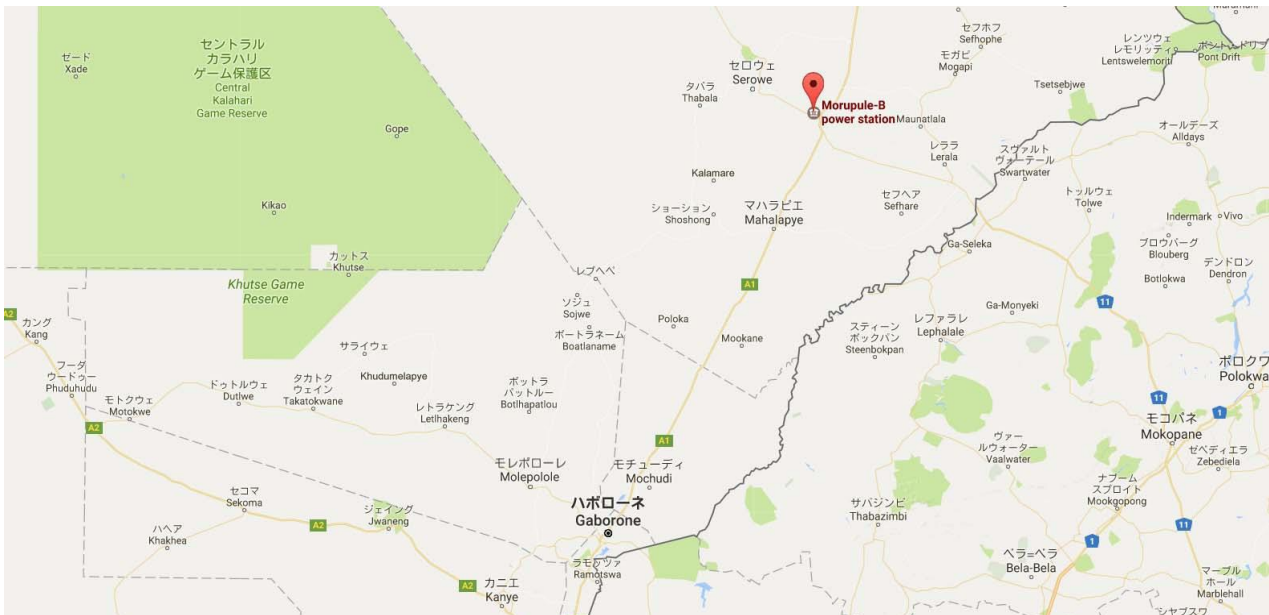
by Japan Center for a Sustainable Environment and Society (JACSES)

1. Overview¹

The Morupule B Coal-fired Power Station (Units 5&6) project is constructing 300MW (150 MW x 2 units) capacity coal-fired power station in Palapye, Botswana and it is expected to begin operation in May 2020.

- **Project Purpose:** To construct a 300 MW (150 MW x 2 units) capacity coal-fired power station using circulating fluidized-bed combustion (CFBC) boiler (subcritical-pressure boiler).
- **Project Executant:** Palapye Power Generation Pty. Limited. Japanese general trading company Marubeni and South Korean firm Posco Energy formed 50% each consortium and will jointly operate and maintain the power station.²
- **Financial Institutions:** The Japan Bank for International Cooperation (JBIC) and the Export-Import Bank of Korea (KEXIM) are considering funding 600 million USD (80% of the total investment) with other private banks for project financing. Nippon Export and Investment Insurance (NEXI) will cover the private banks' insurance.
- **Cost:** \$800 million USD³
- **Coal Type:** Bituminous (planning along with an expanding Morupule coalfield)

2. Location



Source: Google Maps

¹ <http://www.jbic.go.jp/wp-content/uploads/projects/2016/09/49320/ESIStatement3.pdf>

² http://www.poscojapan.co.jp/jpn/promotion/sub03_promotion_01news_02view.asp?idx=134

³ http://www.poscojapan.co.jp/jpn/promotion/sub03_promotion_01news_02view.asp?idx=134

3. Background

The Botswana Power Corporation (BPC) owned existing power station, the Morupule A coal-fired power station (33MW x 4 units), is located in the same district of a site of Morupule B. Although Morupule A started its operation in 1989 and once shut down in 2013. However, the Botswana government decided to renovate and reopen Morupule A due to construction delay of Morupule B (Units 1-4) which resulted in power supply instability. South Korean Doosan Heavy Industries secured the repair contract in 2016.⁴

Morupule B was planned as an expansion of Morupule A, and China National Electric Equipment Corporation (CNEEC) secured contract for Units 1-4 construction. Although operation was expected to begin in October 2012, it suffered significant delays and CNEEC finally handed over the units to the Botswana Government in May 2014. However, in October 2014, three of those four units broke down, thus the Botswana government needed to consider importing energy from South Africa. In 2016, considering high cost of maintenance, the government began to plan to sell Units 1-4 and have it operate as an independent power producer (IPP). In November 2016, the Botswana government decided to sell Unit 1-4⁵ of Morupule B and since then it had operated as an IPP and the Botswana government purchase power from the CNEEC, IPP operator.

In light of circumstances of Units 1-4, the Botswana government planned to set up initial construction of Units 5&6 by an IPP. In March 2016, the consortium of Marubeni and Posco Energy was given charge of construction, management, and repair for 30 years as Botswana's first IPP. Along with plant construction, excavating work for a new open-cast mine at the Morupule coalfield, next to the existing open pit coal mine, had begun to provide coal to the Units 5&6.

However, some news reported BPC is currently considering renegotiating or even terminating the Power Purchase Agreement (PPA). Under the PPA between BPC and Marubeni Corporation, BCP has to buy all of the generated electricity regardless of amount used. There is worry the BPC might need to pay approximately P2 billion (BWP; Botswana Pula) (22 billion JPY) per year for excess electricity in pursuance of PPA since 2020. Thus, BPC concerned about risks of default and bankruptcy submitted a petition to the President of Botswana to reconsider the PPA in June 2017. Marubeni, on the other hand, requested the Botswana government to provide the sovereign guarantee, in which is P8.5 billion (BMP) (92.5 billion JPY).⁶

4

<http://www.powerengineeringint.com/articles/2016/03/botswana-awards-refurbishment-contract-for-ghost-coal-fired-plant.html>

⁵ <https://southernafrican.news/2016/11/11/botswana-sells-power-station/>

⁶ <http://www.sundaystandard.info/matambo-kebonang-want-out-morupule-b-deal>

In a similar condition of Units 5&6, expansion plans of Units 7&8 are in progress. Units 7&8 will also use coal from Morupule coalfield. If all construction of Units 5&6 and 7&8 is completed as planned, generated electricity at Morupule Power Station will surely be exceeded country demand and the Botswana government may consider exporting electricity.⁷

Table : Overview of Morupule B Cole-fired Power Station Project

	Units 1-4	Units 5&6	Units 7&8
Facility	150MW×4 subcritical-pressure boiler	150MW×2 subcritical-pressure boiler, circulating fluidized-bed boiler (CFB)	150MW×2 Technology unknown
Cost		800 million USD (Approximately 98 billion JPY)	
Project Sponsor	Botswana Power Corporation (BPC)	Marubeni, POSCO Energy	Korea Electric Power Corporation (KEPCO), Daewoo
Financial Institutions	World Bank, China Export & Credit Insurance Corporation	Under consideration by JBIC, KEXIM, and private banks	
Coal Type	Bituminous	Bituminous	Bituminous
Construction		Delayed (scheduled for second half of 2016)*2	
Operation	In 2013 (Units 1&2)*1 In 2014 (Units 3&4)	Planned in May 2020*2	Planned in 2020

*1 China National Electric Equipment Corporation (CNEEC) secured the contract with BPC to construct Units 1-4 in November 2008. Unit 1-4 started operations in later than 2013 (scheduled to be completed by 2012).

*2 Although construction of Units 5&6 was scheduled to begin in January 2016, it was delayed in May 2017 due to the Botswana government's arrears of confirmation of certification of payment on the contract. As it scheduled, Unit 5&6 would start operation in May 2020, however, construction has not been started at all and there is no plan when it will begin.⁸

⁷ <http://www.mmegi.bw/index.php?aid=59519&dir=2016/april/22>

⁸ <http://www.mmegi.bw/index.php?aid=69096&dir=2017/may/26>

4. Major Circumstances of Morupule B (Units 5&6) Construction

December 4, 2015	Palapye Power Generation Pty. Limited financed by Marubeni and Posco officially became the preferred bidder of Morupule B coal-fired power station (Units 5&6). ⁹
April 2016	Palapye Power Generation Pty. Limited made the first draft of Environmental and Social Impact Assessment (ESIA) report.
September 20, 2016	Palapye Power Generation Pty. Limited submitted the final ESIA report.
September 27, 2016	JBIC announced its commencement of loan consideration and announced the ESIA report. ¹⁰ (Contact number: 2016-0084)
October 11, 2016	NEXI announced its commencement of insurance consideration and announced the ESIA report. ¹¹
December 5, 2016	Ministry of Environment, Wildlife and Tourism of Botswana issued environmental permit. ¹²
December, 2016	Conclusion of the Purchase Power Agreement (PPA) ¹³

5. Problems/Issues



The Elementary School monitoring station



Coal mine adjacent to the power station

- 1) Although the Units 1-4 actually emit over 1000mg/m³ SO₂¹⁴ an ESIA air quality simulation for Units 5&6 was calculated as premises for 500mg/m³ which was an expectation amount of Units 1-4 after recovery construction would be completed. It is problematic condition because JBIC has not fully confirmed any technical adequacy emission from Units 1-4 would be lowered to 500mg/m³.

⁹ http://www.poscojapan.co.jp/jpn/promotion/sub03_promotion_01news_02view.asp?idx=134

¹⁰ <http://www.jbic.go.jp/ja/efforts/environment/projects/49320>

¹¹ <http://nexi.go.jp/environment/info/information02/index.html>

¹² http://www.jbic.go.jp/wp-content/uploads/projects/2016/09/51940/ESIA_Authorisation_0512161.pdf

¹³ <http://www.mmegi.bw/index.php?aid=71069&dir=2017/august/18>

¹⁴ <http://pubdocs.worldbank.org/en/762751500972243851/CEMS-REPORT-SUMMARY-Oct-2015>

- 2) The ESIA report for Units 5&6 indicates current atmospheric conditions were measured and confirmed at the Kgaswe Elementary School monitoring station, which was set up in July 2015, and at four sampling sites set up for about 3 months period of the ESIA survey (February to April 2016). However, neither NO₂ at the Kgaswe Elementary School nor PM₁₀ at four sampling sites were measured. In addition, the measured values during April and June (in which peak pollution occurs) at the Kgaswe School are not disclosed and, by the same token, values during May and August (serious air polluted months) had not been measured at four sampling sites. Therefore, measurement of current atmospheric conditions is insufficient in terms of measuring targets and period.
- 3) Simulation of air quality with all of the Units 1-6 would be operated indicated high amounts of the maximum hourly concentration of SO₂ (1671µg/m³) and NO₂ (428µg/m³). These amounts exceed the baseline Botswana government standardized. JBIC counter-argued that there is no standard violation since no sensitive receptors exist in that area. However, many local resident work in those area for farming and it is considerable they get critical influence on their health by polluted air. Thus, enforcement to reduce ground-level concentration of both SO₂ and NO₂ is essential.
- 4) Measured values at the Kgaswe Elementary School monitoring station near the power station showed very high PM₁₀ concentration monthly average (364.2µg/m³) in July 2015, that violate Botswana's standards. Similarly high PM₁₀ values were measured in both August 2015 and March 2016 as well. In this circumstances, PM₁₀ value is severely excess country's standard, proposition such as moving the school to different location is considerable for children's health and wellbeing.
- 5) According to the Mmegi Online article posted on July 25¹⁵, there is an expansion plan of the Morupule coal mine in order to supply coal to Units 5&6 at Morupule B. However, some local farm owners of the project site refuse to sell their land. Morupule coalfield can be one of major suppliers for Units 5&6. Even though it is considering exporting coal, infrastructures for coal export are undeveloped and the economic rationality is low. This expansion plan can no longer move ahead without the Unit 5&6's operation, so it is possible to consider as an "associated facilities" according to JBIC Guidelines for Confirmation of Environmental and Social Considerations ("Environmental Guidelines"). It is necessary JBIC properly consult with a community and get their agreement based on its own Environmental Guidelines, but JBIC has not done anything yet.

¹⁵ <http://www.mmegi.bw/index.php?aid=70451&dir=2017/july/25>