Case study: bangladesh power system expansion calculations only

Finance

Case Study – Bangladesh Power System Expansion With the information given below, please calculate the following WACC in real terms for each component, and for the project overall.

2 Exchange rate following purchasing power parity method for the years 2012 to 2016.

3 The international and domestic price contingency for the years 2012 to 2016.

The Project will finance the conversion from Open Cycle to Combined Cycle of 4 gas-powered generation facilities, namely, Khulna, Bhagbhari, Sylhet, and Shajibazaar. The capacity of the open cycle facilities for the 4 units is 150 MW, 100 MW, 150 MW, and 70 MW respectively. By implementing the conversion to combined cycle and introducing a steam cycle, the capacity will be enhanced by 50% for each of the units.

The cost of the project in mid-2012 prices is $100 Million for Khulna, $61 million for Bhagbhari, $110 million for Sylhet and $43 million for Shajibazaar respectively.

The projects will be financed as follows:

$ Millions

Location

WB

Co-finance

GoB Equity

Other domestic Loans

Total

Khulna

90. 0

0. 0

7. 0

3. 0

100. 0

Bhagbhari

0. 0

55. 0

5. 0

1. 0

61. 0

Sylhet

0. 0

100. 0

6. 0

4. 0

110. 0

Shajibazaar

0. 0

40. 0

3. 0

0. 0

43. 0

Total

90. 0

195. 0

21. 0

8. 0

314. 0

The WB loan is available at a spread of 60 basis points over the 5-year LIBOR swap rate, which was 0. 80% at the time the loan was processed. In addition, a maturity premium of 20 bps is applicable. The WB loan is subject to a commitment charge of 0. 15% on the undisbursed loan balances.

The co-financed loans are available at a rate of 4% per annum, whereas the other domestic loans are available at a rate of 3% per annum.

The risk-free interest rate in Bangladesh is 8% per annum on Government securities of 10-year tenor and it may be assumed that an investor would expect a premium of at least 2% to invest in equity. The return on equity is expected to be 15% per annum.

The inflation rates are as below:

2012

2013

2014

2015

2016

Domestic

8. 5%

7. 2%

7. 2%

7. 2%

7. 2%

International

0. 50%

0. 50%

0. 50%

0. 50%

0. 50%

The starting exchange rate in 2012 is Taka 82. 00 = USD1. 00.

The corporate tax rate is 37. 5%.

The purchasing power parity ratio of 1. 23 and a 1 Taka per dollar exchange rate between the currencies in Bangladesh and the United States indicates that the purchasing power of the Taka and the dollar are similar but not exact. This means that Bangladesh and U. S. consumers have similar purchasing power with their respective currencies