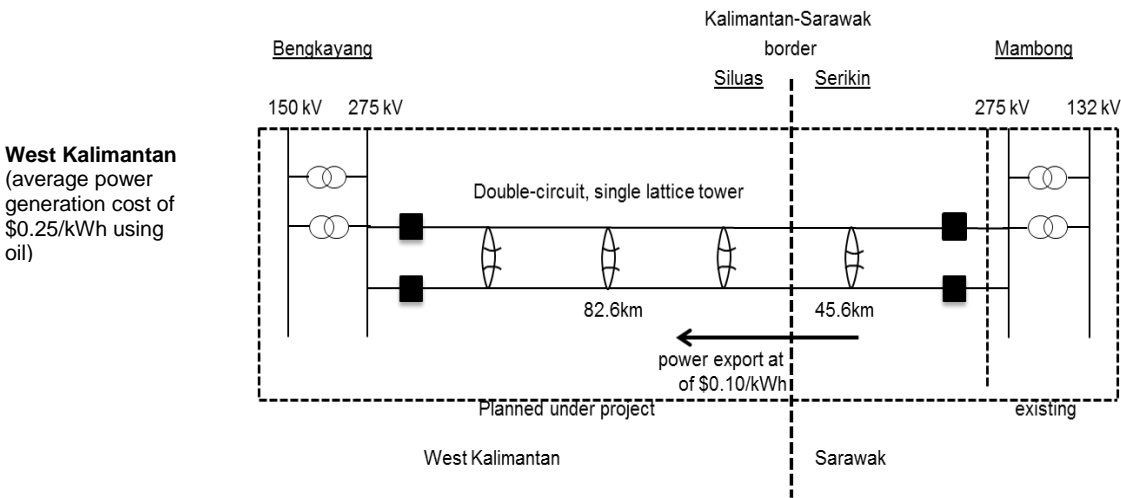


FINANCIAL ANALYSIS

A. General

1. The financial viability of the project is evaluated by considering the aggregate costs and benefits based on with- and without-project scenarios in the West Kalimantan Power Grid component. The main component of the project is an 83 km cross-border high-voltage transmission line and a substation that will link the power grid on the Indonesian side (West Kalimantan) to the power grid of neighboring Malaysia (Sarawak), enabling power exchange of about 230 megawatts (MW) between the two systems. A schematic diagram of the transmission line is in Figure 1.

Figure 1: Cross-Border Transmission Project



2. The financial internal rate of return (FIRR) analysis will assess the project return, comparing it with the weighted average cost of capital (WACC). The FIRR of the project has been calculated for 2013–2033 using constant 2012 prices. The estimation of the WACC is summarized in Table 1 below.

B. Weighted Average Cost of Capital

3. The WACC of 2.1% is estimated based on the following assumptions (Table 1):
- (i) the Asian Development Bank (ADB) loan is \$49.5 million, with an interest rate of 2.95% per annum;¹
 - (ii) the French Development Agency (AFD) loan is \$49.5 million, with the same cost as the ADB loan;
 - (iii) the government and PLN funds (PLN funds) are \$29 million, with a nominal cost of 13.8% per annum;² and
 - (iv) the inflation rate is 2.0% per annum for international costs, and 4.3% per annum for local costs.

¹ The ADB loan cost is based on US\$ 10-year fixed swap rate of 2.047% + lending spread of 0.40% + 0.5% onlending premium = 2.95%.

² The PLN's cost of US dollar funds is estimated based on the (i) risk free rate (US), plus (ii) equity premium (US), plus (iii) country risk premium, plus (iv) inflation premium.

Table 1: Weighted Average Cost of Capital Calculation

Item	Financing Component				Total
	ADB	AFD	PLN	CEFPF	
Amount (\$ million)	49.5	49.5	29.0	2.0	130.0
Weighting	38.1%	38.1%	22.3%	1.5%	100.0%
Nominal cost of funds	2.9%	2.9%	13.8%	0.0%	
Tax rate	30.0%	30.0%	0.0%	0.0%	
Tax-adjusted nominal cost	2.1%	2.1%	13.8%	0.0%	
Inflation rate	2.0%	2.0%	4.3%	2.0%	
Real cost	0.1%	0.1%	9.1%	-1.9%	
Weighted component of WACC	0.0%	0.0%	2.0%	0.0%	2.1%
WACC	2.1%				

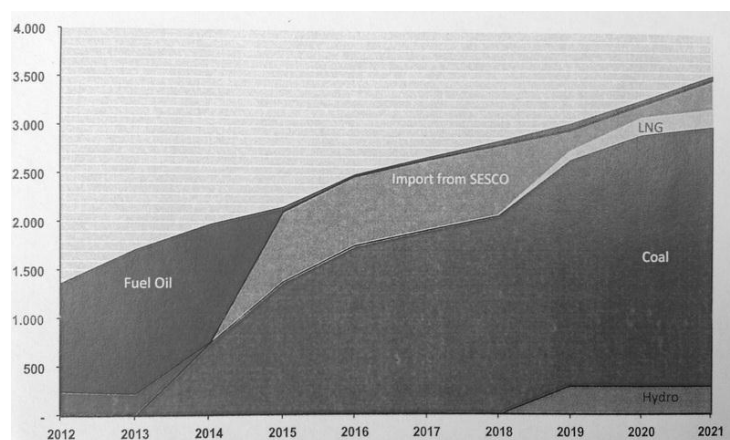
ADB = Asian Development Bank, AFD = Agence Française de Développement (French Development Agency), CEFPF = Clean Energy Financing Partnership Facility, PLN = PT (Persero) Perusahaan Listrik Negara, WACC = weighted average cost of capital.

Source: Asian Development Bank estimates.

C. Capital Costs and Financial Benefits

4. The Capital investment will be used to construct a 275 kilovolt (kV) interconnector line to Bengkayang substation (83 kilometers [km]), 150 kV lines for distribution system expansion and other substations in West Kalimantan, in addition to provisions for environmental, social, financing, and implementation costs. All capital costs are expressed in real terms using constant 2012 prices. The FIRR is calculated on base costs, excluding price contingencies and financing charges during construction. In performing the FIRR analysis, operation and maintenance costs are assumed at 2% of the investment costs, which start in 2014 when the project is scheduled to be completed. Line losses are also considered as part of the costs.

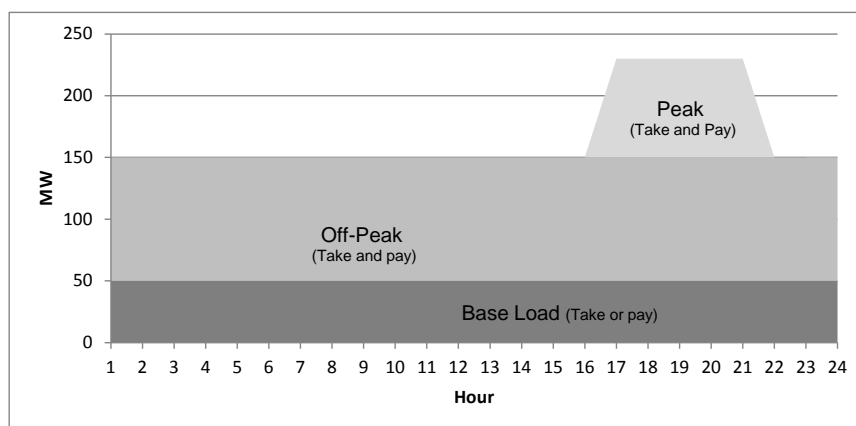
5. The financial benefits are measured by the amount of savings to be generated by this project for the Government of Indonesia with the purchased power from Sarawak. As the dominant generation source in West Kalimantan is oil-based, the average cost of oil generation is as high as \$0.25/kilowatt-hour (kWh). This is much higher than the agreed power purchase cost of power from Sarawak of about \$0.10/kWh, which will displace old rented oil generation plants currently used by PLN as shown in Figure 2. The benefits are computed from the saving margin multiplied by the estimated power transfer in kWh.

Figure 2: Energy-mix (GWh) in West Kalimantan (with the project)

D. Financial Internal Rate of Return

6. With ADB's active support PLN and SESCO signed the power exchange agreement (PEA) on 5 September 2012 for a term of 20 years. The supply start date for the PEA is 1 July 2014. During the first 5 years from the supply start date (Phase 1) under the PEA, the take-or-pay capacity (50 megawatts [MW] for off-peak and 170–230 MW for peak) and take-and-pay (up to 230 MW during off-peak) will be imported by PLN at an agreed tariff. Thereafter (Phase 2), each party will have the opportunity to export or import electricity from or to the other party on a take-and-pay prices.³

**Figure 3: Power Exchange Agreement
(Capacities, MW)**



7. Based on the PEA, the project team has developed various scenarios to test the financial robustness of the investment. Table 2 summarizes the key assumptions for these scenarios. The base case scenario represents the most likely case, which conservatively assumes only 50 MW will be purchased as take-and-pay for off-peak time during Phase 1 and only 50 MW will be purchased after 5 years of the contract at a tariff 25% higher. The high case assumes PLN will import 100 MW take-and-pay load during Phase 1 and the same capacity will be purchased at prices 15% higher during Phase 2. The low case scenario assumes no take-and-pay will be purchased during Phase 1 and no power purchase will occur after 5 years. Financial returns of other scenarios are expected to fall along the spectrum between the high and low cases.

8. The estimated after-tax FIRRs are also summarized in Table 2. Detailed FIRR calculation for the base case is in Table 3. The results show that the FIRR of the base case is 30.0% based on the 20-year horizon, which is consistent with the loan tenor. The high case scenario would likely yield an FIRR of 42.0%. Even if there is no power purchase after 5 years, this investment is still very profitable with an FIRR about 17.7%. All are much higher than the 2.1% WACC, therefore the project is financially viable.

³ Take-or-pay amounts are like capacity payments: payments for full amounts have to be made even if only a portion of the contract amount is consumed. Take-and-pay allows the buyer to pay only for the amounts used.

Table 2: Financial Internal Rate of Return and Scenario Analysis

Scenarios	1st 5-Year		After 5 Years		FIRR (2013-2033)
	Power Purchase Capacity (MW)	Price	Power Purchase Capacity (MW)	Price	
1. Base Case					30.0%
Baseline:	50	base price per signed term sheet	50	25% higher	
Peak:	180		0		
Off-Peak	50		0		
2. High Case					42.0%
Baseline:	50	base price per signed term sheet	50	15% higher	
Peak:	180		180	15% higher	
Off-Peak	100		100	15% higher	
3. Low Case					17.7%
Baseline:	50	base price per signed term sheet	0		
Peak:	180		0		
Off-Peak	0		0		

FIRR = financial internal rate of return, MW = megawatt.

Source: Asian Development Bank

**Table 3: Financial Analysis
(Base Case Scenario)**

Year	Costs				Benefits				Net Benefits		
	Investment	O&M	Line	Total	Cost of Oil	Purchase	Margin	Benefits	Net Cashflow	Net Cashflow	
	Costs	Costs	Losses	Costs	Generation	Cost	\$/kWh	\$/kWh	Before Tax	After Tax	
	\$million	\$million	\$million	\$million	\$/kWh	\$/kWh	\$/kWh	\$/kWh	\$million	\$million	
0	2013	24.7	0.0	0.0	24.7	0.00	0.00	0.00	0.0	-24.7	-24.7
1	2014	86.4	0.0	0.0	86.4	0.00	0.00	0.00	0.0	-86.4	-86.4
2	2015	12.3	0.0	0.0	12.3	0.00	0.00	0.00	0.0	-12.3	-12.3
3	2016		2.5	0.3	2.7	0.20	0.10	0.10	49.5	46.8	32.7
4	2017		2.5	0.9	3.4	0.20	0.10	0.10	109.8	106.4	74.5
5	2018		2.5	0.9	3.4	0.20	0.10	0.10	109.8	106.4	74.5
6	2019		2.5	0.9	3.4	0.20	0.10	0.10	109.8	106.4	74.5
7	2020		2.5	0.9	3.4	0.20	0.10	0.10	109.8	106.4	74.5
8	2021		2.5	0.9	3.4	0.20	0.13	0.08	57.4	54.0	37.8
9	2022		2.5	0.9	3.4	0.18	0.13	0.06	25.5	22.1	15.5
10	2023		2.5	0.9	3.4	0.18	0.13	0.06	25.5	22.1	15.5
11	2024		2.5	0.9	3.4	0.18	0.13	0.06	25.5	22.1	15.5
12	2025		2.5	0.9	3.4	0.18	0.13	0.06	25.5	22.1	15.5
13	2026		2.5	0.9	3.4	0.18	0.13	0.06	25.5	22.1	15.5
14	2027		2.5	0.9	3.4	0.17	0.13	0.04	18.6	15.2	10.6
15	2028		2.5	0.9	3.4	0.17	0.13	0.04	18.6	15.2	10.6
16	2029		2.5	0.9	3.4	0.17	0.13	0.04	18.6	15.2	10.6
17	2030		2.5	0.9	3.4	0.17	0.13	0.04	18.6	15.2	10.6
18	2031		2.5	0.9	3.4	0.17	0.13	0.04	18.6	15.2	10.6
19	2032		2.5	0.9	3.4	0.14	0.13	0.02	8.2	4.8	3.4
20	2033		2.5	0.9	3.4	0.14	0.13	0.02	8.2	4.8	3.4
123.4											
FIRR (after tax)		30.0%									
NPV (after tax)		305.1 \$million									

() = negative, FIRR = financial internal rate of return, kWh = kilowatt-hour, NPV = net present value, O&M = operation and maintenance.

^a NPV is calculated based on a 2.1% weighted average cost of capital.

Source: Asian Development Bank estimates.