Power Plant Financial Overview

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Plant Information

Installed Capacity

Installed Capacity

3 MW

Power Generation per hour

3,000 kWh

Power Generation per day

72,000 kWh (3,000 × 24)

Coal Consumption

1

Coal usage

2,100 kg/hour = 2.1 MT/hour

2

Coal per day

2.1 × 24 = 50.4 MT/day

Running and Raw Material Costs

Cost Component	Basis	Amount (₦)
Running cost	₦100,000/hour × 24 hours	₦2,400,000/day
Coal cost	₦80,000/MT × 50.4 MT	₦4,032,000/day
Total Daily Operating Cost		₦6,432,000/day

(Note: You previously wrote ₦6,320,000 — slightly off due to rounding.)

Revenue from Power Sales

1

Selling price

₦190 per kWh

2

Daily generation

72,000 kWh

3

Revenue per day

72,000 × 190 = ₦13,680,000/day

Profit Calculation

Daily Profit = Revenue – Total Costs
= ₦13,680,000 – ₦6,432,000
= ₦7,248,000/day

If operating 340 days/year (allowing 25 days downtime):
Annual Profit = ₦7,248,000 × 340 = ₦2,464,320,000/year

Conversion to USD

US$ = ₦2,464,320,000 ÷ 1,450 ≈ US$1,699,000/year

Repayment / Investment Outlook

If the total investment is approximately ₦7–8 billion (or US$4.8–5.5 million),
Payback period ≈ 3 years, which aligns with your statement.

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Summary Table

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Item	Formula / Basis	Value
Plant Capacity	Given	3 MW
Power Generation per Hour	3 MW × 1 hr	3,000 kWh
Power Generation per Day	3,000 × 24	72,000 kWh/day
Coal Consumption per Hour	Given	2.1 MT/hour
Coal Consumption per Day	2.1 × 24	50.4 MT/day
Running Cost	₦100,000/hr × 24	₦2,400,000/day
Coal Cost	₦80,000/MT × 50.4 MT	₦4,032,000/day
Total Daily Operating Cost	2.4M + 4.032M	₦6,432,000/day
Revenue from Power Sales	72,000 × ₦190	₦13,680,000/day
Daily Profit	13.68M – 6.432M	₦7,248,000/day
Annual Profit (340 days)	7.248M × 340	₦2,464,320,000/year
Equivalent in USD	₦2,464,320,000 ÷ 1,450	≈ US$1.70 million/year
Investment Cost	₦7–8 billion (\~US$4.8–5.5 million)	
Payback Period	7–8 billion ÷ 2.464 billion	≈ 3 years

Thank You