

Financial Analysis of Financing Package 2 Projects

This Annex presents the financial analysis of the five project groups of package 2 of projects for TSP.

Methodology

1. The project financial analysis is carried out by comparing project revenues and the various project costs in constant 2013 US dollars over project life (30 years) to assess their profitability.
2. Annual project revenues for each group from project commissioning in 2018 are computed according to the following formula:
 - Bulk energy supply, multiplied by
 - Average tariff of TSP, multiplied by
 - Billing collection rate
3. Annual project costs for each group comprise of:
 - Capital investment costs as per disbursement profiles indicated in Table 1 below, plus
 - Operations and maintenance (O&M) costs, from project commissioning, equivalent to 1% of capital investment costs, plus
 - Corporate income tax on profits.
4. Financing costs are not considered as project financial viability is considered from an investor/owner perspective.
5. The base case results of the financial analysis are considered in terms of the financial internal rate of return (FIRR), financial net present value (FNPV), benefits to cost ration (B/C) and simple payback period. The results of various scenarios are presented in terms of FIRR.

Investment Costs

6. The estimated project costs and disbursement profiles for each group of the five packages are summarized in Table 1 below.

Table 1: Investment Costs in 2013 US\$ millions

	2015	2016	2017	Total
Group 1	306	88	44	438
Group 2	384	110	55	548
Group 3	172	49	25	246
Group 4	432	123	62	617
Group 5	297	59	30	385
Total Package 2	1,591	429	215	2,235

Wheeled Energy & Bulk Supply

7. Table 2 below shows the estimated energy wheeled and bulk supply for each group of investments.

Table 2: Wheeled Energy & Bulk Supply

	Investment Groups >					Total
	1	2	3	4	5	
Wheeling capacity (MW)	902	1,633	387	533	280	3,734
Load factor	0.70	0.70	0.70	0.70	0.70	
Wheeled energy (GWh)	5,529	10,011	2,375	3,267	1,715	22,897
Transmission losses	5.0%	5.0%	5.0%	5.0%	5.0%	
Bulk supply to DisCos (GWh)	5,253	9,510	2,256	3,104	1,629	21,752

8. It is assumed that no gas constraints will apply as from 2018 and that electricity demand in each project group area will be high enough to utilize in full the added wheeling capacity of each project group from the first year of operation (i.e. 2018 onwards).

Tariffs & Revenues

9. The following two alternative tariff scenarios for TSP have been considered in estimating revenues:
- MYTO II tariffs

- Fully cost reflective tariffs
10. MYTO II tariffs apply until May 2017 as per existing NERC Order. These tariffs have been adjusted by removing assumed price escalations. Thereafter, tariffs are assumed to increase annually by 1% in real terms. Fully cost reflective tariffs, which have been estimated to 2018, reflect in full the amounts needed to adequately maintain and operate the network and to grow the infrastructure in step with rapid expansion of generation and load. The resulting tariffs are significantly higher than existing MYTO tariffs. Tariffs from 2019 onwards are assumed to increase annually by 1% in real terms.
 11. The average tariffs in 2018 (in 2013 prices) under the two tariff scenarios are indicated in Table 3 below.

Table 3: Average TSP Tariffs in 2018 (in 2013 prices)

In 2013 prices	NGN/MWh	US\$/MWh
MYTO II	1,144	7.372
Fully cost reflective	3,690	23.774
Gap	223%	223%

12. It is assumed that TSP will collect 100% of its billings from 2018 onwards when the projects are commissioned.

O&M Costs and Corporate Income Tax

13. Operations and maintenance costs for each project group is estimated at 1% of the applicable capital investment costs.
14. The Corporate income tax – 32% (including 2% education tax). Investment allowance of 10% per annum (i.e. for 10 years). Accumulated tax losses carried-forward for set-off against future taxable profits (it is assumed that the company as a whole will generate profits in the future)

Results of Project Financial Analysis

15. Table 4 below shows the results of the financial analysis for each project group and all project groups combined under the two tariff scenarios described above.

Table 4: Results of Project Financial Analysis

	MYTO II Tariffs				Fully Cost Reflective Tariffs			
	FIRR	FNPV	B/C	Simple Payback (Years)	FIRR	FNPV	B/C	Simple Payback (Years)
Group 1	5.6%	-71	0.84	11	17.7%	517	1.74	4
Group 2	8.8%	66	1.11	8	23.2%	1,110	2.01	2
Group 3	3.6%	-78	0.67	15	14.3%	180	1.52	5
Group 4	-0.1%	-351	0.39	Over 30	8.2%	38	1.06	8
Group 5	-1.3%	-243	0.32	Over 30	6.6%	-31	0.92	10
All Groups	4.0%	-643	0.71	14	15.0%	1,834	1.57	4

16. Each group is considered to be financially viable if its Financial Internal Rate of Return (FIRR) is equal to or greater than the Weighted Average Cost of Capital (WACC), estimated at 7.49% (real after tax as per NERC estimates for MYTO tariff evaluation).
17. Results if MYTO II tariffs applied - Only investment Group 2 meets the minimum FIRR criteria of 7.49%. In descending order of financial performance, Group 2 is followed by Group 1, Group 3, Group 4 and lastly Group 5. The only positive FNPV and benefits/cost ratio exceeding 1.0 times applies to Group 2. These results clearly indicate that 4 out of 5 Groups of investments will not be financially viable if MYTO tariffs applied. All Groups combined also do not meet the minimum FIRR.
18. Results if fully cost reflective tariffs applied – Under these conditions, the collected revenues will provide the required positive financial results for all Groups except marginally for Group 5.
19. The above results illustrate the need for an urgent review and revision of tariffs that will make the proposed transmission projects financially attractive to prospective donors and investors.
20. Apart from the increase in wheeling capacity and reduced transmission losses, which have been assessed above, in terms of their financial benefits, there are other benefits resulting from the investments which cannot be easily assessed in financial terms. Such benefits include improvements in system reliability and stabilization of system voltage.

Sensitivities

21. Table 5 below shows the results in terms of FIRR of sensitivities applied to the Base Case assumptions for Project Costs and Revenues detailed above. With MYTO II tariffs, Group 2 meets the minimum criteria in all cases (except for marginally lower FIRR of 7.3% with +20% project costs), indicating the robustness of this particular group of investments.

Table 5: Results of Sensitivities

Project Costs	MYTO II Tariffs (FIRR)					Fully Cost Reflective Tariffs (FIRR)				
	Base	+ 10%	+ 20%	- 10%	- 20%	Base	+ 10%	+ 20%	- 10%	- 20%
Group 1	5.6%	4.9%	4.4%	6.4%	7.3%	17.7%	16.5%	15.5%	19.1%	20.8%
Group 2	8.8%	8.0%	7.3%	9.7%	10.8%	23.2%	21.7%	20.4%	24.9%	26.9%
Group 3	3.6%	3.0%	2.5%	4.3%	5.0%	14.3%	13.3%	12.4%	15.5%	17.0%
Group 4	-0.1%	-0.6%	-1.0%	0.4%	0.9%	8.2%	7.4%	6.7%	9.1%	10.1%
Group 5	-1.3%	-1.8%	-2.2%	-0.7%	-0.1%	6.6%	5.9%	5.3%	7.4%	8.4%
All Groups	4.0%	3.6%	3.1%	4.9%	5.7%	15.0%	14.0%	13.0%	16.3%	17.7%
Revenue	Base	+ 10%	+ 20%	- 10%	- 20%	Base	+ 10%	+ 20%	- 10%	- 20%
Group 1	5.6%	6.4%	7.1%	4.8%	3.9%	17.7%	19.0%	20.3%	16.3%	14.9%
Group 2	8.8%	9.7%	10.6%	7.8%	6.8%	23.2%	24.8%	26.3%	21.5%	19.7%
Group 3	3.6%	4.3%	4.9%	2.9%	2.1%	14.3%	15.5%	16.6%	13.1%	11.9%
Group 4	-0.1%	0.4%	0.9%	-0.8%	-1.7%	8.2%	9.0%	9.9%	7.2%	6.2%
Group 5	-1.3%	-0.6%	0.0%	-2.0%	-2.9%	6.6%	7.4%	8.2%	5.7%	4.8%
All Groups	4.0%	4.9%	5.6%	3.4%	2.6%	15.0%	16.2%	17.3%	13.8%	12.5%

22. Variations in project costs have a direct impact on O&M costs as these estimates are linked. The sensitivity results relating to project costs reflects this linkage.