



Annexure-G

COST BENEFIT ANALYSIS Paradip Numaligarh Crude Oil Pipeline Project

Table-A: Estimation of cost of Forest diversion

SI. No.	Parameters	Value	Remarks
1	Ecosystem service losses due to purposes forest diversion	23 .851 lakh	Enclosed in Annexure - A
2	Loss of Animal husbandry produc- tivity including loss of fodder	2.385 lakh	10% of NPV value is taken
3	Cost of human resettlement	Nil	
4	Loss of public facilities and admin- istrative infrastructure (Roads, building, schools, dispensaries, electrics lines, railway etc) on for- est land, which would require forest land it these facilities were diverted due to the project.	Nil	
5	Possession value of forest land diverted	1382.025 lakh	30% of NPV value is take or circle rate of adjoining at ea in the district. Possession value of forest land will be (considerin 30% of NPV) = 0.3 X 23.85 = 7.155 lakh a) Per hectare land rate it district. Jagatsinghpur is approx.733.88 lakh. So possession value of forest land (as per averag BMV rate) = 1.524 ha. 733,88lakh = 1118.433 lakh b) Per hectare land rate it district. Kendrapada is approx. 23.72 lakh So possession value of forest land (as per averag BMV rate) = 0.610 ha. 23.72 lakh = 14.47 lakh.

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			c) Per hectare land rate in district Bhadrak is approx. 6.92 lakh So possession value of forest land (as per average BMV rate) = 0.337 ha. X 6.92 lakh = 2.332 lakh d) Per hectare land rate in district Balasore is approx. 6.92 lakh So possession value of forest land (as per average BMV rate) = 1.445 ha X170.79lakh = 246.79 lakh
			So total possession value of forest land (as per average BMV rate) =(a+b+c+d) =1382.027 lakh. So considered amount (Maximum one) is Rs. 1382.025 lakh
6	Cost of suffering out tees	Nil	
7	Habitat fragmentation cost	11.923 lakh	50% of NPV value is taken
8	Compensatory afforestation and soil and moisture conservation cost	27.412 lakh	Compensatory afforestation and soil and moisture conservation cost. Rate of Compensatory afforestation Rs.3.5 /ha CA land =3.916x2= 7.832 ha. Total cost= CA land area x rate of Compensatory afforestation = 7.832 ha. x 3.50 lakh =27.412 lakh
	Total cost in monetary terms	1447,596 lakh	

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Table-B: Existing guidelines for estimating benefits of forest diversion in CBA

Parameters	Result(Rs.in lakh)	Remarks	
Increase in productively attribute to the specific project	102000.00lakh		
Benefits to economy due to specif- ic project	102.00 lakh		
No, of population benefits due to specific project	300	Enclosed in Annexure-A	
Economy benefits due to direct and indirect employment due to project	10919.80 lakh		
Economy benefits due to compen- satory afforestation	772.607 lakh		
Total(2+4+5)	113794.407 lakh		
	Increase in productively attribute to the specific project Benefits to economy due to specific project No, of population benefits due to specific project Economy benefits due to direct and indirect employment due to project Economy benefits due to compensatory afforestation	Increase in productively attribute to the specific project Benefits to economy due to specific project No, of population benefits due to specific project Economy benefits due to direct and indirect employment due to project Economy benefits due to compensatory afforestation Intel(2+4+5) Iakh) 102000.00lakh 102.00 lakh 10919.80 lakh 10919.80 lakh	

Cost benefit Ratio: Total Benefit / Total Loss = 113794.407: 1435.381 = 1:79

Annexure -A

EVALUATION OF LOSS OF FORESTS

Loss of value of Timber, fuel wood and minor forest produce on an annual basis, including loss of man-hour per annum of people who derived livelihood and wages from the harvest of these commodities.

Only one time loss of vegetation occurs during construction and there is no loss of man

Considering the NPV of 6.26 lakh per hectare the total loss of timber, fuel wood and minor forest produce for 3.916 ha of forest may be calculated as 3.916 X 6.26 =24.514 lakh

EVALUATION OF BENEFITS

- Increase in productively attributable in the project
 - Increase in productivity attribute in the project for 50 years (To be quantified a) and expressed in monetary terms)
 - To maintain project IRR at 10 %a onetime VGF will be provided, subject to b) maximum of Rs. 102000 lakh.

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2. Benefits to economy due to specific project.

It is assumed that there will be over all benefit to economy on account of reduction in petroleum product price @ 1 % of the total project IRR will be =1 % of Rs.102000 lakh = Rs.102 Lakh

- 3. No. of population benefitted due to specific project.
 - a) There will be no direct recruitment for this project.
 - Indirect employment may be generated through service providers engaged by NRL for the project.

Possible indirect employment may be considered as follows:

SI. No.	Department	No. of Indi- rect employ- ment (a)	No. of days in a year (b)	No. of persons /year {(a x b)/365}
1	Civil & Construction	20	180	10{i.e. 1800/365}
2	Pipeline	40	300	33{{i.e. 12000/365}
3	Installation & Opera-			48
4	Security			209
Total				300

- Economic benefits due to direct and indirect employment due to project.
- a) Indirectly employed manpower in Installation & Operation has a cost of Rs. 200 lakh / year in terms of Salary. Therefore, for 50 years
 =Rs.10000 lakh(i.e.Rs.200 lakh X 50 years)
- b) Cost of other indirectly employed manpower (Total 252 nos.)Unskilled/semi unskilled worker in terms of Salary and Wages @ Rs. 500/day (average) for 2 years = Rs 919.80 lakh (i.e. 252.0 X Rs 500 X 365 days X 2 years)

Total Cost (a+b) = Rs.10919.80 lakh.

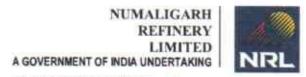
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5. Economic benefit due to Compensatory Afforestation.

The Compensatory Afforestation will be done in 7.832 ha. of degraded forest land, which is down the line would be having a density of minimum 0.8. The ecological value for a 50 years period of density of 1.0 is 126.74 lakh per hectare (As per Forest Conservation Act 1980). By considering minimum 0.8 density, the ecological gain for this project would be = 126.74lakhX0.8X7.832= Rs.794.102 Lakh

Date:

Place: Paradip

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