

COST BENEFIT ANALYSIS

EMIL Mines and Mineral Resources Limited - Bandha Coal Mine

**COST BENEFIT ANALYSIS FOR FOREST DIVERSION OF 807.91
HECTARES AREA OF BANDHA COAL MINE (Reserve Forest –
708.46 Ha, Protected Forest - 95.90 Ha, Revenue Forest - 3.55 Ha)**

Table A: Cases under which a cost-benefit analysis for forest diversion is required.

S. No	Nature of proposal	Applicable/ not applicable	Remarks
1	All categories of proposal involving forest land up to 20 Ha in plains and up to 5 hectares hills	Not applicable	These proposals are to be considered on case-by-case basis and value judgment.
2	Proposal for defense installation purposes and oil prospecting (prospecting only)	Not applicable	In view of National Priority accorded to these sectors, the proposals would be critically assessed to help as certain that the utmost minimum forest land above is diverted for non-forest use.
3	Habitation, establishment of industrial unit, tourist lodges, complex and other building construction	Not applicable	These activities being detrimental to protection anti conservation of forest, as a matter of policy, such proposals would be rarely entertained.
4	All other proposals involving forestland more than 5 hectares in hills including roads, transmission lines, minor, medium and major irrigation projects, mining activity, railway lines, location specific installations like microwave stations, auto repeater centers, TV towers etc.	Applicable	These are cases where a cost benefit analysis is necessary to determine when diverting the forest land to non-forest use is in the overall public interests. The present proposal is for diversion of 807.91 Ha of ML area.

Table B: Estimation of Cost of Forest Diversion

Sr. No	Parameters	Remarks
1	Ecosystem services losses due to proposed forest diversion (NPV of forest)	Economic value of loss of eco-system services due to diversion of forests at proposed villages in Singrauli District of Madhya Pradesh shall be Rs. 1228590.00 /Ha -NPV rate for 807.91 Ha Notified Forest, as per Eco Class II Value of Dense Forest Class) as per Guideline of MoEF&CC, GOI dated 06.01.2022 As prescribed by Central Government (MoEF&CC). 1. Total Forest area: 807.91 Ha. 2. Environmental loss: 807.91 Ha X 1228590.00; = Rs. 992590147
2	Loss of Animal Husbandry,	= 10% X Rs. 992590147

	loss of fodder 10% of NPV (As per Cost Benefit Guideline)	= Rs. 99259014.7
3	Cost of Human Settlement (As per approved R&R plan)	Not Applicable Though there are no human resettlement in Forest Land, cost of human resettlement (R&R) in Tenancy Land is included in project cost estimates
4	Loss of public facilities & infrastructure (On actual cost)	Not applicable Though there are no loss of public facilities & administrative infrastructures on forest land but cost of public facilities & administrative infrastructures in outside the forest area is included in project cost estimate
5	Possession value of forest land diverted (30% of NPV)	<p>a. Circle rate of adjoining area in the district as a cost component as possession value of forest land is arrived as Rs. 20 lakhs / Ha X 807.91 Ha = Rs.161.58 /- Cr</p> <p>b. 30% of environmental costs (NPV) due to loss of Forest (99.25 X 0.30 =Rs. 29.77/- Cr.)</p> <p>c. Circle rate of adjoining area is Rs. 161.58/- Cr, which is maximum compared to 30% of NPV. Hence Rs. 161.58/- Crores is considered as possession value of forest land to be diverted =Rs. 161580000/-</p>
6	Cost of Suffering to oustees (1.5 times have earned in last 2yrs)	No human habitation exists on forest land proposed to be diverted as such there is no social cost of rehabilitation of oustees. However, cost likely to be incurred in R&R plan is provided in the project cost.
7	Habitat Fragmentation Cost	Habitat fragmentation cost taken as 50% of NPV = 50% X Rs. 992590147 = Rs. 496295073
8	Compensatory afforestation and soil & moisture conservation	CA Scheme for 807.91 Ha is Rs. 404992144

Total cost due to diversion of forest land:
= (992590147+ 99259014.7+ 161580000+ 496295073+ 404992144)
= Rs. 3608936379
= Rs 360.89 crores

Table B1: Project Cost Estimates

Table - B 1 - Project Cost Estimates			
Sl No	Particulars	Value in Crores	Remarks
1	Capital investment including preoperative expenses	1,987	
2	R&R Cost	150	Cost of human resettlement (R&R) in Tenancy Land
3	Cost of Public facilities including administrative cost	100	Cost included diversion of HT lines, RERC Lines, Roads etc.
4	Net present value (NPV) payable to Forest Dept. for total forest land of 807.91 hectares	NIL	Cost included in the part of Forest cost in the Project
5	Cost of Compensatory Afforestation payable to Forest Dept. The cost of Afforestation on revenue forest land -807.91 Hectares	99.25	Cost included in the part of Forest cost of the Project
Total Project Cost in Rs. Crores= 2,331/-			

Table C: Existing guidelines for estimating benefits for Forest Diversion

Table C: - Estimation of Benefits of Forest Diversion						
Life of the Project		40 Years for Opencast Mines				
Construction Period		Excluding 4 years of construction period				
Sl No	Parameters	Calculation				
1	Increase in Productivity Attribute to the Bandha Coal Mine	Net Revenue due to Coal				
		Sl No	Parameters	Rate (Rs.)	Unit	Amount (In Cr.)

			Gross Revenue from ROM Coal for life of the Open Cast Mine (G 10 Grade) up to 250 Meter depth total extractable reserves for a period of 30 years is 150 MTe @ Rs. 2500 / MTe (Representative Price)	2500/-	Rs. /MTe	37,500/-
		I				
		ii	Tentative operating cost including depreciation, interest on loan payment, tax liability etc. for 30 years @ (150 MTe X Rs.1530/- per MTe)	1530/-	Rs. /MTe	22,950/-
2		Net Revenue benefits due to Coal (i - ii) Net Revenue against Royalty, DMF, NMET, Compensation cess, total taxes, upfront etc. to State Govt. (@996/MTe)				
		a. Population directly benefitted - 1406				
		b. Population indirectly benefitted - 5000				
		c. Employment generated on non-forest land in afforestation programme				
		d. Local people have income opportunity in various ancillary work & other activities				
3	No. of Population benefited due to the project	e. Engagement of 1406 direct and 5000 indirect employment per day for 300 days in a year up to 30 years of project life at the present wage rates of Rs. 410- & Rs. 350/- respectively as approved by Madhya Pradesh State Govt. for skilled labour.				
	Total Benefit to Employees and Local Population					2093/-

4	Economic benefits due to compensatory afforestation	Compensatory afforestation of 807.91 Ha of Land @1000 no of sapling & survival rate @80%. The sapling for 807.91 Ha = 807910 trees Survival trees@80% = 646328 Economic benefits of one tree accruing over next 50 years monetized in terms of providing oxygen, water, soil, moisture conservation, etc. + timber & firewood= 2.00 lakh Future benefits of 646328 nos. of trees @ 2.00 lakh = Rs. 1292656 crores	12926.56
	Total Benefit to Society		12926.56
	Total Benefits in Rs. Crores		44510/-

Cost Benefit Analysis

Based on value of products:

A) Total Benefit to the Society = Rs 44510 crores (Table C)

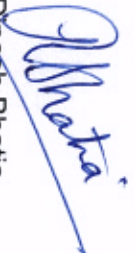
B) Total Cost to the Society = Rs 2692 crores (Table B+ Table B1)

Cost Benefit Ratio = Total Benefit / Total Cost

= Rs 44510 / Rs 2692 crores = 16.53

Cost Benefit Ratio 1: 16.53

Authorised Signature /Seal
(For, EMIL Mines and Mineral Resources Ltd)


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