



Cost Benefit Analysis for Chakla Coal Transportation Pathway

The Cost Benefit Analysis (CBA) has been prepared for Railway & Road Corridor since the forest diversion proposal involves mining activity. The CBA has been prepared as per the MoEF & CC, Govt. of India, New Delhi guidelines dated 01.08.2017.

Approx. Length of Railway & Road Corridor in Forest (Notified Forest & GM JJ) and Non-Forest Area			
SI No	Type	Forest Corridor in Meter	Non Forest Corridor Length
1	Existing Railway siding length	138.33	2163.62
2	Proposed Railway corridor outside Chakla Coal Block boundary	1057.29	
3	Proposed Road Area outside Chakla Coal Block boundary	777.05	906.04
Grand Total Length in Forest Area		1972.67	3069.66

Table A: Calculations for estimation of Cost of Forest Diversion in Chakla Coal Transportation Pathway

Cost Benefit Analysis in respect of Chakla Coal Transportation Pathway (As per new guideline in Handbook of Forest Conservation Act 1980 published in 2019, issued by MoEF/CG Govt. of India, New Delhi)			
Table - A: Estimation of cost of forest diversion:-			
Sl.No	Parameters	Rail and Road Corridor Cost (in Rs. Cr.)	Remarks
1	Ecosystem services losses due to Proposed forest diversion	32.56	Eco Class III Open Forest NPV rate is 9,57,780/Ha. Revised NPV rates dated 06.01.2022
2	Loss of animal husbandry productivity, including loss of fodder	2.13	10% of NPV Rate
3	Cost of Human Resettlement	-	No human resettlement in the forest patches

Cost Benefit Analysis in respect of Chakla Coal Transportation Pathway (As per new guideline in Handbook of Forest Conservation Act 1980 published in 2019, issued by MoEF/CG Govt. of India, New Delhi)			
Table - A: Estimation of cost of forest diversion:-			
Sl.No	Parameters	Rail and Road Corridor Cost (in Rs. Cr.)	Remarks
4	Loss of Public Facilities and Administrative infrastructure (Road, Building, Schools, Dispensaries, Electric Lines, Railways etc..) on forest land, which would require land if these facilities were diverted due to the project	-	NIL public infrastructure in the forest patches
5	Possession Value of Forest Land Diverted	6.39	30% of NPV
6	Cost of suffering to Oustees	-	NIL Oustees in the forest patch
7	Habitat Fragmentation Cost	10.64	50% of NPV
8	Compensatory afforestation and Soil & Moisture Conservation Cost	0.71	Cost of 11 year CA plantation scheme @9 lakhs/Ha + estimated Rs.0.1 Crore for soil and moisture conservation cost
	Sub Total	52.43	
	Total	52.43	

Table B: Calculations for estimation of Benefit of Forest Diversion in Chakla Coal

Transportation Pathway

Table - B: Estimation of benefits of forest diversion:-			
Sl No.	Parameters	Coal Transport ation Cost (in Rs. Cr.)	Remarks
1	Increase in productively attribute to the specific project	109.32	The profit from rail transport per tonne is Rs. 2.41/km. The production at each mine is multiplied by profit, line length for a period of 30 years
2	Benefits to economy due to the specific project (for 30 Years)	182.20	Chakla Coal Transportation is around 5km (Rail-3.6km and Road -1.4km) in length and specific for evacuation of coal. No passenger traffic is possible in forseable future. Environmental Benefits due to clean transportation via railway corridor. Monetized benefit to the economy is " Cost of Road transportation minus cost of Railway Transportation"

Table - B: Estimation of benefits of forest diversion:-

Sl No.	Parameters	Coal Transport ation Cost (in Rs. Cr.)	Remarks
3	No. of population benefited due to specific project(for 30 Years)	240.90	No. of population in adjacent village is multiplied by per capita income
4	Economic bebefits due to direct and indirect employment due to the project (included for all three lines for 30 years)	9.58	Direct employment-25 nos. and Indirect employment - NIL. Direct + Indirect multiplied for 365 days in a year at the rate of Rs 350/day
5	Economic benefits due to Compensatory Afforestation (for 30 Years)	4.09	The benefits from such compensatory afforestation accruing over next 30 years, monetized and discounted to the present value should be included as benefits of compensatory afforestation. Standard gain x applied area x average forest density =150.5 Lakhs X 6.8 * 0.4
	Sub Total	546.09	
	Total Benefits	546.09	
	Cost Benefit Ratio	1:11	11.28

Summary of Total Cost and Benefit**Cost Benefit Analysis in respect of Chakla Coal Mine**

(As per new guideline dated 01/08/2017 issued by MoEF/CG Govt. of India, New Delhi)

Table - A: Estimation of cost of forest diversion: -

Sl.No	Parameters	Cost (in Rs. Cr.)
1	Ecosystem services losses due to Proposed forest diversion	32.56
2	Loss of animal husbandry productivity, including loss of folder	2.13
3	Cost of Human Resettlement	NIL



Cost Benefit Analysis in respect of Chakla Coal Mine

(As per new guideline dated 01/08/2017 issued by MoEF/CG Govt. of India, New Delhi)

Table - A: Estimation of cost of forest diversion: -

Sl.No	Parameters	Cost (in Rs. Cr.)
4	Loss of Public Facilities and Administrative infrastructure (Road, Building, Schools, Dispensaries, Electric Lines, Railways, etc.) on forest land, which would require land if these facilities were diverted due to the project	NIL
5	Possession Value of Forest Land Diverted	6.39
6	Cost of suffering to Oustees	NIL
7	Habitat Fragmentation Cost	10.64
8	Compensatory afforestation and Soil & Moisture Conservation Cost	0.71
	Sub Total	52.43
	Total	52.43


Table - B: Estimation of benefits of forest diversion: -

SI No.	Parameters	Cost (in Rs. Cr.)
1	Increase in productivity attribute to the specific project	109.32
2	Benefits to economy due to the specific project (for 30 Years)	182.20
3	No. of population benefited due to specific project (for 30 Years)	240.90
4	Economic benefits due to direct and indirect employment due to the project (included for all three lines for 30 years)	9.58
5	Economic benefits due to Compensatory Afforestation (for 30 Years)	4.09
	Total	546.09
	Cost Benefit Ratio	1:11

Cost Benefit Ratio:

1. Total Cost is Rs. 52.43 Crores
2. Total Benefit is Rs. 546.09 Crores

The Cost to Benefit Ratio is 1: 11 (Total Cost/Total Benefit)


Rajiv Kumar
AVP (Mining)

Rajiv Kumar
Authorised Person
Chakla Coal Mine
Hindalco Industries Limited

Authorised Signatory on behalf of Hindalco Industries Limited