

## Cost Benefit Analysis

**Cost Benefit Analysis in respect of Diversion of 151.095 Ha of forest land (Reserve Forest 142.075 Ha & Revenue Forest 9.020 Ha) for Bikram Coal Mine having area of 239 Ha for underground & opencast coal mine for captive cement & power plants of Birla Corporation Ltd.**

**Proposal No. : FP/MP/MIN/49537/2020**

**Table – A: Cases under which a cost – benefit analysis for forest diversion are required**

Sl.No.	Nature of proposal	Applicable/Not applicable	Remarks
1	All categories of proposals involving forest land upto 20 hectares in plains and upto 5 hectares in hills	Not applicable	These proposals may be considered on a case to case basis and value judgement
2	Proposal for defence 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 ascertain that the utmost minimum forest land is diverted for non – forest use.
3	Habitation, establishment of industrial units, tourist lodges complex and other building construction.	Not applicable	These activities being detrimental to protection and conservation of forest, as a matter of policy, such proposals would be rarely entertained.
4	All other proposals involving forest land more than 20 hectares in plains and more than 5 hectares in hills including roads, transmission lines, minor, medium and major irrigation projects, hydro projects, mining activity, railway lines, location specific installations like micro – wave stations, auto repeater centres, TV towers etc	Applicable	The proposed project is for diversion of 151.095 Ha of forest land (Reserve Forest 142.075 Ha & Revenue Forest 9.020 Ha) for Bikram Coal Mine in the village of Gopalpur & Bartara of District Shahdol, Madhya Pradesh.

**Table – B Estimation of Cost of Forest Diversion**

Sl.No.	Parameters	Remarks	Cost (in Rs.)
1	Ecosystem Service loss due to proposed forest diversion.	Economic Value of loss of ecosystem Services due to proposed diversion of Forest – NPV amount of forest land being diverted as prescribed by Central Government (MoEF&CC).	<p>Economic Value of loss of ecosystem Services due to proposed diversion of Forest shall be Rs 861390 / Ha ( NPV rate as per, File No. 5-3/2011 –FC (Vol - I) of MoEF &amp; CC, GoI dated 06/01/2022.</p> <p>Since the project is Opencast as well as Underground hence NPV value is considered at 100% for opencast and 50% for underground.</p> <p>➤ Total Forest area : 151.095 Ha = 114.372 (OC) + 36.723 (UG).</p> <p>➤ Environment loss :</p> <p><b>114335309.565</b></p> <p><b>Rs 114335309.565/-</b></p>
2	Loss of animal husbandry productivity including loss of fodder.	To be quantified and expressed in monetary term or 10% of NPV applicable whichever is maximum.	<b>Rs 11433530.956/-</b>
3	Cost of Human Resettlement.	To be quantified and expressed in monetary terms as per approved R & R Plan.	<b>Not Applicable</b>
4	Loss of public facilities and administrative infrastructure (roads, building, schools, dispensaries, electric lines,	To be quantified and expressed in monetary terms on actual cost basis at the time of diversion.	<b>There is no public facilities and administrative infrastructure on the forest land to be diverted. Hence, there is no loss of public facilities.</b>

	railway etc.) on forest land, which would requires forest land if these facilities were diverted due to project.		
5	Possession Value of the forest land diverted.	30% of environment cost (NPV) due to loss of forest or circle rate of adjoining area in the district should be added as a cost component as possession value of forest land whichever is maximum.	<b>Rs 34300592.869/-</b>
6	Cost of suffering to oustees.	The social cost of rehabilitation of oustees (in addition to the cost likely to be incurred in providing residence, occupation, and social services as per R & R plan) be worked out as 1.5 times of what oustees should have earned in two years had he not been shifted.	There will not be any loss on this account as diversion of the forest land to this project will not affect any evacuation of house or structure or human settlement in forest area.
7	Habitat Fragmentation Cost.	While the relation between fragmentation and forest goods and services is complex, for the sake of simplicity the cost due to fragmentation has been pegged at 50% of NPV applicable as a thumb rule.	<b>Rs 57167654.782/-</b>
8	Compensatory afforestation and soil & moisture conservation cost.	The actual cost of compensatory afforestation and soil & moisture	The cost @ Rs 400000 / Ha is taken for compensatory afforestation and soil & moisture conservation. Hence

		conservation and its maintenance in future at present discounted value.	amount will be:
			<b>Rs 45748800.00/-</b>
<b>Total cost due to diversion of forest land:</b>			
Rs 114335309.565 + Rs 11433530.956 + Rs 34300592.869 + Rs 57167654.782 + Rs 45748800.00			
<b>Total Cost to the Society = Rs 262985888.172/-</b>			

**Table – C Existing guidelines for estimating benefits of forest - diversion**

Sl.No.	Parameters	Remarks	Benefits (in Rs.)
1	Increase in productivity attribute to the specific project.	To be quantified & expressed in monetary terms avoiding double counting.	9850000 T x 1757 (G-8). <b>Rs17306450000.00/-</b>
2	Benefits to economy due to the specific project.	The incremental economic benefit in monetary terms due to the activities attributed to the specific project.	*Royalty, DMF, NMET, M.P Infrastructure tax, Forest transit cess amounts to Rs 448.53/T <b>Rs4418020500.00/-</b>
3	No. of population benefited due to specific project.		<ul style="list-style-type: none"> <li>➤ Direct – 701</li> <li>➤ Indirect – 500</li> <li>➤ Employment generated on non – forest land in afforestation programme</li> <li>➤ Locality people will have income opportunity in various ancillary work &amp; other activities.</li> </ul>

4	Economic benefits due to of direct and indirect employment due to the project.		<p>➤ Direct – 701 Rs 100000 x 701 x 12 (months) <b>=Rs 841200000/-</b></p> <p>➤ Indirect – 500 Rs 10000 x 500 x 12 (months) <b>= Rs 60000000/-</b></p> <p><b>31 years x</b> <b>901200000/-</b></p> <hr/> <p><b>Rs27937200000.00/-</b></p>
5	Economic benefits due to Compensatory afforestation	Benefits from such compensatory forestation accruing over next 50 years monetized and discounted to the present value should be included as benefits of compensatory afforestation.	<p>Compensatory afforestation of 114.372 Ha of land @ 1000 no of sapling = survival rate @ 80%.</p> <p>The sapling/114.372 Ha = 114372 trees</p> <p>Survival trees @ 80% = 91497.6 trees</p> <p>Economic benefits of one tree accruing over next 50 years monetized in terms of providing oxygen, water, soil, moisture conservation, etc, timber &amp; firewood = Rs 200000.</p> <p>Future benefits of 91497.6 nos of trees @ Rs 200000</p> <hr/> <p><b>Rs18299520000.00/-</b></p>

**Total benefits due to diversion of forest land for non – forest activity:**

(Rs 17306450000 + Rs 4418020500 + Rs 27937200000 + Rs 18299520000)

**Total Benefit to the Society = Rs 67961190500.00/-**

## **Cost Benefit Analysis**

**Based on value of products:**

<b>A) Total Benefit to the Society</b>	<b>= Rs 67961190500.00/-</b>
--	------------------------------

<b>B) Total Cost to the Society</b>	<b>= Rs 262985888.172/-</b>
-------------------------------------	-----------------------------

<b>Cost Benefit Ratio</b>	<b>= <u>Total Benefit</u> Total Cost</b>
---------------------------	--

<b>Cost Benefit Ratio</b>	<b>= <u>67961190500.00</u> <u>262985888.172</u></b>
---------------------------	---

**= 258.421**

**For Birla Corporation Limited**



**(Sandeep Kumar Jain)  
Additional Vice President-Mining**

**Project Authority**