

Cost Benefit Analysis for the Downhill Pipe Conveyor Project from Narasimha Iron Ore Mine ( ML.No.2148) to Proposed Pellet Plant of MSPL Limited at Village Somlapur over an extent of 19.17 Ha. over 50 years period				
1	Toposheet No	:	57A/8 & 57/12	
2	Location	:	Narasimha Iron Ore Mine to Proposed Pellet Plant at Somlapur, Ballari District, Karnataka State.	
3	Extent	:	19.17	Ha Forest Land
4	Unbroken Area			Ha
5	Density of Forest growth	=	0.4	Density of forest/Ha
6	<b>A. Evaluation of Losses</b>			
7	<b>I. Ecosystem Services losses due to proposed forest diversion : (Soil erosion, effect on hydrological cycle, wildlife habitat, microclimate upsetting of ecological balance)</b>			
8	Ecosystem Services losses due to proposed forest diversion	=	97184232	Rs. (Env losses/ha for density 1 X Forest density/Ha X FC proposed area)-Env loss/Ha =12674000
10	<b>II. Loss of animal husbandry productivity, including loss of fodder</b>			
11	Loss of animal husbandry productivity, including loss of fodder	=	0.97	Cr. 10 % of the NPV of the forest as per the new guidelines
12	<b>III. Possession value of forest land diverted</b>			
13	Possession value of forest land diverted	=	2.92	Cr. 30 % of environmental costs (NPV) due to loss of forest or circle as per the new guidelines
14	<b>IV. Habitat Fragmentation Cost</b>			
15	Habitat Fragmentation Cost	=	4.859	Cr. 50 % of the environmental cost (NPV) as a thumb rule as per the new guidelines
16	<b>V. Compensatory afforestation &amp; Soil and Moisture conservation Cost</b>			
17	Compensatory afforestation & Soil and Moisture conservation Cost	=	3.52	Cr. Rs.18.36 Lakhs per Ha as Per Letter No:KFD/HoFF/A53(GFL)/34/2019-FC dated.24.05.2022
18	Soil and Moisture conservation Cost	=	0.05	Cr.
19	Total losses due to forest diversion		22.035	Cr.
20	<b>B. Benefits Evaluation</b>			
21	<b>I. Benefit to the Project Proponent</b>			
22	Estimated Iron Ore reserves in forest area	=	60160000	Tonnes Mineable Reserves - tonnes
24	The cost to transport material through road	=	78.0	Rs./Tonne Transportation cost through Road
25	Cost to transport material through DHC	=	15.0	Rs/Tonne Transportation cost through DHC
27	Total Benefit to the Project Proponent	=	379.01	Cr. (Benefits after starting the project)
28	<b>II. Benefit to the economy</b>			
29	Sale price of Iron Ore as per IBM in Karnataka	=	1260.03	Rs. As per IBM ASP Below 55% Fe , From Sep-21 to Aug-22
30	Bid Premium charges	=	129.90%	%
31	DMG Royalty	=	15.00%	% of IBM Sale Price
32	DMF	=	10.00%	% of DMG Royalty
33		=	1.500%	% of IBM Sale Price
34	NMET	=	2%	% of Royalty
35		=	0.300%	% of IBM Sale Price
36	FDF	=	0.000%	% of IBM Sale Price
37	Total % Benefit to economy	=	146.70%	% of IBM Sale Price
38	Total Benefit to the Economy	=	111203594841.6	Rs. All kind of levies including charges by Forest Dept., DMG etc.
39		=	11120.36	Cr.
40	<b>III. Population benefited due to the specific project</b>			
41	Population benefited due to the specific project	=	7.58	Cr. Keeping 2% of the net profit as the benefits to the population (CSR activities)
42	<b>IV. Total benefit to Employees</b>	=	43.2	Cr. ( no of employees X CTC per employee X 50 years)
43	<b>V. Economic Benefits due to Compensatory afforestation cost</b>	=	2.35	Cr. Guidelines for Forest diversion of forest land for non forestry purpose under forest conservation act 1980 Guidelines. For Collection of NPV, NPV charges taken @12.28La/Ha (File No.5-3/2011-FC(Vol-I))
44	Total Benefit due to the Project	=	11553	Cr.
45	Cost Benefit to Cost Ratio	=	524.2888	
46	Cost Benefit Ratio	:	524	Ratio

For MSPL LIMITED

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Vice President Mines and CC

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SL.No.	Losses in Crores		Benefits in Crores	
1	Ecosystem Services losses due to proposed forest diversion	9.72	Benefit to the Project Proponent	379.01
2	Loss of animal husbandry productivity, including loss of fodder	0.97	Benefit to Economy	11120.36
3	Possession value of forest land diverted	2.92	Population benefited due to the specific project	7.58
4	Habitat Fragmentation Cost	4.86	Benefit to the employees	43.20
5	Compensatory afforestation & Soil and Moisture conservation Cost	3.57	Economic Benefits due to Compensatory afforestation cost	2.35
	Total Losses	22.03	Total Benefits	11552.50
<b>Cost Benefit Ratio</b>		<b>1 :</b>	<b>524</b>	

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**1. Applicability of Cost Benefit Analysis**

SNo.	Nature of Proposal	Applicable/not applicable	Remarks
1.	All categories of proposals involving forest land up to 20 hectares in plains and up to 5 hectares in hills.	Not applicable	These proposals are to be considered on case by 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 above 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 ha. in hills including roads, transmission lines, minor, medium and major irrigation projects, hydel projects mining activity, railway lines, location specific installations like micro-wave stations, auto repeater centres, T.V. 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.

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**2. Evaluation of Loss of Forest**

S. No.	Parameters	Mining Project
1.	Ecosystem service losses due to proposed forest diversion	<p>The details of environmental losses are identified as per the given thumb rule for the forest area required for the project are as follows:</p> <p>1.) Density of the forest: 0.4</p> <p>2.) Avg. density of the forest land to be diverted: 0.4</p> <p>3.) Thumb rule for the environment losses per Ha. for density 1.0 over a period of 50 Years (In Lacs): 126.74 Lacs</p> <p>4.) Environmental loss per Ha. of forest land to be diverted: <math>0.4 \times 126.74</math> Lacs: 50.696 Lacs.</p> <p>5.) Total forest area required to be diverted: 19.17 Ha.</p> <p>6.) Total Environmental loss due to forest land diversion: <math>50.696 \times 19.17</math> Lacs</p> <p>7.) Total Environmental loss due to forest land diversion: 971.84 <b>Lacs</b></p> <p>8.) Total Environmental loss due to forest land diversion per year: <math>971.84 / 50</math> = 19.44 Lacs per year</p> <p>9.) Total Environmental loss due to forest land diversion for 50 years: = 9.72 <b>Cr</b></p>
2.	Loss of animal husbandry productivity, including loss of fodder	10 % of the Net Present Value (environmental services losses) = $0.10 \times 9.72$ Crores = 0.972 <b>Cr</b>
3.	Cost of human resettlement	There is no loss involved on account of human resettlement.
4.	Loss of public facilities and administrative infrastructure (Roads, buildings, schools, dispensaries, electric lines, railway etc) on forest land, or which would require forest land if these facilities were diverted due to the project.	No administrative infrastructure such as roads, buildings, schools, dispensaries, electric line, railway, etc are affected due to diversion of forest land to this project. There will be no loss involved on this account
5.	Possession Value of forest land diverted	30 % of the Net Present Value (environmental services losses) = $0.30 \times 9.72$ Crores = <b>2.916 Cr</b>
6.	Cost of suffering to oustees	There will not be any losses on this account as diversion of the forest land to this project will not affect any house or structure.
7.	Habitat Fragmentation Cost	50 % of the Net Present Value (environmental services losses) = $0.50 \times 9.718$ Crores = <b>4.859 Cr</b>
8.	Compensatory afforestation & Soil and Moisture conservation plan	<b>Rs.3.570 Cr</b> (Rs.18.36 Lakhs per Ha as Per Letter No:KFD/HoFF/A5-3(GFL)/34/2019-FC dated.19.04.2021)
<b>Total Loss to environment</b>		<b>22.03 Cr</b>

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**3. Evaluation of the Benefits**

SNo.	Parameters	Mining Project
1.	Increase in productivity attributable to the specific project.	1. Total Mineable reserves = 60160000Tonnes 2.Estimated cost of transport if ore is transported through truck to MSPL Pelle Plant = Rs. <b>76 per tonne</b> 3. Estimated cost of transport through Downhill Pipe Conveyor = Rs.15 Per tonne 4. Profit to the project proponent after starting this project for 50 years = 379.01 Cr. 5. Payments to be made against various royalties, taxes to NMET, FDF, DMF and DMG Royalty = 146.7% on total mineable reserves as per the IBM Sale Price =Rs. 11120.36 Cr 6. Net benefit to the project proponent for 50 years = 325.87 <b>Cr.</b>
2.	Benefits to economy due to the specific project	A. Total mineable iron ore reserve =60160000 Tonnes B. Average Sales price of iron ore as per IBM(Karnataka)-last 12 months = Rs.1260.03 per tonne C. i. Premium to GoK =129.90% . ii. Other Levies DMG Royalty = 15 % of IBM Average Sales price DMF = 10 % of Royalty(Auctioned Mines) NMET = 02 % of Royalty  Grand Total = 146.7% of IBMAverage Sales Price D. Total benefit to econmy of GoK in 50 Years =11120.36 <b>Cr.</b>
3.	No. of population benefited due to specfic project	Keeping straight 2% of the net profit in CSR Activities = 0.02*379.01=7.58 <b>Cr.</b>
4.	Economic benefits due to the direct and indirect employment due to the project	Total benefit to the employees per annum = <b>0.864 Crores per annum</b> Total Benefit to the employees for 50years = 43.20 <b>Cr.</b>
5.	Economic Benefits due to Compensatory afforestation charges	<b>Rs. 2.35</b> (Guidelines for Forest diversion of forest land for non forestry purpose under forest conservation act 1980 Guidelines. For Coolection of NPV, NPV chaarges taken @12.28La/Ha
	<b>Total Benefit</b>	
		<b>Total Loss of the forest: 22.03 Cr</b>
		<b>Total benefits: 11540.23 Cr</b>
		<b>Cost Benefit Ratio: 1:524</b>

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