

Cost Benefit Analysis of Chitra East OCP - Diversion of 113.94 Ha as per MOEF&CC
Circular Dated 01-08-2017

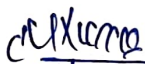
Table B: Estimation of cost of forest diversion

<u>Sl. No.</u>	<u>Parameters</u>	<u>Remarks</u>	<u>Value in INR</u>
1.	Ecosystem services loss due to proposed forest diversion	Economic value of loss of ecosystem service should be net present value of the forest being diverted as prescribed by the MoEF&CC. Note: in case of National parks the NPV shall be 10 times the normal NPV and incase of Wildlife sanctuaries the NPV shall be five times the normal NPV as prescribed by the Ministry or any other competent authority	i) Since the forest is typically Tropical dry deciduous Forest it falls under the category –Eco Class III ii) Average forest Density is 0.10 and is thus classified as moderately dense forest iii) As such Rate of NPV per Ha = Rs.626000.00 Thus, NPV for 113.94 Ha of forest land = 626000 X 113.94 = Rs. 71326440.00 i.e. <u>Rs 7.14 Crore</u> <u>Ref: Guidelines for Calculation of NPV vide MoEF&CC, GoI, FNo. 5-3/2007-FC dated 05.02.2009</u>
2.	Loss of animal husbandry or fodder	To be quantified and expressed in Monetary terms or 10% NPV whichever is maximum	There is no significant animal husbandry or fodder in the area. As such the maximum value can be quantified as 10% NPV (10% of Rs. 71326440.00) = Rs. 7132644.00 i.e. <u>Rs 0.71 Crore</u> (Refer Sl. no.1 for value of NPV)
3.	Cost of human Settlement	To be quantified and expressed in in Monetary terms as per approved R&R Plan	Total Cost of Human settlement is Rs. 573400000.00 as per R&R plan. i.e <u>Rs 57.34 Crore</u> Copy of R&R plan is already attached with Form A-Part-I
4.	Loss of public facilities and administrative infrastructure (Roads, buildings, schools, dispensaries, electric lines, railways) on	To be quantified and expressed in Monetary terms on actual cost basis at the time of diversion	There will be no loss of public facilities and administrative infrastructure (Roads, buildings, schools, dispensaries, electric lines, railways) on Forest land which would require forest land if these facilities. As such the Monetary Value on actual cost basis at the time of diversion is <u>NIL.</u>

(Signature)
22.12.2021
सहायक/ General Manager
पर्यावरण विभाग / ईसीएल मुख्यालय
Environment Deptt./ECL. HQ.


(Signature)
20.12.21
General Manager
SP Mines Area
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S P MINES AREA, ECL

Sl. No.	Parameters	Remarks	Value in INR																								
	Forest land which would require forest land if these facilities were diverted due to the project.																										
5.	Possession value of the forest land	30% of the environmental costs (NPV) due to NPV or loss of forest or circle rate of adjoining areas of the district should be added as cost component of possession value of the forest land; whichever is maximum.	<p>i) 30% of NPV = 30 % of Rs. 71326440.00 = Rs. 21397932.00 (Refer Sl no.1 for value of NPV)</p> <p>ii) Possession Value at Circle Rate of Deoghar District (Palojori and Sarath Blocks) = Rs 1227917760.00</p> <p>iii) Additional for mining @ 30 % NPV = Rs. 21397932.00</p> <p>Total = Maximum of (i) & (ii) + (iii) = Rs 1249315692.00</p> <p>i.e. <u>Rs 124.93 Crore</u></p>																								
6.	Cost of suffering to oustees	The social cost of rehabilitation of the 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.	<p>Village wise Net Sown Area (Ref: Census of India 2011, https://censusindia.gov.in/2011census/dchb/DCHB_A/20/2005_PART_A_DCHB_DEOGHAR.pdf as accessed on 03.12.2021) of the 06 villages to be shifted are as follows:</p> <table><tr><th>Sl No</th><th>Village</th><th>Net Sown Area (in Ha)</th></tr><tr><td>1</td><td>Khoon</td><td>14.70</td></tr><tr><td>2</td><td>Jamua</td><td>71.50</td></tr><tr><td>3</td><td>Tarabad</td><td>97.10</td></tr><tr><td>4</td><td>Chitra</td><td>25.80</td></tr><tr><td>5</td><td>Bhawanipur</td><td>7.30</td></tr><tr><td>6</td><td>Tulsidabor</td><td>129.50</td></tr><tr><td colspan="2">TOTAL</td><td>345.90</td></tr></table> <p>Since Paddy Cultivation is the major economic job of the oustees, the major earning comes from the same. Yield of Paddy in Deoghar District is 2649 Kg/Ha (Ref: Department of Agriculture and Farmers Welfare, Govt of India, https://agricoop.nic.in/sites/default/files/deoghar.pdf as accessed on 03.12.2021).</p> <p>Thus, total production of paddy from these villages will be $2649 \times 345.90 = 916289.10$ Kg = 9162.891 quintals</p> <p>MSP of Common Paddy for FY 2021-22 = Rs 1940 per quintal (Ref: Food Corporation of India, Govt of India, https://fci.gov.in/procurements.php?view=89 as accessed on 03.12.2021)</p>	Sl No	Village	Net Sown Area (in Ha)	1	Khoon	14.70	2	Jamua	71.50	3	Tarabad	97.10	4	Chitra	25.80	5	Bhawanipur	7.30	6	Tulsidabor	129.50	TOTAL		345.90
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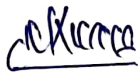
<u>Sl. No.</u>	<u>Parameters</u>	<u>Remarks</u>	<u>Value in INR</u>
			<p>Total income per year from cultivation of Paddy = $1940 \times 9162.891 = \text{Rs } 1,77,76,008.54$</p> <p>Income for two years = $2 \times 17776008.54 = \text{Rs } 3,55,52,017.08$</p> <p>The cost of suffering to oustees = $1.5 \times 35552017.08 = \text{Rs } 5,33,28,025.62$ i.e. <u>Rs 5.34 crores</u></p>
7.	Habitat Fragmentation Cost	While the relationship 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 thumb rule	<p>Habitat Fragmentation Cost = 50% of NPV = 50% of Rs. 71326440.00 = Rs 35663220.00 i.e. <u>Rs 3.57 Crore</u></p>
8	Compensatory afforestation and soil and moisture conservation cost	The actual cost of Compensatory afforestation and soil & moisture conservation and its maintenance in future at present discounted rate	<p>CA cost for twice the forest area to be diverted = $113.94 \times 2 @ \text{Rs } 231726.80^* = \text{Rs } 52805903.00$</p> <p>+</p> <p>Soil & Moisture Conservation Cost: Rs 45671000.00 = Rs 98476903.00 i.e. <u>Rs 9.85 Crore</u></p> <p>* As per Letter no. 2564 dated 09.11.2019 from DFO, Deoghar</p>



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 महाप्रबंधक/ General Manager
 पर्यावरण विभाग / ईसीएल मुख्यालय
 Environment Deptt./ECL, HO

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 GENERAL MANAGER
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Table-C: Existing guidelines for estimating benefits of forest diversion in CBA

Sl no.	Parameters	Remarks	Value in INR
1.	Increase in productivity attributed to specific project	To be quantified and expressed in Monetary term	Total Coal Reserve within the project= 47.42 million tonne Total units of Power Generated (@0.8kg of Coal/KWH) = $(1/0.8) * 47.04 * 10^9 = 59.3 * 10^9$ units Value of Power (@ Rs 6.00 per unit) = Rs. 35580 crores
2.	Benefits to the economy due to specific project	The incremental economic benefit in monetary term due to the activities attributed to the specific project	Rs. 784.70 Crore which is the cost of the project that is infused directly into the economy to provide benefits by virtue of coal production and consequent generation of power, adding to energy security of the nation.
3.	No. of population benefited due to specific project	As per Detailed project report	Electricity consumption per capita in the year 2019-20 = 1208 KWH No of people benefited= $59.3 * 10^9 / 1208 = 49089404$ 4.91 crore – benefited by electricity generation and 1000 direct and 2000 indirect employments
4.	Economic benefits due to direct and indirect employment due to the project	As per the Detailed project report	For direct employment for life of the mine for 1000 persons at present rate of emoluments = 1200.0 Crore For indirect employment for life of the mine for 2000 persons = 960.0 Crore Total = Rs 2160.00 Crore
5.	Economic benefit due to Compensatory afforestation	Benefits from such compensatory afforestation acquiring over next 50 years and discounted to present value should be included as benefits of compensatory afforestation. * For benefits of CA guideline of the Ministry for NPV estimation may be consulted	NPV rate for Class III Dense Forest taken as benefits for CA = Rs 803000.00 per Ha x 113.94 Ha x 2 = Rs 18.30 Crore


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 महाप्रबंधक/General Manager
 पर्यावरण विभाग / ईसीएस मा. प्र. वि. प.
 Environment Dept., ECL, Ind.


20.12.21
 General Manager
 SP Mines Area
 GENERAL MANAGER
 S P MINES AREA, ECL


Costs

Sl No.	Parameters	Value in INR Crore
1.	Ecosystem services loss due to proposed forest diversion	7.14
2.	Loss of animal husbandry or fodder	0.71
3.	Cost of human Settlement	57.34
4.	Loss of public facilities and administrative infrastructure (Roads, buildings, schools, dispensaries, electric lines, railways) on Forest land which would require forest land if these facilities were diverted due to the project.	0.0
5.	Possession value of the forest land	124.93
6.	Cost of suffering to oustees	5.34
7.	Habitat Fragmentation Cost	3.57
8.	Compensatory afforestation and soil and moisture conservation cost	9.85
Total Cost		208.88

Benefits

Sl No.	Parameters	Value in INR Crore
1.	Increase in productivity attributed to specific project	35580.00
2.	Benefits to the economy due to specific project	784.70
3.	No. of population benefited due to specific project	4.91 crore – benefited by electricity generation and 1000 direct and 2000 indirect employments (Cannot be expressed in monetary terms)
4.	Economic benefits due to direct and indirect employment due to the project	2160.00
5.	Economic benefit due to Compensatory afforestation	18.30
Total Benefits		38543.00


22.12.2011
महाप्रबंधक/General Manager
पर्यावरण विभाग / Environment Department
मुख्यालय / ECL HQ

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SP MINES AREA, ECL
