COST BENEFIT ANALYSIS – DALBHUM DIVISION

Table-B Estimation of Costs for Cost Benefit Analysis

Sl.	Parameters	NPV Factor as per guidelines	Remarks
1	Ecosystem services losses due to proposed forest diversion	1	The total area considered for diversion is 16.75 ha. The economic value of loss of eco-system services due to diversion of forests is taken as the NPV of the forest land being diverted as per MoEFCC, forest type and forest class is considered as per FSI report 2015, and NPV value as per MoEFCC guidelines dated 05.02.2009 at Rs.803000/- for Dense forest class-III, The value is calculated at Rs.134.50 lakhs for the forest area diverted.
2	Loss of animal husbandry productivity, including loss of fodder	0.1	The economic value of loss due to diversion of forests is taken as the NPV of the forest land being diverted as per MoEFCC, forest type and forest class is considered as per FSI report 2015, and NPV value as per MoEFCC guidelines dated 05.02.2009 at Rs.803000/- for Dense forest class-III, The value is calculated at Rs. 13.45 lakhs for the forest area diverted.
3	Cost of human settlement		Nil, as No human settlement is displaced
4	Loss of public facilities and administrative infrastructure (Roads, buildings, schools, dispensaries, electric lines, railways, etc.) on forest land, which would require forest land if these facilities were diverted due to the project		Diversion is made for widening and upgradation to 2/4 lane of existing and new alignment.
5	Possession value of forest land diverted	0.3	The loss is calculated as per the NPV value and factor as per guidelines. This value is calculated at Rs. 40.35 lakhs for the forest

26/4/18

Executive Engineer
RCD Road Division
Jamshedpur

			area diverted.
6	Cost of suffering of oustees		Nil, No displacement of people is anticipated in the forest.
7	Habitat fragmentation cost	0.5	The loss is calculated as per the NPV value and factor as per guidelines. This value is calculated at Rs. 67.25 lakhs for the forest area diverted.
8	Compensatory afforestation and soil and moisture conservation cost		This is calculated as per the CA costs as per Jharkhand Government Forest guidelines @ Rs.96775/ha. The total value of CA is calculated at Rs. 16.21 lakhs.
		Total	**The total cost in terms of NPV for the forest land diversion is calculated at Rs. 271.76 lakhs.**

26/4/18

Executive Engineer
RCD Road Division
Jamshedpur

26/4/18

Executive Engineer
RCD Road Division
Jamshedpur

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

S. No.	Parameters	Descriptions
1	Increase in productivity attributable to the specific project	The overall output of the industries established in the vicinity of the area will be increased as the project road will provide them a fast and safe transportation system which will decrease their transportation charge in terms of diesel consumption and hauling capacity due to time saving in hauling with respect to the present condition of the road. Moreover this project road will also provide a safe and fast access to the forest officials. Increase in productivity with respect to time saved in travel and manpower hours saved are addressed. This comes to Rs.340 lakhs at 12% NPV rates^.
2	Benefits of economy	During and after the construction of project road, local people and the industries situated in this area will be benefitted greatly. The construction of the road will provide a safe and fast transportation to people which in turn will accelerate the rate of growth in this area. Industries in this area will be benefitted by the construction of this road as it would prove to be a better transportation facility for them. Increase in District GDP/per capita income and savings in fuel costs would be a direct indicator for benefit to the economy. This comes to Rs.808 lakhs at 12% NPV rates^.
3	No. of population benefited	While overall the populations of Jharkhand state (3.29 Cr.) will benefit from the project. Specifically the population of districts East Singhbhum (22.91 lakhs) through which the alignment passes will benefit largely. (Source: Census 2011, Jharkhand). Projected population as on 2017 would be 26.07 Lakhs based upon 2001-2011 population growth rates.
4	Economic benefits due to direct and indirect employment due to the project	200 employees during the construction phase will be employed. During the construction period approx. 0.73 lakhs man-days will be generated and after the construction indirect employment will be generated due to development of shops along the project road. 0.73 lakhs man-days will be benefitted in terms of salary and wages @ Rs.350/day = Rs. 255 lakhs.
5	Economic benefits due to Compensatory afforestation	Considering the total forest diverted area for CA i.e. 16.75 ha and the NPV of forest the total Economic benefit would be Rs.134.50 Lakhs once the total CA is done and similar benefits are accrued as in forest areas.

26/4/18
Executive Engineer
RCD Road Division
Jamshedpur

Total benefit that would be accrued due to the project at NPV is Rs.1537.50 Lakhs.
^Note: A period of 20 years is considered as per SP-30 for calculating economic returns due to the project, Economic analysis of Highway projects for benefits calculation. Net present value of benefits is also calculated to compare the cost vs benefit at 12% returns.

Benefit-Cost Ratio = Net Benefit/Net Loss is **5.66:1**

Considering the tangible benefits, the project is found to be viable. If it considers the intangible benefits also, then the project would become even more viable and attractive.

26/4/18

(Signature of User Agency)

Executive Engineer
RCD Road Division
Jamshedpur

Place Jamshedpur
Date: 26-4-18

Countersigned by
Divisional Forest Officer, Dalbhum Division