

### COST BENEFIT ANALYSIS

**Name of the Project:** Forest proposal for 5 Nos. of land provided by state government for construction of 132/33 KV G/S/S under transmission circle, Hazaribag in Village Nawadih.

**Nature of Proposal:** Acquisition of 4.048 Ha. of forest land under FCA, 1980 for construction of Grid Sub-station.

**Purpose:** The Cost of Benefit Analysis is being undertaken for proposed Acquisition of Forest land being affected due to construction of 132/33 KV G/S/S under transmission circle, Hazaribag in Village Nawadih.

**Total forest area**

Under Hazaribag west forest division = 4.048 Ha.

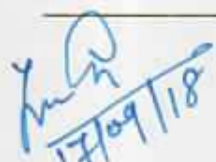
**Table A**

[As per MoEF&CC guidelines for conducting Cost Benefit Analysis vide file no. &-69/2011-FC(Pt.) dated 1<sup>st</sup> August, 2017]

Sl. No.	Parameters	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	The proposed project involves 4.048 Ha. of forest land. Hence, the CBA is not applicable.
2	Proposals for defence installation purposes and oil prospecting (Prospecting only)	Not applicable	No such area is involved in the project.
3	Habitation, establishment of industrial units tourist lodges/complex and other building construction.	Not applicable	No such activities are involved in the project.
4	All other proposals involving forest land more than 5 ha in plains and more than 2 ha in hills including roads, transmission lines, minor, medium and major irrigation projects, hydel projects, mining activities, railway lines, location specific installation like micro-wave stations, auto repeater controls, towers etc.	Not Applicable	The proposed project involves 4.048 Ha. of forest land. Hence, the CBA is not applicable. However, the CBA has been done for providing clarity.

**Table B: Estimation of cost of forest diversion**

[As per MoEF&CC guidelines for conducting Cost Benefit Analysis vide file no. &-69/2011-FC(Pt.) dated 1<sup>st</sup> August, 2017]

  
17/09/18

S. No.	Parameters	Remarks
1	Ecosystem services losses due to the proposed forest diversion	The proposed forest area to be diverted is mostly characterized by Tropical dry deciduous forest. According to MoEF&CC Guidelines for diversion of forest land for non-forestry purposes under Forest (Conservation) Act, 1980- and Guidelines for collection of Net Present Value (NPV) dated 05.02.2009, the area comes under Class I and Class III type of forest. Considering very dense forest, an average value of Rs. 9,39,000/- can be considered per hectare. Hence, the total NPV for the diverted project shall be Rs. 38,00,602.5/- (approx.).
2	Loss of animal husbandry productivity, including loss of fodder	10% of NPV i.e. Rs. 3,80,060.25/-
3	Cost of human resettlement	NA
4	Loss of public facilities and Administrative (road, buildings, schools, dispensaries, electric lines, railways etc.) on forest land or which would require forest land if these facilities were diverted due to the project.	NA
5	Possession value of forest land diverted	30% of the NPV i.e. Rs. 11,40,180.75/-
6	Cost of suffering to outstees	There are no outstees involved in the forest area.
7	Habitat Fragmentation cost	50% of the NPV i.e. Rs. 19,00,301.25/-
8	Compensatory afforestation and soil & moisture conservation cost	The compensatory afforestation will be taken up in about 8.095 Ha of Degraded Forest land which is about two times of the area proposed to be acquired. The compensatory afforestation cost will be Rs. 32,38,000 @ INR 400000 per Ha.

The total estimated cost of forest diversion = Ecosystem services losses+ Loss of animal husbandry productivity+ Cost of human resettlement+ Loss of public and Administrative facilities+ Possession value of forest land diverted+ Cost of suffering to outstees+ Habitat Fragmentation cost+ Compensatory afforestation and soil & moisture conservation cost.

Hence, the total cost of forest diversion comes out to be Rs. 1,04,59,144.75/-

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

(As per MoEF&CC guidelines for conducting Cost Benefit Analysis vide file no. &-69/2011-FC(Pt.) dated 1<sup>st</sup> August, 2017)



S. No.	Parameters	Remarks
1	Increase in productivity attributable to the specific project.	The proposed project shall transmit 80 mW of power i.e 80000 kW. Electricity rates in Jharkhand is Rs. 3.5 per unit i.e. Rs. 3.5/kWhr. Hence every day, power equivalent to about Rs. 22,40,000 shall be transmitted which comes to about Rs. 81.76 Crores per year.
2	Benefits to the economy due to the project	Same as above
3	Number of population benefitted due to the project	Population of Hazaribag district will get benefitted due to proposed development which has a population of about 17.34 Lakhs.
4	Economic benefits due to direct and indirect employment of the project	A total of about 100 persons shall be employed by the proposed project. The period of construction for the project is estimated to be 1.5 years. Considering 250 working days per year a total of 3,00,000 man hours is expected to be generated due to the project. As per govt. of Jharkhand, the average per capita income of Jharkhand was estimated to be Rs. 7378 per month i.e. Rs. 35.5 per hour. Hence, monetarily the project shall generate employment worth of Rs. 1,06,50,000/-.
5	Economic benefits due to Compensatory afforestation	In lieu of total trees to be affected in forest land it is proposed to be undertake at least twice of the affected trees as compensatory afforestation as per Forest (Conservation) Act. So the net productivity will increase. Apart from compensatory plantation. The compensatory afforestation will be done in 8.095 ha of degraded forest land, which would be having a density of minimum 0.7. The ecological value for a 50 years period for the density of 0.7 is INR 126.74 lacs per hectare. By considering minimum density as 0.7 the ecological gain for this project would be Rs. 10.26 Crores down the line.

The total estimated benefits of forest diversion = Increase in productivity+ Benefits to the economy due to the project + Number of population benefitted due to the project + Economic benefits due to direct and indirect employment of the project + Economic benefits due to Compensatory afforestation

Hence, the total estimated benefits of forest diversion comes out to be Rs. 93,08,50,000/-

Therefore, Cost benefit Ratio = Total Environmental Benefits/Total cost of the environment  
= 93,08,50,000/ 1,04,59,144.75= 89 >1

Hence, Project is found viable.

*[Handwritten Signature]*  
12/09/18

Electrical Executive Engineer  
Jharkhand Urja Sancharan Nigam Limited,  
Transmission Circle, Hazaribagh

**PRAVIN RAM**  
**ELECTRICAL EXECUTIVE**  
**TRANSMISSION DIV**  
**JUSNL, HAZARIB.**