



# JHARKHAND BIJLI VITRAN NIGAM LIMITED

Electric Supply Circle, Hazaribag

Julu Park, Hazaribag, Pin No. - 825301

e-mail: esehazaribag@gmail.com

Phone No.: 06546 - 222425

## COST BENEFIT ANALYSIS

(Ref: MoEF guideline No. 7-69/2011-FC (Pt.) dtd. 01<sup>st</sup> Aug. 2017)

PROJECT: Erection of 33 KV line from Padma-PSS to Nachanve-PSS

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

NO	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 hectare in hills	Not applicable	
2	Proposal for defense installation purposes and oil prospection (prospection only)	Not applicable	
3	Habitation, establishment of industrial units, tourist lodges complex and other building construction.	Not applicable	
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	There are cases where a cost benefit analysis is necessary to determine when diverting the forest land to non-forest use in the overall public interest.

  
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Table-B Estimation of cost of forest diversion.

Sl No.	Parameters	Remarks	Monetary Equivalent
1	Ecosystem service losses due to proposed forest diversion	Economic value of loss of ecosystem service due to diversion of forest shall be the net present value (NPV) of the forest being diverted as prescribed by the Central Governmento (MoEF & CC.)  Note: In case of National parks the NPV shall be ten (10) times the normal NPV or otherwise prescribe NPV by the ministry or any other competent authority	Considering the Net present value of forest area to be diverted be <b>6.26 Lakh per Hectare</b> as per highest density in Eco class III.  Hence losses to Eco system in Rupees: <b>7.608 ha X 6.26 lakh =Rs.47.63 lakh</b>
2	Loss of animal husbandry productivity, including loss of fodder	To be quantified and expressed in monetary terms or 10% of NPV applicable which ever is maximum	<b>Nil</b> as the project is an overhead Transmission line there will be no loss of animal husbandry productivity including loss of fodder.
3	Cost of human resettlement	To be quantified and expressed in monetary terms as per approved R&R plan	There is no Human Resettlement involved in the project. Hence losses : <b>NIL</b>
4	Loss of public facilities and administrative infrastructure (roads, building, School, dispensaries, electric lines railways, etc.) on forest land, which would require forest	To be quantified and expressed in monetary terms on actual cost basis at the time of diversion	There is no loss of public facility and administrative infrastructure due to this project. Hence losses: <b>NIL</b>

  
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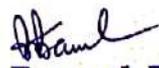
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	land, if these facilities were diverted due to the project		
5	Possession value of forest land diverted	30% of environmental costs (NPV) due to loss of forests or circle rate of adjoining area in the district should be added as a cost component as possession value of forest land whichever is maximum	The possession value of forest land diverted is calculated as <b>Rs. 14.39 Lakh</b> (30% of NPV), However, in case of Transmission line project possession of diverted forest land is not completely required by the user Agency after completion of the project & during operation and maintenance (O & MI)
6	Cost of suffering to outees	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 is no rehabilitation of people, hence no social losses. Losses: <b>NIL</b>
7	Habitant fragmentation Cost	While the relationship between fragmentation and forest goods and services is complex, for the sake of simplicity the cost due to fragmentation as been pegged at 50% of NPV applicable as a thumb rule	50% of NPV 6.26 lakh X 7.608 ha X 50%= <b>23.81 lakh</b>

  
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8	Compensatory afforestation and soil & moisture conservations cost	The actual cost of compensatory afforestation and soil moisture conservation and it's maintenance in future at present discounted value	Cost of CA considered as <b>4 lakhs</b> per hectare including soil & Moisture conversation work. Total CA cost = 4 Lakh X 7.608 Ha. = <b>30.43 Lakh</b>
	<b>Total</b>		<b>47.63 + 14.39 + 23.81 + 30.43 = 116.16 lakh</b>

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

SI No.	Parameters	Remarks	Monetary Equivalent
1	Increase productively attribute to the specific project	To be quantified & expressed in monetary terms avoiding double counting	Uninterrupted supply of electricity can make a big difference in society, it boosts socio economy growth, irrigation, telecommunication facilities, health education and overall economy of state. The lump sump mnetary equilent of above benefits considered as <b>100 lakhs</b> .
2	Benefits to economy due to the specific project	The incremental economic benefit in the monetary terms due to the activities attributed to the specific project.	The monetary returns of the specific transmission projectis calculated as below:  Power Flow: 6500 KW

  
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			<p>Average value added: Rs.6.00 per kwh          Energy sent out per year:  <math>6500 \times 24 \times 365 = 56940000</math> kwh          Value added:  <math>56940000 \text{ kwh} \times 6 =</math>  <b>3416.4 lakh/year</b></p>
3	No. of population benefited due to specific project	As per the detailed Project Report	<p>Population of whole area and its surrounding will get benefit by this project. This will help to provide stable power supply of govt. offices like Block, Thana, Primary health centre, school and other govt. buildings and household of different vilages, It helps greatly to improve socio economy development of the area. The lump sump Monetary euivalent of the benefit is considered as:<b>Rs.50.00 lakhs</b></p>
4	Economic benefits due to of direct and indirect employment due to the project	As per the detailed Project Report	<p>A. Minimum 50 temporary labour engaged during the construction of transmission line approx 100 days @300/- per mandays.  <math>= 50 \times 100 \times 300 = 15 \text{ Lakh}</math></p> <p>B. Permanent Employee – 04 for entire period.          Therefore <math>04 \times 40000 \times 12 \times 25 \text{ year} = \text{Rs.480 Lakh}</math></p>
5	Economic benefits due to compensatory afforestation	Benefits from such compensatory forestation accruing over next 50 years monetised and discounted to the present value should be.	Benefit from such compensatory afforestation accruing over next 25 year is huge and monetary equivalent

  
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		included as benefitsof is considered as <b>Rs.100 lakh</b> compensatory afforestation. *For benefits of CA the guideline of the Ministry for NPV estimation may be consulted.
<b>TOTAL</b>		100+3416.4+50+15+480+ 100= <b>4161.4 lakh</b>

Total Environment loss: **116.16 lakh**

Total Benefit to society: **4161.4 lakh**

(Value for 25 years = Rs.86155 lakh)

Cost benefit Ratio (CBA Ratio): Benefit/Cost, 86155/116.16

**CBA RATIO: 741.69: 1**

  
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