

## COST BENEFIT ANALYSIS

**Project: Diversion of 7.6195 Ha (North Distt. = 6.6054 Ha + East Distt. = 1.1041 Ha) of forest land for laying of 220 KV Double Circuit from Dikchu-Singhik Transmission Line in North & East District by Energy and Power Department, Govt. of Sikkim.**

**Table B - Estimation of cost of Forest diversion (As per MoEF & CC Guideline dated 1st Aug. 2017 related to Cost Benefit Analysis)**

Sl. No	Parameters	Remarks (Transmission Line)
1	Ecosystem Services losses due to prosed forest diversion.	NPV of the forest land having Eco Class VI is Rs. 6,99,000/Ha. and Rs. 6,57,000/Ha for Eco Class V as per the Hon'ble Supreme Court order dated 28.03.2008 Therefore, NPV for 7.6195 ha of forest land is Rs. 52,83,438.00 <b>Total =Rs. 52.83438 Lacs</b>
2	Loss of animal husbandry productivity, including loss of fodder.	Productivity of livestock will not be affected due to construction of the transmission line. 10% of NPV Applicable i.e. <b>Rs. 5.283438 lacs</b>
3	Cost of human resettlement.	<b>Not Applicable</b> , since there is no displacement of people due to the project hence there would be no cost of human resettlement.
4	Loss of public facilities and administrative infrastructure (roads, 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.	<b>Not Applicable</b> , since these facilities are not available inside the forest area for proposed diversion. The route/corridor of the Transmission Line not affecting any public facilities on diverted forest land.
5	Possession value of forest land diverted.	30% of Environment Cost (NPV) i.e. <b>Rs. 15.850314 lacs.</b>
6	Cost of Suffering to oustees.	<b>Not Applicable</b> , since there will be no displacement of people.
7	Habitat Fragmentation Cost.	50% of NPV applicable as thumb rule i.e. <b>Rs. 26.41719 lacs.</b>
8	Compensatory Afforestation and Soil & Moisture Conservation Cost.	The cost of compensatory afforestation (with Soil & Moisture conservation Cost included for 25% of total plantation area in hectares) and its maintenance in future is as follows: Comp. Affn. Cost <b>Rs. 67.06098 lacs</b>
9	Total Loss (Against the proposed diversion calculated for 35 years)	<b>Rs. 167.446302 lacs</b>

  
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**Table C - Estimation of Benefit of Forest Diversion in Cost Benefit Analysis**  
(As per MoEF & CC Guideline dated 1st Aug.2017 related to Cost Benefit Analysis)

- Total Length of the Transmission line passing through Khasmal area (under Mangan, Phodong and Gangtok Forest Division) = **2.177 KM**
- Total Forest area proposed for diversion = **7.6195 Ha.**

Sl. No	Parameters	Remarks (Transmission Line)
1	Increase in productively attribute to specific project	Considering average flow of power through the line at 500 MW, Load Factor-50%, Loss-2%, average cost of power at Rs.3/Kwh, Energy sent out/year = $500 \times 1000 \times 0.5 \times 8760 \times 0.98 \text{ Kwh}$ = $2146200 \times 1000 \text{ Kwh}$ Value added = $2146200 \times 1000 \times 3 = \text{Rs. } 64386 \text{ lacs/year.}$
2	Benefit to economy due to specific project	Rs. 64386 lacs/year = 2253510 lacs.
3	No. of population benefited due to specific project	Evacuation of approx. 500.00 MW power by constructing the said transmission line in the state of Sikkim will illuminate thousands of families along with generation of huge job opportunities during construction & maintenance activity under Sikkim states of North- East Region
4	Economic Benefit due to direct and indirect employment due to the project	Rs. 1339.3983 lacs
5	Economic benefit due to compensatory Afforestation.	Rs. 114.09391 lacs (as per Guideline issued by MoEF vide, letter No. 5 - 3/ 2007/ FC. Dt. 05.02.2009.
6	Total	Rs. 2319349.5 lacs

**C. Cost benefit ratio** i.e. Project Benefit / Forest Loss =  $2319349.5 / 167.446302 = \mathbf{13851:1}$

Hence, the project has high benefit to the country as compare to forest loss. The benefit to loss ratio is approximate **13851** times

  
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