

COST BENEFIT RATIO

220 KV D/C GOVINDPUR-DUMKA TRANSMISSION LINE

EVALUATION OF BENEFITS:

1. Increase in productivity attributable to the specific project:

Power Flow	=	240 MW
Load Factor	=	60%
Losses	=	2.5%
Average Value Added	=	Rs.6.00 per kwh
Energy sent out per year	=	$240 \times 1000 \times 0.6 \times 8760 \times 0.975 \text{ kwh}$
	=	$122.9904 \times 10^7 \text{ kwh}$
Value added	=	$122.9904 \times 10^7 \times 6.00$
	=	Rs. 737.9424 crore / year
	=	□ 738 crore/ year
Value added for 50 years	=	$50 \times 738 = 36900 \text{ crore}$

2. Benefits to economy:

The power will be transmitted through this line to the power deficit regions of Dumka from Tenughat thermal power station. This project will provide sustained and incessant supply of power to these regions which will be utilized by large and SMEs industries leading to increased industrial output which in turn will lead to increase in GDP of India.

3. No. of population benefitted:

Assuming average 10 units consumption per day per household.
Total **3.08 million households** can be provided electricity per year.

4. Employment potential

The project will employ an average of 300 labours with an average of 200 days of work in a year for 02 years.

Therefore, total mandays generated= $300 \times 200 \times 2 = 120000$.

Value of mandays generated assuming the labour cost of Rs 200/manday= $120000 \times 200 = 2.4 \text{ crores}$

5. Cost of Acquisition of facility on non-forest land wherever feasible:

Nil

(a) Loss of Agriculture



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(b) Animal husbandry production due to diversion of forest land
Nil

6. Cost of rehabilitating the displaced persons as different from compensatory amounts given for displacement.

Nil

7. Cost of supply of free fuel-wood to workers residing in or near forest area during the period of construction

Nil

EVALUATION OF LOSS OF FORESTS

I. Loss of value of timber, fuelwood and minor forest produce on an annual basis, including loss of man-hours per annum of people who derived livelihood and wages from the harvest of these commodities:

Only one time loss of vegetation occurs during construction and there is no loss of man-hours.

Considering the NPV of 8.04 lakhs per hectare, the total loss of timber, fuelwood and minor forest produce for 16.2635 hectare of forest may be calculated as $16.2635 \times 8.04 = 130.75854$ lakhs, say 1.31 cr.

II. Loss of animal husbandry productivity, including loss of fodder

Nil

III. Cost of human resettlement

Nil

IV. Loss of public facilities and administrative infrastructure:

Nil

V. Losses due to soil erosion/effect on hydrological cycle/wildlife habitat etc.

In the present case total forest involvement is 16.2635 ha. Assuming the value of 01 Ha. of fully stocked forest (density 1.0) as 126.74 lakhs, to accrue over a period of 50 years.

Total value of forest

$$\begin{aligned} &= 16.2635 \times \text{Rs.} 126.74 \text{ lakhs} \\ &= \text{Rs.} 2061.236 \text{ lakhs} \\ &\approx \text{Rs.} 20.61 \text{ crores approx..} \end{aligned}$$



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For the purpose of cost benefit analysis

The total cost= (I)+(V)= $1.31+20.61= 21.92$ crores.

The total value of benefits=(1)+(4)= $36900+2.4=36902.4$ crores

Hence Cost : Benefit Ratio = 21.92 crores : 36902.4 crores
= $1:1683.503$
Say 1: 1683

Thus the construction of the 220 KV D/C line would be advantageous in monetary terms.

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