

COST BENEFITS ANALYSIS

Project Name: Regularization of 555.759 ha of diverted forest land for the construction of Rihand Super Thermal Power Project under Renukoot Forest Division in Sonbhadra district of Uttar Pradesh.

Proposal No.: FP/UP/THE/36097/2018

| (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 upto 20 hectares in plains and upto 5 hectare in hills | Not applicable | These proposals may be considered on a case-to-case basis and value judgement | | | | | | | | |
| 2. | Proposal for defense installation purposes and oil prospecting (prospecting only) | Not applicable | In view of national Priority accorded to these sectors, the proposals would be critically assessed to help ascertain that the utmost minimum forest land is diverted for non-forest use. | | | | | | | | |
| 3. | Habitation, establishment of industrial units, tourist lodges complex and other building construction | Not applicable | These activities being detrimental to protection and conservation of forest, as a matter of policy, such proposals would be rarely entertained. | | | | | | | | |
| 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 centers, TV towers etc. | Applicable | These 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 | | | | | | | | |
| (B) Estimation of cost of Forest Diversion: | | | | | | | | | | | |
| 1. | Ecosystem services losses due to proposed forest diversion. | Total Reserve Forest land diversion is being regularized for the Rihand Super Thermal Power Station, NTPC Ltd. As per Forest (Conservation) Act, 1980, the density of 0.1 is INR 9.5778 lacs per hectare. The division wise environmental loss is as follows: | | | | | | | | | |
| | | <table> <tr> <th>Division</th><th>Forest Area (ha.)</th><th>Rate (In Cr.)</th><th>Environmental Loss (In Cr.)</th></tr> <tr> <td>Renukoot Forest Division in Sonbhadra district</td><td>555.759</td><td>0.095778</td><td>53.2294855</td></tr> </table> | Division | Forest Area (ha.) | Rate (In Cr.) | Environmental Loss (In Cr.) | Renukoot Forest Division in Sonbhadra district | 555.759 | 0.095778 | 53.2294855 | |
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| 2. | Loss of animal husbandry productivity, including loss of fodder. | To be quantified and expressed in monetary terms of 10% of NPV applicable whichever is maximum <i>i.e.</i> 53.2294855 = Rs 5.32294855 Cr. |
| 3. | Cost of human resettlement. | There is no resettlement in the forest land hence cost of resettlement is does not apply. |
| 4. | Loss of public facilities and administrative infrastructure (Roads, buildings, school, dispensaries, electric lines, railways, etc.) on forest land if these facilities were diverted due to the project. | There are no public facilities and administrative infrastructure (Roads, buildings, School, dispensaries, electric lines, railways, etc.) |
| 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 <i>i.e.</i> , Rs. 15.96884565 Cr. |
| 6. | Cost of suffering to oustees | 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 are no oustees <i>i.e.</i> , Nil |
| 7. | Habitat Fragmentation Cost | While the relationship between fragmentation and forest goods and service is complex, for the sake of simplicity the cost due to fragmentation has been pegged at 50% of NPV applicable as a thumb rule <i>i.e.</i> , Rs. 26.61474275 Cr. |
| 8. | Compensatory afforestation and soil & moisture conservation cost | The actual cost of compensatory afforestation and soil & moisture conservation and its maintenance in future at present discounted value Approximately 1678 Trees, Total values of trees = INR 76077480.00 (Rs.7.608 crores) No livelihood of people will be affected due to proposed diversion forest land |

Therefore, Total loss on account of forest as per FCA guidelines are = Rs. (53.2294855 + 5.32294855 + 15.96884565 + 26.61474275 + 7.608 = 108.7440225) Crores

= **Rs. 108.7440225 Crores**

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

| Sl. No. | Parameters | Remarks |
|---------|--|--|
| 1. | Increase in productively attribute to the specific project | Assuming 80% of capacity <i>i.e.</i> , 800MW being used for residential purpose (with load connection of average 1KW and 4 persons per residence) and balance 20%(200MW) for industry/commercial establishment (with average load connection of 10KW and employing 10 persons), the benefitted population shall be: <ul style="list-style-type: none"> Residential Category: 800X1000X4=32 lakh |

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|----|---|---|
| | | <ul style="list-style-type: none"> Industrial/Commercial Category: $200 \times 1000/10 \times 10 = 2$ lakh <p>Hence, about 34 lakh population benefited from Rihand Stage-I</p> |
| 2. | Benefits to economy due to the specific project | Direct (NTPC Employees)-650 Indirect (Through contract)-5000 Indirect (External Services)-2350 Total: 8000 |
| 3. | Number of populations benefited due to specific project | $\text{Rs. } 7.30 \text{ lakh} \times 555.759 \text{ ha. (as per Guideline issued by MoEF\&CC vide letter No.F.No.5-3/2007_FC Dt.05.03.2009)}$ $= \text{Rs. } 4057.0407 \text{ Lakh}$ = Rs.40.57Cr. (approx.) |
| 4. | Economic benefits due to of direct and indirect employment due to the project | Assuming 80% of capacity i.e., 800MW being used for residential purpose (with load connection of average 1KW and 4 persons per residence) and balance 20%(200MW) for industry/commercial establishment (with average load connection of 10KW and employing 10 persons), the benefitted population shall be: <ul style="list-style-type: none"> Residential Category: $800 \times 1000 \times 4 = 32$ lakh Industrial/Commercial Category: $200 \times 1000/10 \times 10 = 2$ lakh <p>Hence, about 34 lakh population benefited from Rihand Stage-I</p> |
| 5. | Economic benefits due to Compensatory afforestation | Direct (NTPC Employees)-650 Indirect (Through contract)-5000 Indirect (External Services)-2350 Total: 8000 |

Therefore, Net benefits of the project not withstanding loss of forests accruing during Super Thermal Power Plan period = Rs. 52540.57 Cr.


Therefore, Cost benefit Ratio = Total Environmental Benefits/Total cost of the environment

= $52540.47 / 108.7440225 = 483.1582354$ Cr.

Benefit Cost Ratio as per guidelines = 1: 483.1582354


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