

Cost-Benefit analysis

Name of the project: Diversion of 61 ha of forest land for construction of Tumkur Branch Canal of Upper Bhadra Project.

Table A: Category of proposals for which Cost Benefit Analysis are applicable

| Sl.No. | Nature of proposal | Applicable/ Not applicable | Remarks |
|--------|---|-------------------------------|---|
| 1 | All categories of proposals involving forest land up to 20 Ha in Plains and up to 5 Ha in hills. | Not Applicable | Nil |
| 2 | Proposals for defense installation purposes and oil prospecting (Prospecting only) | Not applicable | Nil |
| 3 | Habitation, establishment of industrial units, tourist lodges/complex and other building constructions. | Not applicable | Nil |
| 4 | All other proposals involving forest land more than 20 Ha in plain and more than 5 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 station, auto repeater center, TV towers, etc. | Applicable | These are cases where a cost benefit analysis is necessary to determine whether diverting the forest land to non-forest use is in the overall public interests. |
| 5 | Proposal for renewal of Mining Lease for forest land. | Not Applicable | Nil |

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Table-B: Estimation of Cost of Forest Diversion

| Sl. No | Parameter | Criteria | Cost per Year (lakhs) | Cost for 30 years (lakhs) |
|--------------|---|--|-----------------------|---------------------------|
| 1 | Ecosystem services losses due to proposed forest diversion | Economic Value of loss of eco-system services due to diversion of forest shall be the Net Present Value (NPV) of the forest land being diverted as prescribed by the Central Government (MoEF&CC). Present NPV for 1 Ha of forest land = 9,57,780/- Present NPV for 61 Ha forest land = 61 Ha. X 9,57,780/- = 5,84,24,580/- | 584.24 | 17,527.2 |
| 2 | Loss of animal Husbandry Productivity, Including loss of Fodder. | 10% of the NPV | 58.424 | 1,747.26 |
| 3 | Cost of Human resettlement | No R&R involved in the project | - | - |
| 4 | Loss of public facilities and administrative infrastructure (roads, building, schools, dispensary, electric lines, railways, etc) | No loss public facilities involved in the project | - | - |
| 5 | Possession Value of Forest land Diverted | 30% of the NPV | 175.272 | 5,258.16 |
| 6 | Cost of suffering to oustees | No R&R involved in the project | - | - |
| 7 | Habitat Fragmentation Cost | 50% of the NPV | 292.12 | 8,763.6 |
| 5 | Compensatory afforestation and Soil & moisture conservation cost | Rate of C.A. for 1 Ha of forest land = 18,36,000 (as per Karnataka Forest Dept SR for the year 2022-23) Value of C.A. for 61 Ha forest land x 18,36,000 = 11,19,96,000/- | 1,119.96 | 33,598.8 |
| Total | | | 2,230.016 | 66,900.48 |

Table-C: Calculation of the Benefits

(Parameters for Evaluation of Benefits)
(Not withstanding loss of forest)

| Sl. No | Parameter | Criteria | Cost per Year (lakhs) | Cost for 30 years (lakhs) |
|--------|--|--|-----------------------|---------------------------|
| 1 | Increase in Productivity attribute to the Specific project | Net value of the Produce=Total gross receipts-Total Expenses | 1,41,391 | 42,41,730 |
| 2 | Benefits to economy due to the | Net annual Benefits | 1,62,511 | 48,75,330 |

| Sl. No | Parameter | Criteria | Cost per Year (lakhs) | Cost for 30 years (lakhs) |
|--------------|--|--|-----------------------|---------------------------|
| | Specific project | | | |
| 3 | No of Population Benefited due to specific project | In 8 Taluks as per 2011 Census | 18,86,977 People | |
| 4 | Economic benefits due to of direct and indirect employment due to this project | Total employment =800 (Per day wages as per minimum wages notifications 2021-2022) | | - |
| | | 40 skilled employees X Rs. 734/- (per day) X 30 days X 12 months = Rs. 1,05,69,600/-p.a. | 105.70 | 3,171 |
| | | 760 unskilled employees X Rs. 553/- (per day) X 30 days X 12 months = Rs. 15,13,00,800/- p.a. | 1513.00 | 45,390 |
| 5 | Economic benefits due to Compensatory afforestation | Value of Carbon sequestration per Ha/year = Rs. 1,20,780/- (per Ha/Yr) X 61 Ha (forest land) = Rs. 73,67,580/- | 73.67 | 2,210.1 |
| | | Value of Bio-Prospecting per Ha/year =Rs.25,553/- (per Ha/Yr) X 61 Ha (forest land) = Rs. 15,58,733/- | 15.59 | 467.7 |
| | | Value of NTFP Ha/year=Rs.7,631/- (per Ha/Yr) X 61 Ha (forest land) = Rs. 4,65,491/- | 4.65 | 139.5 |
| | | Value of Eco-tourism Ha/year =Rs.65,113/- (per Ha/Yr) x 61 Ha (forest land) = Rs. 39,71,893/- | 39.72 | 1,191.6 |
| | | Value of fodder Ha/year =Rs.7,631/- (per Ha/Yr) X 61 Ha (forest land) =Rs. 4,65,491/- | 4.65 | 139.5 |
| | | Value of Flagship species Ha/year=Rs.2,58,400/- (per Ha/Yr) X 61 Ha (forest land) = Rs.1,57,62,400/- | 157.62 | 4,728.6 |
| | | Value of Ecological services of forests per Ha/Year=Rs.1,44,332/- (per Ha/Yr) X 61 Ha (forest land) =Rs. 88,04,252/- | 88.04 | 2,641.2 |
| Total | | | 3,06,697 | 92,00,910 |

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Calculation of Benefit/Cost Ratio

Total Benefits (As per II calculations) = Rs. 92,00,910 Lakhs

Total Losses (As per I calculations) = Rs. 66,900.48 Lakhs

Hence, Benefit/Cost Ratio $\frac{92,00,910}{66,900.48} = 137.53$

Thus, the project gives positive Benefit/Cost Ratio with minimal environmental losses.

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