

Cost-Benefit Analysis

Kareghat M.I. Tank Project

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

S. 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 judgment.
2	Proposal for defence 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.

Table-B: Estimation of cost of forest diversion

S. No.	Parameters	Remarks									
1	Ecosystem services losses due to proposed forest diversion.	<p>Economic value of loss of eco-system services due to diversion of forests land and in this project total forest land to be diverted is 73.94 ha. Hence, following are the calculations are made on the basis of NPV Guidelines issued by Government of India, Ministry of Environment, Forest and Climate Change, (Forest Conservation Division), New Delhi vide no. File No.5-3/2011-FC(Vol-I) dated 6th January 2022.</p> <table><tr><th>Particulars</th><th>Area</th><td rowspan="2">x</td><th>NPV Rate</th><th>Amount</th></tr><tr><td>Dam</td><td>73.94</td><td>1228590</td><td>90841945</td></tr></table> <p>= Rs. 908.41 Lakhs</p>	Particulars	Area	x	NPV Rate	Amount	Dam	73.94	1228590	90841945
Particulars	Area	x	NPV Rate	Amount							
Dam	73.94		1228590	90841945							

2	Loss of animal husbandry productivity, including loss of fodder.	Estimated loss of animal husbandry productivity due to diversion of @ 10% of NPV $10\% \times 1228590 \times 73.94 \text{ ha} = \text{Rs.} 90.84 \text{ Lakhs}$
3	Cost of human resettlement.	Loss of Human Settlement = Rs. 0 Lakhs
4	Loss of public facilities and administrative infrastructure (Roads, building, schools, dispensaries, electric lines, railways, etc.) on forest land, which would require forest land if these facilities were diverted due to the project.	Loss of public facilities and administrative infrastructure (Roads, building, schools, dispensaries, electric lines, railways, etc.) on forest land. Hence, Rs. 0 Lakhs
5	Possession value of forest land diverted.	30% of NPV = Rs. 272.52 Lakhs
6	Cost of suffering to oustees.	Nil
7	Habitat Fragmentation Cost.	This project involves forest land along river bank, nalla which is habitat for various wild animals and birds found in that area. But there is no Tiger project, no National Park, Wildlife sanctuary or Eco-sensitive zone of protected area. Habitat fragmentation cost calculated at 50% of NPV = Rs. 454.20 Lakhs
8	Compensatory Afforestation and soil & moisture conservation cost.	The actual cost of compensatory afforestation scheme for an area of 91.26 ha and soil & moisture conservation and its maintenance in future = Rs 40713687.45/- Or say Rs. 407.136 Lakhs

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

Sr. No.	Parameters	Remarks
1	Increase in productively attribute to the specific project.	<p>a) Net increase in agricultural produce for 50 years. Per year benefits are at Rs. 70,000/ 4 Villages/ year = $280000 \times 50 = \text{Rs.} 1400 \text{ Lakhs}$</p> <p>b) It is proposed to develop fisheries produced reservoir, the average reservoir area between FSL and M.D.D.L area is Ha annual production of @5000 Kg/1000 Ha, amounting to Rs 6.930 Lakhs per year after deduction of expenditure. Thus the overall benefits on this account in 50 Years will be = $6.93 \times 50 \times 87.00 \times 8.10 = \text{Rs.} 2441.78 \text{ Lakh}$</p>

		c) Animal husbandry produce 10% of NPV = $908.41 \times 10\% = \text{Rs.}90.84 \text{ Lakhs}$
2	Benefits to economy due to the specific project.	<p>It is assumed that there will be an overall benefit to the economy at 50% of increase in the agricultural output worked out under parameter 1 (a). Thus, benefit due to project on this account will be = Rs 1400 Lakhs</p> <p>$50\% \times 1400 = 700 \text{ Lakhs}$</p>
3	No. of population benefited due to specific project.	Overall all 4 villages will be benefited in the command areas due to this project. Total population of these villages is 70000 persons'. Total number of families benefited will be @17415 family. Assuming increase in income per family Rs.50,000/- per year to these families on this account for 50 years, for 17415 families will be Rs. 4353 lakh.
4	Economic benefits due to of direct and indirect employment due to the project.	<p>a) Employment generated during construction period. Generally, in construction project, ratio of labour component cost to material component cost is 30:70. The total cost of the project is 12959.95 Lakhs labour employment will be about 30% of Rs.3382.60 Lakhs. The employment potential generated assuming the labour wages of Rs. 80/day (average) in monetary terms the employment potential will be 80 Lakhs</p> <p>$30\% \times 3382.6 = 1014.78 \text{ Lakhs}$</p> <p>b) After completion of the project it has been assessed from the statistics available for the irrigation project in operation that a labour potential of 73 mandays/Ha. year is generated perennially due to employment in the fields and in agro based industries in case of this project the irrigable command area is 994 Ha. Assuming wages of Rs. 280/- per day the employment potential that will be created during 50 years. $280 \times 994 \times 50 = 1391 \text{ Lakhs}$</p> <p>c) Drinking water Benefits (As per approved First administrative approval estimate) for $5.2272 \text{ M.cum} \times 0.232 \times 10 = 12.12 \text{ Lakhs}$ per year $\times 50 \text{ Years} = \text{Rs.}606.35 \text{ Lakhs}$</p>
5	Economic benefits due to Compensatory afforestation.	213.45 Lakhs

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Calculations of Benefit Cost Ratio

Total Cost (as per Table-B calculation) = Rs. 2133.106 Lakhs

Total Benefits (as per Table-C calculation) = Rs. 12210.77

Hence, Benefit/Cost Ratio = 5.724



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