

COST BENEFIT ANALYSIS

Yes, enclosed on Page No. 72 to 76

Project Authority



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Date : - 08/07/2022

Place : - Kamarti



(ASHISH THAKARE IFS)
Deputy Conservator of Forests
Alibag

Cost of forest diversion for Sambarkund Medium Irrigation Project Tal. Alibag Dist. Raigad Forest Area : 264.6703 Ha

Evaluation of forest losses as per parameters in table-B (COST)

New Delhi Letter No. 7-69/2011-FC(pt), Dated 01st August, 2017

Parameter-1 Ecosystem services losses due to proposed forest diversion

Total forest land to be diverted is 264.6703 ha. 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. This cost comes at Rs. 1975.27 Lakhs

Particulars	Area	NPV Rate	Amount	Amount
Submergence	238.2415	x	1357110	323319922.1
PDN	25.2991	x	1357111	34333686.9
	263.5406			195993647.9

= 195993648

Rs. 1959.94 Lakhs

Parameter-2 Loss of animal husbandry productivity, including loss of fodder

Estimated loss of animal husbandry productivity due to diversion of 264.5406 ha. of forest land @ 10% of NPV which will be Rs 197.53 Lakh

10% x 195993648 = 19599364.8

RS. 195.99 Lakhs

Parameter-3 Cost of human resettlement

Cost of Rehabilitation involved in this account is referred from First administrative approved estimate

Loss of human settlement = 4659.18 Lakhs

Parameter-4 Loss of Electric Line from Mahan Wadi of Mahan Village to Khairwadi & Jambhulwadi Total 3.00 Km. These rates are from the approved First administrative approved estimate Rs. 210 Lakhs

210.00 Lakhs

Parameter-5 possession value of forest land diverted.

At present the possession value of forest land 264.6703 ha to be diverted estimated to be 30% of the Net Present Value calculated. As detail calculation in parameter 1 NPV comes at 592.58 Lakhs

30% x 1959.94 = 587.98 Lakhs

Parameter-6 Cost of suffering to oustees : NIL

Parameter-7 Habitat fragmentation cost

This project involves forest land along river bank, nalla bank which is habitat for various wild animals and birds found in that area . But there is no Tiger project , no National park , no Wildlife sanctuary and no ecosystem sensitive zone of protected area . habitat fragmentation cost calculated as 50% of value of maximum Net Present value realized for this project and which comes out to Rs. 979.97 Lakh

50% x 1959.94 = 979.97 Lakhs

Parameter-8 Compensatory afforestation and soil & moisture conservation cost

As the project area is 264.5406 ha and this being a State Government project the compensatory afforestation will be taken on suitable land in possession of Forest Department i.e 264.5406 ha of land . This compensatory Afforestation will be raised and maintained for period of 10 years at the cost of User Agency calculated at prevailing wage rates of forest Department by Dy Conservator of Forests, Nanded Forest Division, Nanded and which comes out to Rs. 1932.23 Lakhs

$$264.5406 \times 1116900 = 295465396$$

$$\text{Rs. } 2954.65 \text{ Lakhs}$$

Evaluation of benefits from the project as per parameters in table-C (BENEFIT)

New Delhi Letter No. 7-69/2011-FC(pt), Dated 01st August, 2017

Parameter-1 Increase in productivity attribute to the specific project. These rates are from the approved First administrative approved estimate
a) Net increase in agricultural produce for 50 years. Per year benefits are at = Rs. 145.22 Lakhs x 50 = Rs. 7261 Lakhs

b) It is proposed to develop fisheries produced reservoir, Hence overall benefits on this account for 50 years = 14.23 Lakhs x 50 = Rs. 711.50 Lakh as per letter from Additional Commissioner fisheries, Alibag Raigad dated 03/10/2018

c) Animal husbandry produce 10 % of NPV = 1975.30 x 10% = 197.53
Rs. 195.99 Lakhs

Parameter-2 Benefits to economy due to specific project.

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. 3630.5 Lakhs.

$$50\% \times 7261 = 3630.5 \text{ Lakhs}$$

Parameter-3 Number of population benefited due to specific project.

Overall 33 villages are to be benefited in the command area due to this project. Total population of these villages is 34429 as per **Census data 2011**, total households are 8267. Assuming increase income per family Rs.50,00/- per year to these families on this account for 50 years, for 8267 families will be Rs. 20667.5 lakh.

$$5000 \times 8267 \times 50 = 2066750000$$

$$\text{Rs. } 20667.5 \text{ lakhs}$$

Parameter-4 Economic benefit due to of direct and indirect employment due to the project.

a) Employment generated during construction period.

Generally in construction project, ratio of labour component cost to material component cost is 30:70. Employment generated during construction of the project, the total cost of the project is 74288.14 Lakhs. The labour component will be about about 30% ie Rs. 22286.44 Lakhs. Project cost is from the approved First administrative approval estimate

$$30\% \times 74288.14 = 22286.44 \text{ Lakhs}$$

b) Employment generated after construction.

It has been assessed from the statistics available for the irrigation project in operation that labour potential of 50 mandays /ha/year is generated perennially in the fields and agro-based industries. In case of this project ICA of project is 2528 ha. assuming wages at Rs 418.96/- per day ,the employment potential that will be created during 50 years will be Rs. 26478.27 Lakhs.

$$50 \times 418.96 \times 2528 \times 50 = 2647827200$$

$$\text{Rs. } 26478.27 \text{ Lakhs}$$

c) Drinking water Benefits (As per approved First administrative approval estimate)
for 7.121 Mm³ x 0.216 x 10 = 15.38 Lakhs per year x 50 Years = Rs. 769 Lakhs

Rs. 769.00 Lakhs

d) Industrial Benefits approved First administrative approval estimate

$$10.733 \times 5.76 \times 10 = 618.22 \text{ Lakhs} \times 50 \text{ Years} = \text{Rs. } 30911$$

Rs.

30911.00 Lakhs

Parameter-5 Economic benefits due to Compensatory afforestation.

The compensatory afforestation will be raised over the land of 395.0000 ha. assuming 30% as benefit occurring through Compensatory Afforestation
Which comes out to Rs. 2843.20 lakh. @ 30% = 852.96 Lakhs

$$2843.2 \times 30\% = 852.96 \text{ lakhs}$$

CALCULATIONS OF BENEFIT COST RATIO

Total cost (as per table -B Calculation)

Rs 11547.71 Lakhs

Total Benefits (as per table -C Calculation)

Rs 113764.17 Lakhs

Hence, Benefit/Cost ratio

= 9.85

Cost Benefit Analysis for forest land diversion in accordance with the MoEF & CC's guidelines dated 1.8.2017

Table-B: Estimation of Benefits for forest diversion for Sambarkund Medium Project Tal. Alibag /dist. Raigad

sr. no	Parameters	Remarks
1	Ecosystem services losses due to proposed forest diversion.	Total forest land to be diverted is 264.5406 ha. following are the calculations are made on the basis of NPV Guidelines dated 6th January 2022. This cost comes at Rs. 1959.94 Lakhs
2	Loss of animal husbandry productivity, including loss of fodder	Estimated 10% loss of animal husbandry productivity due to diversion of 264.5406 ha. of forest land which will be Rs 195.99 Lakhs
3	Cost of human resettlement / rehabilitation	The cost of an account of human settlement is Rs. 4659.18 Lakhs as per AA
4	Loss of public facilities and administrative infrastructure (Roads, building,school,dispensaries,electric lines,railways,etc) on forest land ,which would require forest land if these facilities were diverted due to the project.	Loss of Electric Line from Mahan Wadi of Mahan Village to Khairwadi & Jambhulwadi Total 3.00 Km. These rates are from the approved First administrative approved estimate Rs. 210 Lakhs
5	possession value of forest land diverted.	At present the possession value of forest land 264.5406 ha to be diverted estimated to be 30% of the Net Present Value calculated. As detail calculation in parameter 1 NPV comes at Rs. 587.98 Lakhs
6	Cost of suffering to oustees	Nil

7	Habitat fragmentation cost	This project involves forest land along river bank, nalla bank which is habitat for various wild animals and birds found in that area. But there is no Tiger project, no National park, no Wildlife sanctuary and no ecologically sensitive zone of protected area. habitat fragmentation cost calculated as 50% of value of maximum Net Present value realized for this project and which comes out to Rs. 979.97 Lakhs
8	Compensatory afforestation and soil & moisture conservation cost	As the project area is 264.5406 ha and this being a State Government project the compensatory afforestation will be taken on suitable land in possession of Forest Department i.e 264.5406 ha of land. Dy Conservator of Forests, Nanded Forest Division, Nanded and which comes out to Rs. 2954.65 Lakhs
Total Estimated Cost of forest diversion		Rs. 11547.71 Lakhs

Cost Benefit Analysis for forest land diversion in accordance with the MoEF & CC's guidelines dated 1.8.2017

Table-B: Estimation of cost of forest diversion for Sambarkund Medium Project Tal. Alibag /dist. Raigad

sr. no	Parameters	Remarks
1	Increase in productivity attribute to the specific project.	a) Net increase in agricultural produce for 50 years. Per year benefits are at = Rs. 145.22 Lakhs x 50 = Rs. 7261 Lakhs b) It is proposed to develop fisheries produced reservoir, Hence overall benefits on this account for 50 years = 14.23 Lakhs x 50 = Rs. 711.50 Lakhs c) Animal husbandry produce 10 % of NPV = Rs. 197.52 Lakhs
2	Benefits to economy due to specific project.	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. 3630.5 Lakh.
3	No. of population benefited due to specific project.	Overall 35 villages are to be benefited in the command area due to this project. Total population of these villages is 34429 as per Census data 2011, assuming 4 persons in a family i.e. 8267 families. Assuming increase income per family Rs.5,000/- per to the population on this account for 50 years, for 31666.66 families will be Rs. 20667.50 lakhs.

4	Economic benefit due to of direct and indirect employment due to the project.	a) Employment generated during construction period. Generally in construction project, ratio of labour component cost to material component cost is 30:70. Employment generated during construction of the project ,the total cost of the project is 74288.14 Lakhs. The labour component will be about about 30% ie Rs. 22286.44 Lakhs. b)Employment generated after construction. It has been assessed from the statistics available for the irrigation project in operation that labour potential of 50 mandays /ha/year is generated perennially in the fields and agro-based industries. In case of this project ICA of project is 2528 ha. assuming wages at Rs 418.96/- per day ,the employment potential that will be created during 50 years will be Rs. 26478.30 Lakh.
5	Economic benefits due to Compensatory afforestation.	The compensatory afforestation will be raised over the land of 264.6703 ha. assuming 30% as benefit occurring through Compensatory Afforestation Which comes out to Rs. 1887.25 lakh. @ 30% = Rs. 852.96 Lakhs
Total Benefits.		Rs. 113765.70 Lakhs

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