

Cost Benefit Analysis
Maa Ratangarh Canal Project
On the basis of Guidelines for forest land diversion 2017

Table-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 up to 20 hectare in plains and upto 5 hectare in hills	Not applicable	
2	Proposals for defence installation purpose and oil prospecting (Prospecting only)	Not applicable	
3	Habitation, establishment of industrial units, tourist lodges complex and other building construction.	Not applicable	
4	All other proposals involving forest land more than 20 hectare in plains and more than 5 hectares in hill including roads, transmission lines, minor, medium and major irrigation projects, hydro projects, mining activity, railway lines, location specific installation like micro-wave station, auto retreater 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 of overall public interest. The Maa Ratangarh Multipurpose Project falls under this category.



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Table-B Estimation of cost of Forest Diversion (DAM)

No.	Parameters	Remarks
1	Ecosystem services losses due to Proposed Forest diversion	Ecosystem services due to diversion of forest area suggested by the central Powered Committee as per the forest classification report of proposed Maa Ratangarh Multipurpose Project is Rs. 6.26 Lakh/Ha Cost of Land = $1248.821 \times 6.26 = 7817.62$ Lakh
2	Loss of animal husbandry productivity including cost of fodder	As per cost benefits guideline i.e. 10% of N.P.V. 0.626 Lakh per Ha. = $1248.821 \times 0.626 = 781.76$ Lakh
3	Cost of human resettlement	There is no loss of public properties and administration infrastructures of forest land due to construction of Maa Ratangarh Multipurpose Project, no cost has been added on this account.
4	Loss of Public facilities and administrative infrastructure (Road, building, schools, dispensaries, electrics, railways, etc.) on forest land which would required forest land if these facilities were diverted due to the project.	There is no loss of public facilities and administration infrastructures of forest land due to construction of Maa Ratangarh Multipurpose Project, no cost has been added on this account.
5	Possession value of forest land diverted.	The possession value of forest land diverted is taken 30% of the N.P.V. due to loss of forest i.e. 1.878 Lakh/Ha = $1248.821 \times 1.878 = 2345.28$ Lakh
6	Cost of suffering of oustees	Not applicable
7	Habitat Fragmentation Cost	Forest land is being acquired for construction of Dam, Canal pipe line, Submergence & spill Channel of Maa Ratangarh Multipurpose irrigation Project. There is no amount is taken under this account.
8	Compensatory afforestation and soil & moisture conservation cost.	The cost @ Rs. 4.0 Lakh per Ha is taken for compensatory afforestation and soil moisture conservation. Hence amount will be = $1248.821 \times 4.00 = 4995.2$ Lakh
9	Total cost due to forest land diversion	Total cost due to forest land diversion for Maa Ratangarh Multipurpose Project will be - = $7817.62 + 781.76 + 2345.28 + 4995.28 = \text{Rs. } 15939.94$ Lakh



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Table-B Estimation of cost of Forest Diversion (CANAL)

No.	Parameters	Remarks
1	Ecosystem services losses due to Proposed Forest diversion	Ecosystem services due to diversion of forest area suggested by the central Powered Committee as per the forest classification report of proposed Maa Ratangarh Multipurpose Project is Rs. 6.26 Lakh/Ha Cost of Land = $17.63 \times 6.26 = 110.36$ Lakh
2	Loss of animal husbandry productivity including cost of fodder	As per cost benefits guideline i.e. 10% of N.P.V. 0.626 Lakh per Ha. = $17.63 \times 0.626 = 11.04$ Lakh
3	Cost of human resettlement	There is no loss of public properties and administration infrastructures of forest land due to construction of Maa Ratangarh Multipurpose Project, no cost has been added on this account.
4	Loss of Public facilities and administrative infrastructure (Road, building, schools, dispensaries, electrics, railways, etc.) on forest land which would required forest land if these facilities were diverted due to the project.	There is no loss of public facilities and administration infrastructures of forest land due to construction of Maa Ratangarh Multipurpose Project, no cost has been added on this account.
5	Possession value of forest land diverted.	The possession value of forest land diverted is taken 30% of the N.P.V. due to loss of forest i.e. 1.878 Lakh/Ha = $17.63 \times 1.878 = 33.10$ Lakh
6	Cost of suffering of oustees	Not applicable
7	Habitat Fragmentation Cost	Forest land is being acquired for construction of Dam, Canal pipe line, Submergence & spill Channel of Maa Ratangarh Multipurpose irrigation Project. There is no amount is taken under this account.
8	Compensatory afforestation and soil & moisture conservation cost.	The cost @ Rs. 4.0 Lakh per Ha is taken for compensatory afforestation and soil moisture conservation. Hence amount will be = $17.63 \times 4.00 = 70.52$ Lakh
9	Total cost due to forest land diversion	Total cost due to forest land diversion for Maa Ratangarh Multipurpose Project will be = $110.36 + 11.04 + 33.10 + 70.52 = \text{Rs. } 225.02$ Lakh



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

No.	Parameters	Remarks
1	Increase in productivity/attitude to the specific project	The crop production benefit due to Maa Ratangarh Multipurpose Project will be 41036.84 lakh in designed life of 100 years. Water level will be increased and economic growth of command area will be boosted. Project also reserves water for drinking purpose of Gwalior distt.
2	Benefits to Economy due to the specific project	Maa Ratangarh Multipurpose project will trigger economical development with irrigation facility to a land of 78484 ha. In the command area. Irrigation is proposed by pressurized pipe system.
3	No. of population benefited due to specific project	After completion of project 120000 villagers will be benefited.
4	Economic benefits due to direct and indirect employment due to the project.	The project will provide direct and indirect employment for approximate 50000 people due to project.
5	Economic benefits due to compensatory afforestation	Economic benefit due to compensatory afforestation has been considered as per the benefit of C.A. guideline of Ministry for N.P.V. estimation.



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COST BENEFIT ANALYSIS

Cost due to forest land under Dam	=	15939.94 Lakh
Cost due to forest land under Canal	=	225.02 Lakh
Total Forest land Cost (A)	=	16164.96 Lakh
Total benefit due to the Project (B)	=	41036.84 Lakh
Benefit Ratio of project (B/A)	=	2.53



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