

S.No.-8 (Annexure-6)
COST BENEFIT ANALYSIS OF DIVERSION OF FOREST LAND FOR
MAHI BANSWARA RAJASTHAN ATOMIC POWER PROJECT (4 units x 700 MWe)
(In line with letter dated 11th Dec. 2017 and
Guidelines No. 7-69/2011-FC(Pt.) dated 1st August 2017)

TABLE-B: Estimation of cost of Forest Diversion

S No	Parameters	Remarks
1	Ecosystem services losses due to proposed forest diversion	Rs. 626.31 Lakhs (@ NPV Rs 6.26 Lakhs/ha for open class-III forest x 100.05 ha)
2	Loss of animal husbandry productivity , including loss of fodder	Rs. 62.631 Lakhs (@ 10% of Net Present Value)
3	Cost of human settlement	Rs. 13,420 Lakhs (Cost towards R&R award issued for all people affected by the project)
4	Loss of public facilities and administrative infrastructure (roads, building schools, dispensaries, electric lines, railways etc) on forest land, or which require forest land, or which would require forest land if these facilities were diverted due to project.	Nil Public facilities and administrative infrastructure like roads, buildings, schools, dispensaries, electric lines, railways etc. are not going to be affected as these do not exist on the forest land proposed to be diverted.
5	Possession value of Forest land diverted	Rs. 187.89 Lakhs (@ 30% of Net Present Value)
6	Cost of Suffering to oustees	Ousteas will be provided with Compensation towards their land and R & R benefits as announced by State Government. In addition they will be provided with pucca dwelling units which will have improved amenities. There will also be vertical intervention through Neighbourhood Development Programme and Corporate Social responsibilities over the period for improving employability of the outsees & enabling oustees to start their business by imparting training to develop skill sets and entrepreneurship. In all, the oustees will have better living standards and improved lifestyle & there will be no likely suffering to them.
7	Habitat Fragmentation cost	Rs. 313.155 lakhs (@ 50% of Net Present Value)
8	Compensatory afforestation and soil & moisture conservation cost	Rs. 155.077 Lakhs (@ of Rs. 1.55 Lakhs/ha x 100.05 ha)
9	Cost of acquisition of Land (For Private & Govt. Land)	Rs. 28,626 Lakhs
10	Environmental losses: (soil	Environmental losses is computed as below :

S No	Parameters	Remarks
	erosion, effect on hydrological cycle, wildlife habitat, microclimate upsetting of ecological balance.	<ul style="list-style-type: none"> Total Reserved Forest area proposed for diversion : 100.05 ha Density of the forest proposed to be diverted for the project : 0.25 Environmental value of one hectare of fully stocked forest (density 1.0) for a period of 50 years is = Rs. 126.74 Lakhs. Total environment loss over the period of 60 years (Considering plant life of NPP as 60 years) $= 126.74 \text{ Lakhs} \times 0.25 \times (60/50) \times 100.05$ $= \text{Rs. } 3,804.10 \text{ Lakhs}$
11	Cost of project excluding cost of land and R&R.	Rs. 29,36,154 Lakhs * (*base cost @ June 2016)
	TOTAL LOSS IN MONETARY TERMS for 60 Yrs.* (In Rs) * extended plant life	$= 626.31 + 62.631 + 13420 + 187.89 + 313.155 + 155.077 + 28626 : 3804.10 + 2936154 = 2983349.17 \text{ Lakhs}$

Parameters for Estimating benefits of Forest – diversion in CBA

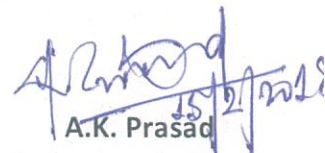
S.No.	Parameters	Remarks
1	Increase in productivity attribute to the specific project.	Power generated by the project will be supplied to the State and Central Grid as per the allocation made by Central Electricity Authority (CEA). This will improve power availability to the tune of 1046364.48×10^6 KWh over the period of Sixty years and will cause all-round industrial development in the region and in the country as a whole which will improve overall productivity.
2	Benefits to economy due to specific project	Construction of NPP will boost economy at the local level, state level and country as a whole: a) Local level: Generation of Direct & Indirect Employment, Improvement in Infrastructure, Encouragement of Entrepreneurship & Growth of Ancillary Units. b) State Level: With the availability of power there will be Spur in industrial activities and thus accelerate industrial development in the state causing boost in economy c) National Level: Increase in productivity & increase in per capita consumption.
3	No. of population benefited due to specific project	50 % (minimum) of the power generated from the project will be allocated to the home State i.e. Rajasthan and balance 50% will be allocated to neighbouring states by CEA. As such entire population of the State as well as of the country will be benefited from the power generated.
4	Economic benefits due to direct and indirect employment due to the	The project will generate employment of 239.20 lakh man-days (approximately) over the period of 10 years during the construction phase of the project. Accrued benefit will be

S.No.	Parameters	Remarks
	project .	valued at Rs. 1,07,640 Lakhs (Considering labour wages of Rs. 450 per man-day). This apart the NPP will also provide tapered employment opportunities during the O&M phase of the project.
5	Economic benefits due to Compensatory afforestation	As a result of Compensatory afforestation (CA) forest of Class –II grade will be created. Economic benefits due to CA will be Rs. 1043.52 Lakhs (considering NPV @ of Rs. 10.43 lakhs/ha)

Benefits of the project in monetary terms

a	Net Power production from the project for 60 years	= (2800x0.9) x 0.79 x 24 x 365 x 60 MW =1046364.48 x 10 ⁶ KWh
b	Unit energy cost (assume an average value)	= Rs. 3.41 per KWh* *estimated tariff of KAPP-3&4(project under construction) has been considered.
c	Monetary return of the project for 60 (sixty) years	= 1046364.48 x 10 ⁶ x 3.41 = Rs. 35681028.77 = Rs. 356,81,028.77 Lakhs
d	Temporary employment	Rs. 1,07,640 Lakhs
e	Economic benefits due to Compensatory afforestation	Rs. 1043.52 Lakhs
	TOTAL	Rs. 357,89,712.29 Lakhs
Cost benefit ratio		(Monetary return of the project in 60 (sixty) years)
	=	(Total cost inclusive of Environmental loss for a period of 60 (Sixty) years)
	=	Rs. 357,89,712.29 / Rs. 29,83,349.17 =12:1

COST BENEFIT RATIO = 12 : 1


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On the behalf of
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