

COST BENEFIT ANALYSIS REPORT

[as per MoEFCC Guideline 7-69/2011-FC(Pt.) dtd. 01 August, 2017]



NTPC Limited

(A Government of India Enterprise)

(A Maharatna Company)

Forest Diversion Proposal for GM-JJ Land in Reservoir & Ash Dyke in North Karanpura STPP (10.24Ha)

सुहेल खलीक़ ख़ान / SUHAIL KHALIQ KHAN
उप महाप्रबन्धक (सिविल) / DGM (CCD)
एनटीपीसी लिमिटेड / NTPC LIMITED
एन.के.एस.टी.पी.पी. / NKSTPP
टण्डवा / Tandwa

Reservoir & Ash Dyke in North Karanpura STPP (10.24Ha)

Introduction:

NTPC Limited has planned for construction of Reservoir & Ash dyke for their North Karanpura Super Thermal Power Project in Tandwa, District Chatra of Jharkhand for water storage and Ash disposal. The Stage-II forest clearances for the entire project including Reservoir & Ash Dyke has already been accorded vide Government of India letter ref. No. F. No. 8-76/2007 – FC dated 03.09.2015 (Copy attached).

However, around 10.24 Ha of GM-JJ land falling within the proposed Reservoir & Ash dyke area was initially notified to WRD, GoJh for construction of Garhi Reservoir scheme. Since the Garhi Reservoir scheme has been cancelled, the same GM-JJ land has been de-notified from WRD, GoJh and allotted to NTPC for the construction of Reservoir & Ash Dyke. The present proposal is for obtaining Forest clearance for the same 10.24 Ha area of GM-JJ land.

Communication:

Name of Dealing Executive	:	Suhail Khaliq Khan
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Detail of Household shifting: Nil

The nature of forest land for which application for diversion of forest land to be applied at Reservoir & Ash dyke for their North Karanpura Super Thermal Power Project in Tandwa (10.24 Ha) falls in Class III MDF forest. As such Rate of NPV comes out as Rs 8,03,000 per ha.

Table 3: Calculation rate for NPV in respect of Amrapali railway siding		
Description	Amount in Rs.	Amount in Rs. Lakhs
Rate of NPV @Rs./Ha	8,03,000	8.03
Total NPV for 10.24 Ha of the forest land proposed for diversion	82,22,720	82.227
10% NPV Value	8,22,272	8.223
30% NPV Value	24,66,816	24.669
50% NPV Value	41,11,360	41.114

Table 4:

Rate of land as per circle rate:

Name of Village	Circle rate per decimal(in Rs)	Forest Land (GMJJ)(in Ha)	Forest Land (GMJJ) (in Decimal)	Circle Rate of the villages (in Rs Lakhs)
Raham	3500	5.79	1430.71	50.07
Naiparam	4200	4.45	1099.59	46.18
Total		10.24		96.25


Total value of forest land (10.24 Ha) as per circle rate: Rs 96.25 Lakhs

Other conversion factor

100 decimal = 1 acre

1 Ha = 2.471 Acre = 247.1 Decimal

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CALCULATION AS PER MOEFCC CIRCULAR NO. 7-69/2011-FC(PT.) Ddt. 01 AUGUST, 2017.

I. Estimation of cost of forest diversion

1. Ecosystem services losses due to proposed forest diversion

Economic value of loss of ecosystem services due to diversion of forest = Net present value (NPV) of the forest land being diverted as per prescribed by the Central Government (MoEF&CC).

As the Forest land proposed does not fall in National park & Wild life sanctuary

Ecosystem services losses due to proposed forest diversion for 10.24 ha = **Rs. 82.227 Lakhs** (Ref Table 3)

2. Loss of animal husbandry productivity, including loss of fodder

No. Of PAFs = 0

Assuming no. Of animal husbandry as 4

Factor = 60

Loss of Loss of animal husbandry productivity, including loss of fodder = $0 \times 4 \times 365 \times 60 = \text{Rs. } 0$

10% of NPV = **Rs. 8.223 lakhs** (ref Table 3)

Since 10% of NPV is more

Thus as per guideline

Loss of animal husbandry productivity, including loss of fodder = **Rs 8.223 lakhs**

3. Cost of human resettlement as per R&R Plan = Rs 0

4. Loss of public facilities and administrative infrastructure (Roads, buildings, schools, dispensaries, electric line, railways, etc.) On forest land, which would require forest land if these facilities were diverted due to the project = Rs. 0.00

5. Amount as per Circle rate of adjoining area = Rs 96.25 Lakhs (Ref Table 4)

30% NPV = **Rs. 24.669 Lakhs** (Ref Table 3)

Since circle rate of adjoining area is more than NPV paid therefore as per guideline,

Possession value of forest land diverted = **Rs 96.25 Lakhs**

6. Cost of suffering of oustees is Nil as:

No. Of Oustees = No. Of PAFs = Nil

7. Habitat Fragmentation cost - Cost due to fragmentation has been pegged at 50% of NPV applicable as a thumb rule (Ref Circular MoEF)

50 % of NPV = **Rs. 41.114 Lakhs** (Ref table 3)

8. Compensatory afforestation and soil & moisture conservation cost

Rate of Compensatory afforestation = Rs. 176009/ Ha

Forest land = 10.24 Ha, Therefore CA land = 20.48 Ha

Cost of Compensatory Afforestation = **Rs. 36.047 Lakhs**


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II. Estimating benefits of forest – diversion in CBA

1. Increase in productivity –

Cost of generation – Rs. 2.81 per KWh, Life of project – 35 years.

Total productivity profit from project in lifetime – $2.81 \times 1320 \times 1000 \times 35 \times 365 \times 24 \times 0.7 \times 0.1 = 796068.50$ Lakhs

For 3x660MW, Land required for Reservoir & Ash Dyke – 475 Ha.

Productivity profit per Ha = $796068.50 / 475 = 1675.93$ lakhs

Total profit = $1675.93 \times 10.24 = \text{Rs. } 17161.56$ lakhs

2. Benefits to economy due to specific project -

A. CSR cost for the life of the project = 2 % of Profit = **Rs 343.23 Lakhs**

3. No. of population benefitted due to specific project

Direct employment = 20

Indirect Employment = 60

Considering avg. family size 5, then no. of Population benefitted = $80 \times 5 = 400$

4. Economic benefits due to direct and indirect employment due to project -

A. For indirect employment generated for = 60 people

Avg. days of Working (as in Jharkhand) = 200 days

Rate of unskilled manpower = Rs. 229/- day

Life of project = 35 yrs

Economic benefits due to indirect employment = Rs. 961.80 Lakhs

B. For direct employment = 20

Minimum Wage for Skilled labour = Rs 604/day

Assumed working Days = 330

Economic benefits due to direct employment = Rs. 1395.24 Lakhs

Economic benefits due to of direct and indirect employment due to project = $A+B = \text{Rs. } 2357.04$ lakhs

5. Economic benefits due to compensatory afforestation -

CA Land = $10.24 \times 2 = 20.48$ Ha

Class of degraded forest land supposed to change from LDF to MDF

A. Thus change in benefits (as per NPV) [@ Rs (8.03 – 6.26) lakhs/ha

= 36.250 Lakhs

B. Economic value of carbon storage

Change in economic value [@ Rs (270040 – 95721) = Rs. 174319 = Rs. 1.74319 [Lakhs] per Ha for 60 yrs.

Thus economic value for 50 yrs = Rs. 29.750 lakhs

Total Economic benefits due to compensatory afforestation = $(A+B) = \text{Rs } 66.000$ Lakhs

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Table: Estimation of cost of forest diversion (as per table B of guidelines)		
Sl No	Parameter	Result(in Lakhs)
1	Ecosystem services losses due to proposed forest diversion	82.227
2	Loss of animal husbandry productivity, including loss of fodder	8.223
3	Cost of human resettlement	NIL
4	Loss of public facilities and administrative infrastructure (Roads, buildings, schools, dispensaries, electric line, railways, etc.) On forest land, which would require forest land if these facilities were diverted due to the project	NIL
5	Possession value of forest land diverted	96.25
6	Cost of suffering of oustees	Nil
7	Habitat Fragmentation cost	41.114
8	Compensatory afforestation and soil & moisture conservation cost	36.047
	Total Loss in lakhs	263.861

Table: Existing guidelines for estimating benefits of forest – diversion in CBA (As per Table C of Guidelines)		
Sl No	Parameters	Result(in Lakhs)
1	Increase in productively attribute to the specific project	17161.56
2	Benefits to economy due to specific project	343.23
3	No of population benefitted due to specific project	400
4	Economic benefits due to of direct and indirect employment due to project	2357.04
5	Economic benefits due to compensatory afforestation	66.00
7	Total(2+4+5)	2766.27

Cost to benefit ratio = $263.861/2766.27 = 1 : 10.48$


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