



COST BENEFIT ANALYSIS REPORT

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



Central Coalfields Limited
(A Miniratna Company)

North Urimari Railway Siding

सौमित्र सिंह
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C.C.L., Ranchi

PROJECT OFFICER
NORTH UPRANCHI RAILWAY

Introduction:

North urimari opencast project in South Karanpura Coalfield, Barkasayal Area has been planned for targeted capacity of 3.0 million tonnes per annum. The project is situated in the Hazaribagh district of Jharkhand. North urimari is connected to Ranchi by fair weather road via Sayal-Patratu/Ramgarh. This project is located at a distance of about 70Km from Headquarter Ranchi. The nearest railway station is Patratu and is located on Patratu-Garhwa road double line section of Eastern Railway

Communication :

Name of Project Officer	:	Sri Dinesh Kumar Rama
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Detail of Household shifting: Nil

Revision of rates of NPV applicable for different class/category of forests

Eco- Value Class	VDF(very dense forest)	MDF(moderately dense forest)	OF(open forest)
Class I	10,43,000	9,39,000	7,30,000
Class II	10,43,000	9,39,000	7,30,000
Class III	8,87,000	8,03,000	6,26,000
Class IV	6,26,000	5,63,000	4,38,000
Class V	9,39,000	8,45,000	6,57,000
Class VI	9,91,000	8,97,000	6,99,000

Source: Revision of rates of npv applicable for different class/category of forests published by centre for ecological services management (CESM), Indian Institute of Forest Management (IIFM)), Bhopal in collaboration with Forest Survey of India (FSI), Dehradun, Nov. 2014

Class	Forest type group/ value of carbon storage(rs/ Ha)	VDF	MDF	OF	LTF
III	Tropical dry deciduous forest	300064	270040	95721	95721

Source: Revision of rates of npv applicable for different class/category of forests published by centre for ecological services management (CESM), Indian Institute of Forest Management (IIFM), Bhopal in collaboration with Forest Survey of India (FSI), Dehradun, Nov. 2014

Compensation For Land

One Employment per 2 acres to land losers (plots can be clubbed together)
Or monetary compensation @ Rs.5.0 Lakh per acre subject to a minimum of Rs.0.50 Lakh.

The compensation can be paid in form of annuity also on monthly, quarterly, annually etc upto 60 years of age or life of project whichever is earlier.

aid in form of annuity and
of project, which never is

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Note : A person receiving employment forgoes all claims to monetary compensation and a person receiving monetary compensation forgoes all claims to employment.
Compensation For Homestead
Compensation for homestead building as per standard valuation method under LA Act.
Payment of Rs 3.0 Lakh in lieu of alternate housing site, assistance in designing & shifting, compensation for construction cattle shed and working shed etc.
Subsistence allowance to each affected family @ 25 days Minimum Agricultural Wages per month for one year.
Compensation For Sharecroppers, Land lessees, Tenants, Day labourers, Landless tribals etc.
Affected landless tribal families will be provided one time financial assistance equivalent to 500 days MAWs as a compensation for loss of customary rights.
Assistance to PAPs to take up non-farm self employment through petty contracts or formation of co-operatives.
Contractors will be persuaded to give jobs to eligible PAPs on preferential basis.

The nature of forest land for which application for diversion of forest land to be applied at North Urimari Railway siding (36.73 Ha) falls in Class III MDF forest. As such Rate of NPV comes out as Rs 6,26,000 per ha for 19.02 Ha of the proposed forest land for diversion lying in Sayal D and Rs 8,03,000 per ha for 17.71 Ha of the proposed forest land for diversion.

$$\text{Total NPV for 36.73 Ha (19.02ha+17.71ha) of the forest land} = 19.02 \times 626000 + 17.71 \times 803000$$

$$= \text{Rs } 2,61,27,650$$

Table 3: Calculation rate for NPV in respect of North Urimari railway siding		
Description	Amount in Rs.	Amount in Rs. Lakhs.
NPV @Rs./Ha for 19.02 Ha of the forest land proposed for diversion	6,26,000.00*19.02	119.06
NPV @Rs./Ha for 17.71 Ha of the forest land proposed for diversion	8,03,000*17.71	142.2
Total NPV for North Urimari Railway siding (36.73 Ha)	26127650	261.27
10% NPV Value	: 2612765	26.12
30% NPV Value	: 7838295	78.38
50% NPV Value	: 13063825	130.63

Table 4:

Rate of land as per circle rate:

Total value of forest land as per circle rate: Rs 381.68 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 36.73 ha = **Rs. 261.27 Lakhs** (Ref Table 3) (for density of forest land as stated in part II of DFO Report)

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. 26.12 Lakhs** (ref Table 3)

Since 10% of NPV is more

Thus as per guideline

Loss of animal husbandry productivity, including loss of fodder = **Rs 26.12 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 381.68 Lakhs** (Ref Table 4)
30% NPV = **Rs. 78.38 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 381.68 Lakhs**

6. Cost of suffering of oustees is Nil as:

No. Of Outsees = 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. 130.63 Lakhs** (Ref table 3)

8. Compensatory afforestation and soil & moisture conservation cost

Rate of Compensatory afforestation = **Rs. 176009/ Ha**

Forest land = 36.73 Ha, Therefore CA land = **73.46 Ha**

Cost of Compensatory Afforestation = **Rs. 12.92 Lakhs**

II. Estimating benefits of forest – diversion in CBA

1. Increase in productively attribute due to railway siding assuming the freight difference from rail to road (freight charge for road is about 50% more than rail for about 1000kms distance.

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Freight charges for rail is Rs 1900 per tonne per 1000 kms (approx), while for road it is about Rs 2600 per tonne per 1000 kms (approx.)

Amount of coal to be dispatched and transported from Magadh Railway siding to Northern and Western India is around 14MTPA. Life of the rail project=35years

= Rs.93,10,000 lakhs

2. Benefits to economy due to specific project

A. CSR cost = 2 % of Profit = Rs 442.64 Lakhs

B. Consultancy charge to RITES (@8% approx.) = Rs. 1628.70 Lakhs

C. GST on Cost of Works (@ 18%)

Total Cost of siding including consultancy cost = Rs 22132.1 Lakhs

Taxes approximation (@ 18% of the total cost) = Rs. 3983.778 Lakhs

3. No of population benefitted due to specific project

Direct employment = 60

Indirect Employment = 300

Considering av. family size 5, then no. Of Population benefitted = $360 \times 5 = 1800$

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

A. For indirect employment generated for 300

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

Rate of unskilled manpower = Rs. 229/- day

Life of siding = 30 yrs

Economic benefits due to indirect employment = Rs. 4122 lakhs

B. For direct employment

Minimum Wage for Skilled labour = Rs 604/day

Assumed working Days = 330

Economic benefits due to direct employment = Rs. 3587.76 Lakhs

Economic benefits due to of direct and indirect employment due to project

=A+B=Rs. 7709.76 lakhs

5. Economic benefits due to compensatory afforestation

CA Land = $36.73 \times 2 = 73.46$ 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
= 130.02 Lakhs

B. Economic value of carbon storage

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

Thus economic value for 50 yrs = Rs.128.05 lakh

Total Economic benefits due to compensatory afforestation = (A+B) = Rs 258.07Lakhs

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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	261.27
2	Loss of animal husbandry productivity, including loss of fodder	26.12
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	381.68
6	Cost of suffering of oustees	Nil
7	Habitat Fragmentation cost	130.63
8	Compensatory afforestation and soil & moisture conservation cost	12.92
	Total Loss in lakhs	812.62

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 productivity attribute to the specific project	9310000
2	Benefits to economy due to specific project	6055.11
3	No of population benefitted due to specific project	1800
4	Economic benefits due to of direct and indirect employment due to project	7709.76
5	Economic benefits due to compensatory afforestation	258.07
6	Total(2+4+5)	14022.94

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Ratio of loss: profit = $812.62/14022.94 = 1:17.26$

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