



COST BENEFIT ANALYSIS REPORT

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



Central Coalfields Limited
(A Miniratna Company)

Magadh Railway Siding (121.29 Ha)

Magadh Railway Siding (121.29 Ha)

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20.10.23
SADALA SATYANARAYAN
PROJECT OFFICER
MAGADH OCP

Introduction:

Central Coalfields Limited (CCL) has planned for construction of Magadh Railway Siding at CCL's command area i.e., Magadh-Sanghamitra Area (M-S Area) to dispatch coal at different power plants from the Magadh Open Cast Project by introduction of 'Rapid Loading System' (RLS) through SILO loading arrangement. The take-off point of the siding line is proposed to be taken off at 480 m away from the center line of Bukru station towards Shivpur which is located Tori-Shivpur section of Dhanbad Division of East Central Railway. The Construction of Railway Siding is proposed in two phases. The length of the proposed alignment taking off from Bukru station of main Arterial railway siding line to the Magadh OCP is about 08 Km, which includes link portion and yard portion with MGR bulb from proposed Bukru Railway station to Magadh OCP.

Communication:

Magadh OCP is well linked with various important places such as Hazribagh and Ranchi town through Road Network. Nearest Railway Station to Magadh OCP is Tori.

Name of Project Officer	Sri Sadala Satyanarayan
Designation	Cheif Manager(Mining)
Address	Office of Project Manager, Vill:-Kundi, P.O-Tandwa, P.S-Tandwa District :-Chatra, Jharkhand(825321)
Mobile no.	89877884407
Email Address	pomagadhms@gmail.com

Detail of Household shifting: Nil

The nature of forest land for which application for diversion of forest land to be applied at Magadh Railway siding (121.29 Ha) falls in Class III MDF forest. As such Rate of NPV comes out as Rs 12,28,590 per ha for 121.29 Ha of the proposed forest land for diversion.

Table 3: Calculation rate for NPV in respect of Magadh railway siding		
Description	Amount in Rs.	Amount in Rs. Lakhs
Total NPV @Rs.1228590/Ha for 121.29 Ha of the forest land proposed for diversion	14,90,15,681.10	1490.15
10% NPV Value	1,49,01,568	149.01
30% NPV Value	4,47,04,704.33	447.04
50% NPV Value	7,45,07,840.55	745.07

Table 4: Rate of land as per circle rate:

Total value of forest land as per circle rate: Rs 701.57 lakh

Name of Village	Circle rate per decimal (in Rs)	Forest Land (in Ha)	Circle rate per Hectare (in Rs)	Circle Rate of the villages (in Rs)
Kundi	2200	10.28	543620	5588413.6

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Kurlonga	2700	6.73	667170	4490054.1
Ara	3372	41.45	833221.2	34537018.74
Chamatu	3372	16.89	833221.2	14073106.07
Chetar	3372	14.03	833221.2	11690093.44
Seregada	3372	17.02	833221.2	14181424.82
Charra	3372	1.54	833221.2	1283160.648
Phulbasia	3372	13.35	833221.2	11123503.02
Total		121.29		96966774.44

Total circle rate for 121.29 Ha= Rs 969.66 lakh

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).
Ecosystem services losses due to proposed forest diversion for 121.29 Ha = **Rs. 1490.15 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. 149.01 lakhs** (ref Table 3)

Thus, as per guideline loss of animal husbandry productivity, including loss of fodder = **Rs. 149.01 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 969.66 lakh** (Ref Table 4)
30% NPV = **Rs. 447.04 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 969.66 lakh**
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. 745.07 Lakhs** (Ref table 3)
8. Cost of Compensatory Afforestation, Soil & moisture conservation cost
(a) Compensatory Afforestation: $214190.11 \times 2 \times 121.29 = \text{Rs } 519.58 \text{ Lakhs}$
(b) Soil Conservation cost= 0.5% of the Project Cost = $0.005 \times 40210 \text{ Lakh} = 201.05 \text{ Lakh}$
Total Cost = (a) + (b) = $519.58 + 201.05 = 720.63 \text{ lakh}$

Magadh Railway Siding (121.29 Ha)

II. Estimating benefits of forest – diversion in CBA

1. Increase in productivity 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. Freight charges for rail is Rs 2160/- 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 10 MTPA. Life of the rail project= 30 years
= Rs.6,48,000 lakhs

2. Benefits to economy due to specific project = 49237.38 lakh

3. No. of population benefitted due to specific project

Direct employment = 300

Indirect Employment = 450

(No. of person-day = 4725000)

Considering avg. family size 5, then no. of Population benefitted = $750 \times 5 = 3750$

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

- A. For indirect employment generated for= 450 people

Avg. days of Working = 350 days

Life of siding = 30 yrs

No. of person-day = $450 \times 350 \times 30 = 4725000$

Rate of unskilled manpower = Rs. 346.01/- day

Economic benefits due to indirect employment = Rs. 16,348.97 Lakhs

- B. For direct employment

Minimum Wage for Skilled labour= Rs 604/day

Assumed working Days = 350

Economic benefits due to direct employment = Rs. 19,026.00 Lakhs

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

=A+B=Rs.35,374.97 lakhs

5. Economic benefits due to compensatory afforestation

CA Land = $121.29 \times 2 = 242.58$ Ha

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

- A. Thus change in benefits (as per NPV) [@ Rs (12.28-9.57) lakhs/ha

= 657.40 lakhs

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	1490.15
2	Loss of animal husbandry productivity, including loss of fodder	149.01
3	Cost of human resettlement	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	0
5	Possession value of forest land diverted	969.66
6	Cost of suffering of oustees	0
7	Habitat Fragmentation cost	745.07
8	Compensatory afforestation and soil & moisture conservation cost	720.63
	Total Loss in lakhs	4074.52

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	6,48,000
2	Benefits to economy due to specific project	49237
3	No of population benefitted due to specific project	2400
4	Economic benefits due to of direct and indirect employment due to project	35,374.97
5	Economic benefits due to compensatory afforestation	657
6	Total (2+4+5)	85,268.97

Cost to benefit ratio = 1:20.93


Project Officer
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