

COST BENEFIT ANALYSIS REPORT

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



CHURI BENTI UG (281.17 Ha Forest Land)



**NK Area
Central Coalfields Limited
(A Miniratna Company)**

**Project Officer
Churi Benti UG Project
N.K. Area, CCL**

Introduction:

Churi-Benti UG is an existing ongoing project under the administrative control of North Karanpura Area of Central Coalfields Limited. It is a taken over underground mine. The mine has been taken over at the time of nationalization. Prior to nationalization, it belonged to M/s United Karanpura Collieries Ltd.

The project report for Churi UG project (Re-organization) was approved in Feb'1982 by Government of India for a rated capacity of 0.84MTY.

The total area under consideration for preparing CBA is 281.17 Ha. The land details are as under:

Name of Project	Forest area applied for diversion in this project in Ha	Non forest Area in Ha
Churi-Benti UG	281.17	171.20

Communication:

Name of Project Officer	:	Sri. Anuj Kumar
Designation	:	Project Officer, Churi-Benti UG Mine
Address	:	Office of the Project Officer Churi-Benti UG Mine Village- Churi, PO- Dakra, PS- Khalari Dist – Ranchi Pin Code: - 829210
Mobile no.	:	9431501602
Email Address	:	pochuri2021@gmail.com

Purpose for Cost benefit analysis:

Cost benefit report is required for making online application in Form A Part I (8). The report has been prepared on the basis of MoEFCC circular no. 7-69/2011-FC(Pt.) dtd. 01 August, 2017. (Copy attached as Annexure A).

Impact on local population and R&R Action Plan

Rehabilitation site is yet to be proposed for about 69 PAFs. Resettlement and Rehabilitation will be done according to R&R policy of Coal India Limited.

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

Table 2(a): Current NPV Rates – Recommended by CEC (Rs. / Ha)			
Eco- Value Class	VDF (very dense forest)	MDF (moderately dense forest)	OF (open forest)
Class I	15,95,790	14,36,670	11,16,900
Class II	15,95,790	14,36,670	11,16,900
Class III	13,57,110	12,28,590	9,57,780

Class IV	9,57,780	8,61,390	6,70,140
Class V	14,36,670	12,92,850	10,05,210
Class VI	15,16,230	13,72,410	10,69,470

Source: Revision of rates of Net Present Value by Forest Conservation Division, MoEF&CC, New Delhi vide File. No. 5-3/2011-FC(Vol-I) dated 06.01.2022.

Table 2(b): Economic value of carbon storage					
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*

The nature of forest land for which application for diversion of forest land to be applied at Saghmitra OCP (934.01 Ha) falls in Class III MDF (Moderately Dense Forest). As such Rate of NPV comes out as Rs. 12,28,590/Ha.

Table 3: Calculation rate for NPV in respect of Churi-Benti UG Mine			
Description		Amount in Rs.	Amount in Rs. Lakhs
Rate of NPV @Rs./Ha	:	12,28,590	12.29
Total NPV for Churi-Benti UG Mine for 281.17 Ha	:	34,54,42,650.30	3454.43
10% NPV Value	:	3,45,44,265.03	345.44
30% NPV Value	:	10,36,32,795.09	1036.33
50% NPV Value	:	17,27,21,325.15	1727.21

Table 4(A): Royalty on Coal		
Sl No	Royalty	Rate
1	Basic royalty	14 % of sale price
2	District Mining Fund	30% of royalty
3	National Mineral fund	2 % of royalty

Reference: (I) Extraordinary gazette, part II – Sec 3(i), MoC Notification New Delhi, the 10th May 2012
(II) Extraordinary gazette, part II – Sec 3(i), MoC Notification New Delhi, the 31st Aug 2016

Table 4(B): Levy and collection of cess	
Coal cess	@ Rs 400 per tonne
Reference: Extraordinary gazette, part II – Sec 1, Ministry of law and justice Notification New Delhi, the 12 th April 2017	

OTHER DETAILS:

1	Manpower as per EPR/ Mine Plan	863 (Dept.)
2	Rehabilitation cost	Rs. 815.29 Lakhs
3	Total notified forest land in the application	181.56 Ha
4	Total GMK JJ in the application	99.61 Ha
5	Cost of production per tonne	
6	- At 100% production level	Rs. 1192.21 (As per approved PR)
7	Selling Price of coal per tonne as per RPR	Rs. 1441.00 (As per approved PR)
	Profit per tonne-	
8	- At 100% production level	Rs. 248.79 (As per approved PR)
9	Mineable Reserves-	7.30 MT
	Life of the mine-	10 yrs
10	Minimum wages of unskilled labor	Rs. 433.00
11	Gas price	Rs. 860.50

CALCULATION AS PER MOEFCC CIRCULAR NO. 7-69/2011-FC (PT.) dt. 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 281.17 Ha = Rs. 3454.43 Lakhs (Ref Table 3)

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

No. of PAFs = 69

Assuming no. Of animal husbandry as 4

Factor = 60

Loss of animal husbandry productivity, including loss of fodder = $69 \times 4 \times 365 \times 60 = \text{Rs. } 60,44,400.00 = \text{Rs. } 60.44 \text{ Lakhs}$

10% of NPV = Rs. 345.44 Lakhs (Ref. Table 3)

Since 10% NPV is less than calculated value

Thus, as per guideline

Loss of animal husbandry productivity, including loss of fodder = Rs. 345.44 Lakhs

3. **Cost of human resettlement**

Cost of human resettlement as per R&R Plan = Rs. 815.29 lakhs

As per MoEFCC guidelines the cost of human settlement is to be quantified and expressed in monetary terms. For expressing the cost of human settlement the R&R policy of Coal India has been taken into consideration. The different components that have been considered are as follows:

(As per R&R Policy)

Monetary Compensation to PAFs – 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. up to 60 years of age or life of project, whichever is earlier. **Note:** A person receiving employment forgoes all claims to monetary compensation and a person receiving monetary compensation forgoes all claims to employment.

Compensation to homestead for Alternate housing – 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 of cattle shed and working shed etc.

Compensation to Homestead as Subsistence Allowance – Subsistence allowance to each affected family @ 25 days Minimum Agricultural Wages per month for one year.

Compensation to landless Tribal family – Affected landless tribal families will be provided one-time financial assistance equivalent to 500 days MAWs as a compensation for loss of customary rights.

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**

⇒ This cost is included in R&R cost at sl no. 3 above.

5. **Possession value of forest land diverted**

As per MoEF guideline the possession value of Forest Land diverted = 30% NPV = Rs. 1036.33 Lakhs

6. **Cost of suffering of oustees**

No. Of Ousteers = No. Of PAFs = 69

No. Of Days Worked = 300 Days (Assumed)

Minimum wages of unskilled labour = Rs. 433.00 (Ref: Table 5)

Thus, Cost of Suffering of oustees =

$1.5 * (\text{daily wages} * \text{No of days} * 2 \text{ years}) * \text{No of Ousteers}$

$= 1.5 * (433 * 300 * 2) * 69 * 4 = \text{Rs. } 10,75,57,200.00 = \text{Rs. } 1075.57 \text{ Lakhs}$

7. **Habitat Fragmentation cost**

Cost due to fragmentation has been pegged at 50% of NPV applicable as a thumb rule (Ref Circular MoEF)

50 % NPV = Rs. 1727.21 Lakhs (Ref table 3)

8. **Compensatory afforestation and soil & moisture conservation cost**

Rate of Compensatory afforestation = Rs. 12,72,022.865 / Ha

Forest land = 281.17 Ha

Cost of Compensatory Afforestation = Rs. 3576.55 Lakhs

SMC cost = 0.5% of project cost = $0.005 \times 16341.00 = \text{Rs. } 81.705 \text{ Lakh}$

Total Cost = Rs. 3658.255 Lakh

II. Estimating benefits of forest diversion

1. Increase in productively attribute to the specific project

Productively attribute = Profit per tonne x mineable reserve X 10

= $248.79 \times 7.30 \times 10 = \text{Rs. } 18,161.67 \text{ Lakh}$

2. Benefits to economy due to specific project

CSR= 2% of the profit

Profit= profit per tonne x Mineable reserve = Rs. $248.79 \times 7.3 \times 10 = \text{Rs. } 18,161.67 \text{ Lakh}$

A. CSR cost = 2 % of Profit= Rs. 363.23 Lakh

B. Royalty to the exchequer = sale price x 397.43 MT x 14 % = Rs. $1441 \times 7.30 \times 0.14 \times 10 = \text{Rs. } 14,727.02 \text{ Lakh}$

C. District Mining Fund (DMF) = 30 % of Royalty = Rs $14,727.02 \times 0.3 = \text{Rs. } 4,418.106 \text{ Lakh}$

D. National Mineral fund = 2 % of Royalty = Rs $14,727.02 \times 0.02 = \text{Rs. } 294.54 \text{ Lakh}$

E. Coal cess = $400 \times 7.30 \times 10 = \text{Rs. } 29,200.00 \text{ Lakh}$

Total Benefit= A+B+C+D+E= Rs 49,002.9 Lakh

3. No. of population benefited due to specific project

Direct employment = 863

Indirect Employment = Direct Employment x 5 = 4315

Considering av. family size 5, then no. of Population benefited = $4315 \times 5 = 21,575$

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

A. For indirect employment generated for 4315

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

Rate of unskilled manpower = Rs. 433/- day

Economic benefits due to indirect employment = $(4315 \times 200 \times 433)/100000$

= Rs. 3736.79 Lakhs

B. For direct employment

Wage Cost = Avg Wage cost/Tonne X Total mineable reserve= Rs. $312.20/\text{Tonne} \times 7.30 \times 10$

= Rs. 22,790.60 Lakhs

Income Tax Paid on Salary Wages (34 %) = Rs. 7748.804 Lakhs

5. Economic benefits due to compensatory afforestation

CA Land = $281.17 \times 2 = 562.34 \text{ Ha}$

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

A. Thus, change in benefits (as per NPV) [@ Rs (**13.57 – 12.29**) lakhs/ha
= 562.34 Ha x 1.28 Lakhs/Ha = Rs. 719.80 Lakhs

B. Economic value of carbon storage

Change in economic value [@ Rs (300064 – 270040) = Rs. 30024 = Rs. 0.30 Lakhs] for 60 yrs.

Thus, economic value of carbon storage = 562.34 Ha x 0.30 = Rs. 168.702 Lakhs

Thus, economic value for 50 yrs = Rs. 140.59 Lakhs

Total Economic benefits due to compensatory afforestation = (A+B) = Rs 860.39 lakhs

Table Estimation of cost of forest diversion (as per table B of guidelines)		
Sl. No.	Parameter	Result (in Lakh Rs.)
1	Ecosystem services losses due to proposed forest diversion	3454.43
2	Loss of animal husbandry productivity, including loss of fodder	345.44
3	Cost of human resettlement	815.29
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	--
5	Possession value of forest land diverted	1036.33
6	Cost of suffering of outsees	1075.57
7	Habitat Fragmentation cost	1727.21
8	Compensatory afforestation and soil & moisture conservation cost	3658.255
	Total Loss	Rs. 12,112.53 Lakh

Table- Existing guidelines for estimating benefits of forest – diversion in CBA (As per Table C of Guidelines)		
Sl. No.	Parameters	Result (in Lakh Rs.)
1	Increase in productivity attribute to the specific project	18161.67
2	Benefits to economy due to specific project	49002.90
3	No of population benefited due to specific project	21575 nos.
4	Economic benefits due to direct and indirect employment due to project	11485.59
5	Economic benefits due to compensatory afforestation	860.39
	Total	Rs. 79510.55 Lakh

Cost to benefit ratio = 12112.53/79510.55= 1:6.56

Annexure – A
Copy of
MoEFCC circular no.
7-69/2011-FC(Pt.)
Dtd. 01 August, 2017.


Project Officer
Churi Benti UG Project
N.K. Area, CCL

No. 7-69/2011-FC(Pt.)
Government of India
Ministry of Environment, Forest & Climate Change
(Forest Conservation Division)

Indira Paryavaran Bhawan,
Jorbagh Road, Aliganj,
New Delhi-110003.
Dated: 01st August, 2017.

To

The Principal Secretary (Forests)
All States / Union Territories Governments.

Sub: Guidelines for conducting Cost Benefit Analysis for projects involving diversion of forest land under the provisions of the Forest (Conservation) Act, 1980.

Sir,

I am directed to inform that in supersession of all earlier orders / guidelines including that referred to at 2.6 of the Handbook of Forest (Conservation) Act, 1980 for conducting Cost Benefit Analysis of projects involving forest diversion, a revised set of guidelines has been prepared by the Ministry and shall be applicable for all projects involving diversion of forest land under the provisions of the Forest (Conservation) Act, 1980, which are required to be undertaken as per Table A of the new guidelines, from the date of issue of this letter. These guidelines will be applicable for all such projects which are yet to be recommended by the State Government on the date of issue of this guideline.

The guidelines for conducting Cost Benefit Analysis for projects involving forest diversion areas is enclosed herewith for further action.

This issues with the approval of competent authority.

Yours faithfully,

Encl: As above.

(Nisheet Saxena)

Sr. Assistant Inspector General of Forests

Copy to:-

1. Prime Minister's Office (PMO)
2. Secretary, Ministry of Mines, Government of India
3. Secretary, Ministry of Coal, Government of India.
4. Secretary, Ministry of Steel, Government of India
5. Principal Chief Conservator of Forests, all States/UTs.


Project Officer
Churi Benti UG Project
N.K. Area, CCL

7. Nodal Officer, the Forest (Conservation) Act, 1980, all States/UTs.
7. All Regional Offices, Ministry of Environment, Forest and Climate Change (MoEF&/C)
 8. Joint Secretary, In-charge, Impact Assessment Division, MoEF&CC.
 9. PS to the Hon'ble Minister of State (Independent Charge) for Environment, Forest and Climate Change.
 10. Chairman, State Environment Impact Assessment Authority, all States/UTs.
 11. Member-Secretary, State Environment Impact Assessment Authority, all States/UTs.
 12. All Directors/Assistant Inspector General of Forests in Forest Conservation Division, MoEF&CC.
 13. All Advisors/Directors/Dy. Directors in the Impact Assessment Division, MoEF&CC.
 14. Director, Regional Office (Headquarters), MoEF&CC.
 15. Sr. Director (Technical), NIC, MoEF&CC with a request to place a copy of this letter on website of this Ministry.
 16. Sr. PPS to the Secretary, Ministry of Environment, Forest and Climate Change.
 17. Sr. PPS to Director General of Forests and Special Secretary, Ministry of Environment, Forest and Climate Change.
 18. Sr. PPS to Addl. Director General of Forests (Forest Conservation), Ministry of Environment, Forest and Climate Change.
 19. PPS to IGF(FC), MoEF&CC.
 20. Guard File.



(Nisheeth Saxena)

Sr. Assistant Inspector General of Forests


Project Officer
Churi Benti UG Project
N.K. Area, CCL

Cost Benefit Analysis Guidelines for forest land diversion -2017

Guidelines for conducting cost-benefit analysis for projects involving forest diversion

- (i) While considering proposal for diversion of forest land for non-forestry use, it is essential that ecological and environmental losses and eco-economic distress caused to the people who are displaced are weighted against economic and social gains.
- (ii) Whenever the forest land is involved in the development projects, the cost of ecosystem services and fragmentation of habitat of wildlife and economic distress caused to people dependent on forests and the cost of settlement of people dependent on forest should also be added as the cost of forest diversion in addition to the standard project cost which would have been incurred by the user agencies without involvement of forest land while conducting the cost benefit analysis of the project. Similarly the benefits from the project accruing due to diversion of forest land and used in the project should also be accounted for in the benefits component in addition to the standard benefits of the project which would have been accrued without involvement of forest land while conducting the cost benefit analysis and determining the benefit and cost ratio (BC ratio).
- (iii) The cost of compensatory afforestation and its maintenance in future and soil & moisture conservation at present discounted value and future benefits from such compensatory forestation accruing over next 50 years monetised and discounted to the present value should be included as cost and benefits respectively of compensatory afforestation while conducting the cost benefit analysis and determining the benefit and cost ratio (BC ratio).
- (iv) **Table-A** lists the details the types of projects involving forest land for which cost-benefit analysis will be required. **Table-B** lists the parameters according to which the cost aspect of forest land diverted for the development projects will be determined, while **Table-C** lists the parameters for assessing the benefits accruing to the project using of forest land.
- (v) A cost-benefit analysis as above should accompany the proposals sent to the Central Government for forest clearance under the Forest Conservation Act.



Page 1 of 4


Project Officer
Churi Benti UG Project
N.K. Area, CCL

Cost Benefit Analysis 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 upto 20 hectares in plains and upto 5 hectare in hills	Not applicable	These proposals may be considered on a case to case basis and value judgement
2	Proposal for defence installation purposes and oil prospecting (prospecting only)	Not applicable	In view of national Priority accorded to these sectors, the proposals would be critically assessed to help ascertain that the utmost minimum forest land is diverted for non-forest use
3	Habitation, establishment of industrial units, tourist lodges complex and other building construction.	Not applicable	These activities being detrimental to protection and conservation of forest, as a matter of policy, such proposals would be rarely entertained.
4	All other proposals involving forestland more than 20 hectares in plains and more than 5 hectares in hills including roads, transmission lines, minor, medium and major irrigation projects, hydro projects, mining activity, railway lines, location specific installations like micro-wave stations, auto repeater centres, 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 in the overall public interest.

Table-B: Estimation of cost of forest diversion

SN	Parameters	Remarks
1	Ecosystem services losses due to proposed forest diversion	Economic value of loss of eco-system services due to diversion of forests shall be the net present value (NPV) of the forest land being diverted as prescribed by the Central Government (MoEF& CC). <i>Note: In case of National Parks the NPV shall be ten (10) times the normal NPV and in case of Wildlife Sanctuary the NPV shall be five (5) times the normal NPV or otherwise prescribed by the ministry or any other competent authority</i>
2	Loss of animal husbandry productivity, including loss of fodder	To be quantified and expressed in monetary terms or 10% of NPV applicable whichever is maximum
3	Cost of human resettlement	To be quantified and expressed in monetary terms as per approved R&R plan
4	Loss of public facilities and administrative infrastructure (Roads, building, schools, dispensaries, electric lines, railways, etc.) on forest land, which would require forest land if these facilities were diverted due to the project	To be quantified and expressed in monetary terms on actual cost basis at the time of diversion

Page 2 of 4


Project Officer
Churi Benti UG Project
N.K. Area, CCL

Cost Benefit Analysis Guidelines for forest land diversion -2017

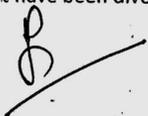
5	possession value of forest land diverted	30% of environmental costs (NPV) due to loss of forests or circle rate of adjoining area in the district should be added as a cost component as possession value of forestland whichever is maximum
6	Cost of suffering to oustees	The social cost of rehabilitation of oustees (in addition to the cost likely to be incurred in providing residence, occupation and social services as per R&R plan) be worked out as 1.5 times of what oustees should have earned in two years had he not been shifted.
8	Habitat Fragmentation Cost	While the relationship between fragmentation and forest goods and services is complex, for the sake of simplicity the cost due to fragmentation has been pegged at 50% of NPV applicable as a thumb rule.
	Compensatory afforestation and soil & moisture conservation cost	The actual cost of compensatory afforestation and soil & moisture conservation and its maintenance in future at present discounted value

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

Sr. No.	Parameters	Remarks
1	Increase in productively attribute to the specific project	To be quantified & expressed in monetary terms avoiding double counting
2	Benefits to economy due to the specific project	The incremental economic benefit in monetary terms due to the activities attributed to the specific project
3	No. of population benefited due to specific project	As per the Detailed project report
4	Economic benefits due to of direct and indirect employment due to the project	As per the Detailed project report.
5	Economic benefits due to Compensatory afforestation	Benefits from such compensatory forestation accruing over next 50 years monetised and discounted to the present value should be included as benefits of compensatory afforestation. *For benefits of CA the guideline of the Ministry for NPV estimation may be consulted.

Note-1: Net Present value (NPV) of environment and ecosystem services loss:

The concept of Net Present value of the forest land diverted is a scientific method of calculating the environmental cost and other losses caused due to diversion of forest land for non-forestry purposes. The NPV represents the net value of various ecosystem services and other environmental services in monetary terms which the forest would have provided if the forest would not have been diverted.



Page 3 of 4


Project Officer
Churi Benti UG Project
N.K. Area, CCL

Cost Benefit Analysis Guidelines for forest land diversion -2017

Note-2: Possession value of forest land diverted:

The forest land diverted for the project such as irrigation, hydropower, railways, roads, wind, and transmission lines and mining etc are unlikely to be returned and remains in possession of the user agencies. Therefore 30% of the net present value (NPV) of forest land diverted or market rate of adjoining area in the district should be added as a cost component as "possession value of forest land" in addition to the environmental costs due to loss of forests.

8


Project Officer
Churi Benti UG Project
N.K. Area, C.C.I.