

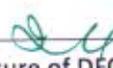
COST BENEFIT ANALYSIS REPORT
OF
BINA KAKARI
AMALGAMATION PROJECT
(Opencast Coal Mine)

NORTHERN COALFIELDS
LIMITED, SINGRAULI (M.P.)

BINA KAKARI AMALGAMATION PROJECT-NCL

PARAMETERS FOR EVALUATION OF BENEFITS, NOTWITHSTANDING LOSS OF FOREST

Sl. No.	Parameters	Description	Calculation	Benefit (in Rs. crores)
1	Cost of coal produced over a period proposed in the project report(26 years)	Total 241.45 Million Tonnes of coal will be produced additionally which is expected to give a profit of:	241.45(MT) x 50.99(Profit Rs./te)	1231.15
2	Benefits to economy	A total of 241.45 Million Tonnes of coal from Bina Kakari Amagamation Project worth Rs. 21996 Crores will be produced at the present basic sale value of coal which will be benefited to economy. The Govt. will be benefited by Royalty & Taxes will shall be Rs. 10338.16 crores as per rate applicable today. Taxes includes DMF-30%, NMET-2%, MPGSTVA-5%, Central Exice Duty 6 %, VAT-4%, SED Rs10/ te, Clean Energy Cess Rs 400/ te, Transit fees Rs, 38/te	Approx.47% of the sale value & Rs.448/teof the basic sale value(Basic sale value as on date is Rs. 911/-	21155.12
3	Benefit in terms of electricity generation	A total of 10 Million tonnes of coal will be produced annually from Bina Kakari Amagamation Project will be used for power generation, taking average consumption of 0.6 kg. of coal per KWH of electricity generation. The total generation from 10 Million Tes. of coal will be 6×10^9 units	26(yrs.)x (6×10^9) (units) x rs. 0.21(Profit per unit)	3276
4	Employment potential	About 549 direct employment in mine & 400 in-direct employment through other services.	$(549+400)$ (manpower)x26(yrs.)x 365(days)x 8(shift hours)x Rs. 33 (per manhour)	237.75
5	Cost of acquisition of facility on non-forest land wherever feasible	There is no scope of diversion of the non-forest area as coal deposited laying under forest area can not be left out of mining		
6	Loss of (a) agriculture & (b) animal husbandry production due to diversion of forest land.	NIL - There is no agriculture or husbandry production in the area.		

 Signature of Forest Ranger, Waidhan वन परिक्षेत्र अधिकारी वन परिक्षेत्र वैदहन	 Signature of SDO Forest, Waidhan उप वन मण्डल वैदहन	 Signature of DEO, Forest Division Singrauli वन मण्डल अधिकारी वन मण्डल सिंगरौली (सा०)
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7	Cost of rehabilitation of the displaced persons as different from compensatory amount given for displacement	There is no population in the forest land.		
8	Cost of supply of free fuel wood to workers residing in or near forest area during the period of constructions.	Not applicable - As free coal is supplied to the workers of company for domestic use.		
9	Total benefits in Crores			25900.02

COST-BENEFIT RATIO			
(A)	Loss of Forest		Rs. Crores. 21.75

(B.1)	Cost benefit ratio in terms of cost of Coal produced	(Benefit / loss of forest)=Rs. 1231.15crores/ Rs.15.80 crores=	56.60	times profit
(B.2)	Cost benefit ratio in terms of royalty/taxes to govt.	(Benefit / loss of forest)=Rs.7682.94crores/ Rs.15.80 crores=	972.57	times profit
(B.3)	Cost benefit ratio in terms of Electricity generation	(Benefit / loss of forest)=Rs.3276crores/ Rs. 15.80 crores=	150.61	times profit
(B.4)	Cost benefit ratio in terms of employment generation	(Benefit / loss of forest)=Rs.237.75 crores/ Rs.15.80 crores=	10.93	times profit
(B.5)	Cost benefit ratio in terms of Total benefits	(Benefit / loss of forest)=Rs.25900.02crores/ Rs.15.80 crores=	1190.71	times profit

		
Signature of Forest Ranger, Waidhan	Signature of SDO Forest, Waidhan	Signature of DFO, Forest Division Singrauli

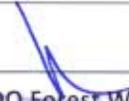
वन मण्डल सिंगरीली
वन परिशेखर वैठन

वन मण्डल सिंगरीली
उप वन मण्डल वैठन

वन मण्डल सिंगरीली (सा०)

FOREST LAND DIVERSION OF BINA KAKARI AMALGAMATION OPENCAST PROJECT-NCL
EVALUATION OF LOSS OF FORESTS
CALCULATION DETAILS

SI No	Details	Description
1	Project	Bina Kakari Amalgamation Project-NCL
		Tehsil: Singrauli
		District: Singrauli
		State: Madhya Pradesh
2	Forest Range	Waidhan
3	Forest Compartment	PF 258, 259, 260, 261, 262, RF
4	Forest Land Needed (in ha)	390.264
5	Quality	V B
6	Total Number of Trees (Annexure - A&B)	213328
7	Average Density of Forest	0.4
8	Estimated Total volume (Cmt) (Annexure-A&B)	11973
(a)	Total Timber Volume (Cmt) (Annexure-A&B)	3610
(b)	Total Fuel Volume (Cmt) (Annexure-A&B)	8363

		
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(A) ITEM-1

Evaluations of loss Timber Fuel Minor Forests Produce Mandays Expectation or Potential Value of Soil for Forest Land

S.no	Particulars	Bina Kakari Amalgamation Project-NCL	
a	Value of Timber @ Rs.18000/-	Rs.	64980000.00
	Value of Fuel @ Rs.2100/-	Rs.	17562300.00
	Total Market Price-(M)	Rs.	82542300.00
	Per Hect value-	Rs.	211503.75
b	<u>Value of Minor Forests produce (Revenue per hectare* x area applied for in Hectare)</u>	Rs.	1406511.46
c	Cost of Coupe working (Mandays per ha x Area x 263)	Rs.	39022862.90
	Total Cost per Hectare	Rs.	99990.94
	Mandays per Hectare (Cost per Hectare/Daily Wages)	Mandays per Ha	380.19
	Reciprocal Value ($1.04P^{N-1}$) where P= rate of interest=12%, N=period of rotation=30Years		2.324
	Upset price of Forest growth (R) ($R=5/6M-E$) where M= Market price and E= Expenditure in Rs	Rs.	36266197.58
d	Expectation of Potential Value of soil (Upset PriceXReciprocal Value)	Rs.	84282643.18
	Revenue Obtained From Intermediate Yield	Rs.	Nil
e	Fire Protection Charges (C) ($C=25*R''*A$) where R''=Fire Protection Expenditure Per Hectare i.e Rs 1052 per Ha; A=Area in 390.264 Ha. in Rs	Rs.	10263943.20
	Total (a+b+c+d+e)	Rs.	217518260.74

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FORM-B: Details of Expenditure				
Particular of Work	Amount of work	Unit	Rate in (Rs.)	Cost (in Rs.)
Felling, Collection upto Extraction path				
Felling of Timber, debarking and other Works	3610.00	Cmt	3156	11393160.00
Felling of fuel Wood	2787.67	Cmt	3156	8797876.00
Recording				
Other Expenditure Material ,E P,W &Ward etc				
A) Timber	3610.00	Cmt	1052	3797720.00
B) Fuel Wood	2787.67	Cmt	1052	2932625.33
Transportation upto market including loading, unloading (Market Bargawan depot avg. lead 48 km)				
A) Timber	3610.00	Cmt	1100	3971000.00
B) Fuel Wood	8363.00	Cmt	750	6272250.00
Total =				37164631.33
5% Extra for labour rate changes:-				1858231.57
Total Expenditure (E)=				39022862.90
Expenditure per Hectare=				99990.94

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UPSET PRICE FORM 'C'		
Upset Price = 5/6 M-E M=Market Price E= Expenditure		
(A) ITEM-1 Upset price in Rs.	Rs	25150447.58
(B) ITEM-2 Loss Value of Fodder (Grass)		
(i) Estimate quantity of grass in metric tones based on the consideration that on closure, an area is capable of yielding an average 2 to 4 mt of grass per Ha	Annual Production x Area Applied	
	=	1171
Loss of loss of fodder Average in local market @ Rs 1080 per mt	Rs	1264455.36
(C) ITEM-3 Cost of Human Re-Settlement		
The forest land is not to be used for the Rehabilitation of displaced persons. Hence the cost of human settlement is Nil. There is no habitation therefore on settlement will be applied.		
(D) ITEM-4 Loss of Public Facilities and Administrative Infrastructure		
There is no loss of forest road, nakas and other construction in the applied area.		
(E) ITEM-5 Valuation of Environmental Losses		
Environmental loss over a period of 50 year	Standard loss per Ha.in fully stocked forest X Area applied for X Avg forest density	
	Rs.	197848237.4
Environmental loss per year	Rs.	3956964.749
(F) ITEM-6 Suffering to Outstees		
Suffering to Outstees	Nil	

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CALCULATION OF COMPENSATION FOR THE FOREST LAND
Amount of compensation has been decided as per instructions contained in the Govt. of MP
Forest Dept.

COMPENSATION OF LAND INCLUDES

Area of Forest Land in Ha.	390.264
1. Expectation as Potential value of soil i.e.	
Co	R/ (1.04 P ^N -1)
R	Upset price of Standing growth (Rs)
P	Rate of Interest =12%
N	Period of Rotation =30 years
Reciprocal value of (1.04 P ^N -1)	2.324
Potential value of Soil	Rs 84,282,643

2. Upset price of Standing Growth i.e. includes value of Timber and fuelwood

Upset Price	Rs. 36,266,198
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3. Potential Revenue from Minor forest Product

C	25*R*A
Where R	Revenue per Ha./Acre from MFP (Rs. 3.00 per Acre)
Where A	Area of 390.264 hectare
Hence C	Rs. 72,296.41

4. Fire Protection Charges

C	25 *R*A
Where R	Fire Protection charges per Ha/ Acre (Rs.20 /-per Acre per Year)
A	Area of 390.264 hectare
Hence C	Rs 481,976.04

5.Rehabilitation Charges i.e. Rs 10,000/ ha as per Govt. of MP forest

	Rs	3,902,640.00
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TOTAL COMPENSATION

	Rs.	125,005,753
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Waidhan Range								
BINA KAKARI AMAGAMATION PROJECT								
(Site Quality V B)								
Compartment No:PF 258, 259, 260, 261, 262 Number of Plots 90=3.54 Hact								
Revenue forest 8, 9, 12, 17, 390, 414								
Sr No:	Species	Girth Class	No of trees	Timber Factor	Timber Quantity in cmt	Fuel Factor	Fuel Quantity in cmt	Total Quantity in cmt
1	Sound	21-30	0	0.010	0.00	0.0025	0.00	0.00
2		31-40	0	0.030	0.00	0.0075	0.00	0.00
3		41-60	0	0.050	0.00	0.0125	0.00	0.00
4		61-80	0	0.120	0.00	0.0300	0.00	0.00
5		81-100	0	0.200	0.00	0.0600	0.00	0.00
6		101-120	0	0.300	0.00	0.0750	0.00	0.00
7		121-150	0	0.410	0.00	0.1025	0.00	0.00
8		151-180	0	0.580	0.00	0.1450	0.00	0.00
9		180+	0	0.800	0.00	0.2000	0.00	0.00
Sub Total			0		0.00		0.00	0.00
1	Semi Sound	21-30	99	0.010	0.99	0.0100	0.99	1.98
2		31-40	140	0.020	2.8	0.0300	4.20	7.00
3		41-60	143	0.040	5.72	0.0500	7.15	12.87
4		61-80	29	0.090	2.61	0.0600	1.74	4.35
5		81-100	3	0.150	0.45	0.1000	0.30	0.75
6		101-120	0	0.230	0	0.1500	0.00	0.00
7		121-150	0	0.310	0	0.2050	0.00	0.00
8		151-180	0	0.440	0	0.2900	0.00	0.00
9		180+	1	0.600	0.6	0.4000	0.40	1.00
Sub Total			415		13.17		14.78	27.95

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1	Un Sound	21-30	246	0	0	0.0100	2.46	2.46
2		31-40	418	0.01	4.18	0.0300	12.54	16.72
3		41-60	594	0.01	5.94	0.0500	29.70	35.64
4		61-80	99	0.03	2.97	0.0600	5.94	8.91
5		81-100	24	0.05	1.2	0.1000	2.40	3.60
6		101-120	4	0.08	0.32	0.1500	0.60	0.92
7		121-150	3	0.1	0.3	0.2050	0.62	0.92
8		151-180	0	0.15	0	0.2900	0.00	0.00
9		180+	2	0.2	0.4	0.4000	0.80	1.20
Sub Total			1390		15.31		55.06	70.37
Total			1805		28.48		69.84	98.32
Total from 390.264 Ha (cmt)			213328		3610		8363	11973

		
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