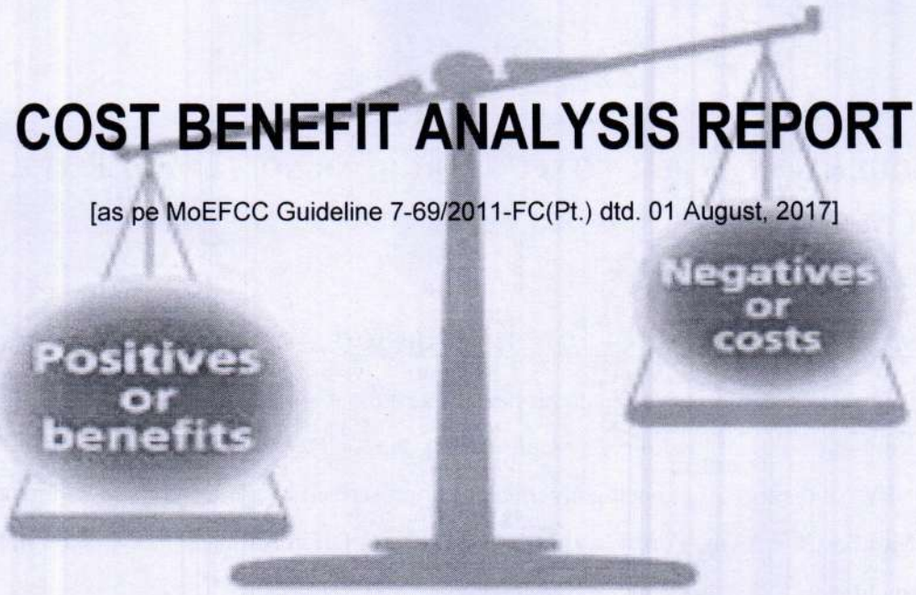
COST BENEFIT ANALYSIS REPORT

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



KOTRE BASANTPUR PACHMO OCP
(633.19 Ha Forest Land)

Kotre Basantpur Pachmo Open Cast Project

Hazaribagh Area

Central Coalfields Limited

(*A Miniratna Company*)

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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

   Therefore Ecosystem Service Lossess due to proposed diversion in Rs. lakhs= 3963.76

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

As per guidelines issued by MoEFCC, Loss of animal husbandry productivity, including loss of fodder is to be quantified and expressed in monetary terms or 10% of NPV applicable whichever is maximum.

Assuming no. of husbandry as 4 per family and factor of husbandry as 60 then,

No. of Project affected person in **Rs. lakhs**	Loss of animal husbandry etc as per calculation in Rs. lakhs	Loss of animal husbandry etc as per NPV in Rs. lakhs
330	289.08	396.37

Since 10% NPV is more than calculated value.

Thus as per guideline Loss of animal husbandry productivity, including loss of fodder in Rs. lakhs = **Rs 396.37 lakhs**

3. Cost of human resettlement

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 has 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. upto 60 years of age or life of project, whichever is earlier.

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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 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 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.

Cost of human resettlement as per R&R Plan (in Rs. Lakhs)=**Rs.** 779.12 Lakhs

4. Loss of public facilities and administrative infrastructure:

As per MoEF guidelines the loss of public facilities and administrative infrastructure is to be expressed in monetary term which would require forest land if these facilities were diverted due to the project. The facilities may include roads, buildings, schools, dispensaries, electric line, railways, etc. on forest land.

Loss of public facilities and administrative infrastructure = Rs0

5. Possession value of forest land diverted:

As per MoEFCC guideline 30% of environmental cost (NPV) due to loss of forest or circle rate of adjoining area in the district should be added as a cost component as possession value of forest land whichever is maximum. The Circle rate and 30% NPV calculated are as follows:

Possession value of Forest Land diverted as per Circle Rate in Rs. lakhs	Possession value of Forest Land diverted as per NPV in Rs. lakhs
8231.55	1189.13

The Cost of land as per circle rate is more than the 30 % NPV Value as such the

Possession value of forest land diverted in Rs. lakhs=8231.55

6. Cost of suffering of oustees As per MoEFCC guideline the social cost of rehabilittion 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 has he not been shifted. Accordingly, Cost of suffering of oustees in Rs. Lakhs =7175.52
7. Habitat Fragmentation cost As per MoEFCC guideline while the relationship between fragmentation and forest goods and services is complex, for the sake of simplicity the cost due to

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fragmentation has been pegged at 50% of NPV applicable as a thumb rule. Accordingly, Habitat Fragmentation cost in Rs. lakhs =1981.88

8. Compensatory afforestation and soil & moisture conservation cost As per MoEFCC guideline the actual cost of compensatory afforestation and soil & moisture conservation and its maintenance in future at present discounted value. Accordingly, Compensatory afforestation and soil & moisture conservation cost in Rs. lakhs = 2556.78

Thus as per MoEFCC guideline the estimated cost for the diversion of forest land is the sum total of Ecosystem services losses due to proposed forest diversion, Loss of animal husbandry productivity, including loss of fodder, Cost of human resettlement, 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, Possession value of forest land diverted, Cost of suffering of oustees, Habitat Fragmentation cost and Compensatory afforestation and soil & moisture conservation cost. Accordingly,

Total estimated Cost due to diversion of forest in Rs. lakhs= 25085.01

II. Estimation of Benefits of forest diversion

1. Increase in productively attribute to the specific project

These are to be quantified & expressed in monetary terms avoiding double counting. The productivity part is included in the other heads to follow and as such not included in estimating the benefits, though the productivity has been calculatedand tabulated as under :

Increase in productively attribute to the specific project in Rs. Lakhs = 414545.02

2. **Benefits to economy due to specific project :**

As per MoEFCC guidelines the these benifits are incremental economic benefit in monetary terms due to activities attributed to specific projects. These benefits may include benefits due to expenditure made on account of CSR activities as per company's Act 2012, Royalty to the exchequer, contribution to District Mining Fund (DMF), contribution to National Mineral fund, amount collected as Coal cess, Stowing cess where ever applicable and any other benefits. Accordingly, Benefits to economy due to specific project = 433411.48

3. **No. of population benefitted due to specific project**

As per MoEFCC guidelines no. of population benefitted due to specific project is to be worked out on the basis of project report. As such no. of population benefitted for this project has been worked out as under:

No. of population benefitted due to specific project = 39780

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

As per MoEFCC guidelines economic benefits due to direct and indirect employment due to project is to be worked out on the basis of project report. As such no. of economic benefits is as under:

Economic benefits due to direct employment due to project in Rs. Lakhs	Economic benefits due to indirect employment due to project in Rs. Lakhs
44379.48	3169.14

Economic benefits due to direct and indirect employment due to project in Rs. Lakhs = 47548.62

5. Economic benefits due to Compensatory afforestation:

As per MoEFCC guidelines these benefits are the benefits from such compensatory afforestation 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 guidelines of Ministry for NPV estimation may be consulted accordingly these benefits have been calculated on two heads namely benefits to CA & Benefits due to carbon storage by the afforestation done on CA land. The results are as under:

Economic benefits due to Compensatory afforestation only in Rs. Lakhs	Economic benefits due to Carbon Storage due to CA in Rs. Lakhs
1793.19	1766.03

From the above figure the total Economic benefits due to Compensatory afforestation can be estimated as sum of benefits due to CA & increase in carbon storage for the CA land. Thus the benefits are as follows:

Economic benefits due to Compensatory afforestation in Rs. Lakhs = 3559.22

Thus as per MoEFCC guideline the estimated Benefits for the diversion of forest land is the sum total of benefits to economy due to specific project ,Economic benefits due to of direct and indirect employment due to project and Economic benefits due to compensatory afforestation. Accordingly, Estimated benefits due to project in Rs. Lakhs= 484519.33

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These estimated Costs & estimated benefits are tabulated at table 1 &table 2 respectively.

Table 1 : Estimated Cost in Rs. Lakhs

Area	Name of Project	Ecosystem Service Lossess due to proposed diversion	Loss of Animal Husbandry Productivity, including loss of fodder	Cost of Human Settlement	Loss of Public facilities and administrative infrastructure	Possession Value	Cost of suffering outstees	Habitat Fragmentation cost	Compensatory afforestation and Soil & Moisture Conservation Cost
Hazaribagh Area	Kotre Basantpur Pachmo OCP (633.19 Ha)	3963.76	396.37	779.12	0	8231.55	7175.52	1981.88	2556.78

Table 2 : Estimated Benefits in Rs. Lakhs

Area	Name of Project	Increase in Productivity Attribute to the specific Project	Benefits to Eco due to Specific Projects	No. of Population benefitted due to specific Projects	Economic benefits due to direct and Indirect employment due to Project	Economic benefits due to compensatory afforestation
Hazaribagh Area	Kotre Basantpur Pachmo OCP (633.19 Ha)	414545.02	433411.48	39780	47548.62	3559.22

The Cost to benefit ratio is the ratio of estimated cost (table 1) and estimated benefits (Table 2). The cost to benefit ratio for this forest proposal comes out as under:

Total estimated Cost due to diversion of forest in Rs. lakhs	Estimated benefits due to project in Rs. Lakhs	Cost to benefit Ratio
25085.01	484519.33	19.31

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Annexure – A

Copy of

MoEFCC circular no.

7-69/2011-FC(Pt.)

Dtd. 01 August, 2017.

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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.

(Nisheeth 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.

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6. 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.

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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.

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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). ***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*
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

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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 bas 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.

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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.

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