

ANNEXURE - I. GUIDELINES FOR CONDUCTING COST BENEFIT ANALYSIS FOR PROJECT INVOLVING DIVERSION OF FOREST

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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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

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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.

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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). 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

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.

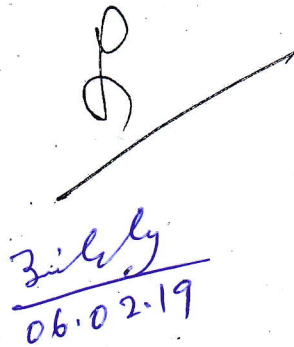
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Cost Benefit Analysis Guidelines for forest land diversion -2017

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.

A handwritten signature in blue ink, followed by a horizontal line and the date "06.02.19" written below it.

ANNEXURE - II - LETTER FROM PCCF, JHARKHAND, RANCHI

कार्यालय प्रधान मुख्य वन संरक्षक, झारखण्ड, रांची ।

सेवा में

पत्रांक 3068 रांची-2 दिनांक 25 अगस्त, 2008

सभी क्षेत्रीय मुख्य वन संरक्षक
सभी प्रादेशिक वन संरक्षक
सभी प्रादेशिक वन प्रमण्डल पदाधिकारी

विषय : वनभूमि के अपयोजन के काम में एन.पी.वी की वसूली के संबंध में
माननीय सर्वोच्च न्यायालय द्वारा पारित आदेश दिनांक 28.03.2008.
प्रसंग : इस कार्यालय का पत्रांक 2203 दिनांक 07.06.2008
महाशय,

प्रासंगिक पत्र सभी क्षेत्रीय मुख्य वन संरक्षकों को संबोधित था और उनसे अनुरोध किया गया था कि माननीय न्यायालय द्वारा पारित आदेश सभी / प्रादेशिक वन संरक्षक / प्रादेशिक वन प्रमण्डल को तामिला करा दिया जाय । माननीय सर्वोच्च न्यायालय द्वारा निर्धारित दर पर ही अब NPV की वसूली की जानी है। लेकिन हाल में कुछ मामले दृष्टिगोचर हुए हैं, जिसमें NPV मद में मांगी गयी माननीय न्यायालय के आदेश के अनुरूप नहीं है । माननीय न्यायालय द्वारा पारित आदेश निम्नवत् है :-

माननीय न्यायालय द्वारा वनों का वर्गीकरण छः विभिन्न इको वर्ग में किया गया है। राज्य के वन मुख्यतः Tropical Dry deciduous Forest की श्रेणी में आते हैं । कुछ विशिष्ट मामलों में वन का कोई Block या F.S. Tropical Moist Deciduous Forest की श्रेणी में भी है (जैसे सारण्डा, कोल्हान प्रमण्डल के कुछ वन), जिनका उल्लेख वन कार्य नियोजना में किया गया है । इन्हें क्रमशः इको वर्ग-III एवं I में रखा गया है । इन वर्गों के लिए NPV की वसूली के लिये निम्न दर अनुमोदित है :-

Rate Rs/ha.			
ECo Class	Very dense (More than 0.7)	Dense (between 0.4 to 0.7)	Open (between 0.2 to 0.4)
III	8,87,000/-	8,03,000/-	6,26,000/-
I	10,43,000/-	9,39,000/-	7,30,000/-

साथ ही जंगल झाड़ भूमि, जिसपर सामान्यतः वृक्ष नहीं होते हैं के लिये उसी दर पर NPV की मांग करना उचित नहीं होगा जिसे दर पर अधिसूचित वन हेतु राशि की मांग की जाती है, बल्कि जंगल-झाड़ पर स्थित वृक्षों के घनत्व के अनुरूप ही NPV की गणना की जानी चाहिये ।

कार्यालय प्रधान मुख्य वन संरक्षक
झारखण्ड
दिनांक 29.8.08

विश्वासभाजन,
1803 प्रधान मुख्य वन संरक्षक,
झारखण्ड, रांची ।
दिनांक 29-8-2008
मिलिट्री वन संरक्षक, झारखण्ड, रांची /
राज्यीय वन संरक्षक, झारखण्ड, रांची /
राज्यीय वन संरक्षक, झारखण्ड, रांची /
राज्यीय वन संरक्षक, झारखण्ड, रांची /

0/C

राज्यीय मुख्य वन संरक्षक
झारखण्ड

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ANNEXURE - III STATEMENT SHOWING R&R COST AS PER JHARKHAND R&R POLICY

Appendix : A-8.1

FEASIBILITY REPORT FOR PAKRI BARWADIH (NW) (OPENCAST MINING) (DEPARTMENTAL) STATEMENT SHOWING R&R COST AS PER JHARKHAND R&R POLICY

All values in ₹ Lakh

Sl. No.	Criteria	Provision as per JRRP 2008 and RFCTLARR 2013	No. of PAFs	Total amount
1	Compensation for land values	Compensation for land values will be decided as per mutual agreement with villagers	791	
2	Shifting costs (JRRP 2008 Ch 7.9)	One-time financial assistance of Rs. 15000/- per PAF, for shifting of the family, building materials, belongings and cattle (As per current CPI Rs. 28,950/ per PAF)	204	59.06
3	Cattle shed (JRRP 2008 Ch 7.8)	For construction of cattle shed each affected family shall get financial assistance of Rs. 35000/- per PAF, (As per current CPI Rs. 67,550/ per PAF)	613	414.08
4	Land for house construction (JRRP 2008, Ch 7.2)	10 decimal land/PAF	204	115.55
5. (i)	House construction costs (JRRP Ch 7.2)	1000 sq. ft. carpet area within 10 decimal area, single storied house with toilet & kitchen JRRP 2008 (Clause 7.2 & 7.3 of JRRP)	204	3616.82
(ii)	House construction costs (PAFs who do not want any constructed house in the resettlement area but desire to be relocated elsewhere) (JRRP 2008 Ch 7.2)	One time financial assistance of Rs. 3,00,000/PAF (As per current CPI Rs. 5,79,000/ per PAF)	204	1181.16
6	Wage compensation/ PAF (JRRP Ch 7.14)	If employment is provided from the date of displacement then 300 man days will be provided for one year (@ Rs.168/day as on 01.04.2016) OR If employment not provided within one year, they will be given an amount equal to 600 days of agriculture wage. (@ Rs.168/day as on 01.04.2016)	791	398.66
7	Wage compensation for Agricultural labour and artisans	Minimum wages for 600 days @ Rs. 168/day as on 01.04.2016	67	67.54
8	Annuity for PAF (In lieu of employment) (JRRP 2008, Ch 7.12)	The amount of Rs. 12,000/- at 2008 price per annum per acre will increase by Rs. 500 every two years. Provided further that the maximum amount from the annuity policy will be limited to Rs. 10,000/- per month per affected family.		
9	Shop (JRRP Ch 7.10)	NTPC Ltd. will provide constructed shops to the eligible PAFs as mentioned in JRRP 2008, Cl. 7.10 (As per current CPI Rs. 96,500/ per PAF)	102	98.43
GRAND TOTAL				5951.30

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ANNEXURE - IV - PRICE OF "G-8" GRADE COAL OF NORTH-KARANPURA COALFIELD OF CCL
Min Mec Consultancy Pvt. Ltd.

with effect from 09-01-2018. The rate of royalty on coal price have been taken as 14% of sale price of coal in all states other than West Bengal (Refer notification No. GSR 349(E) dated 10-05-2012).

- * The base price of 'G8' grade coal of North Karanpura Coalfield of CCL is Rs.1465 per tonne ROM coal.
- * As per the CIL notification No S&M : GM(F) pricing 1907 dated 26.02.2011, for the coal sizing upto 50 mm through manual facilities or mechanical means, a charge at the rate of Rs. 110.00 per tonne will be levied in addition to the price applicable for ROM coal.
- * Sale price/Transfer price for financial analysis has been considered as Rs. 1575.0 (1465+110) per tonne (without royalty) for grade "G8".

Cash Flow Statement and Internal Rate of Return (IRR)

Year-wise cash flow statement is given in Appendix D. I.R.R has been calculated based on the cash flow. In the cash flow statement, interest on working capital has been considered. The IRR of the project estimated at 100%, 90% and 85% capacity utilization are summarized below.

Level of production	IRR
At 100% production level	11.14%
At 90% production level	8.14%
A 85% production level	6.54%

Sales price to achieve 12% IRR works out to be 1614.63 Rs/t.

1.5 Sensitivity Analysis

The Following parameters have been considered for assessing their impact on the profitability and I.R.R.

- Capital investment
- Operating cost
- Capacity utilization
- Selling price of coal

A summarized data of result of sensitivity analysis is given in **Appendix E**. It may be seen that selling price is the most sensitive and capital cost is the least sensitive amongst the parameters.

Completion cost

Due to the reason that total mine life of PB mine is 52 years and this report represents only 28 years of Pakri Barwadih (NW) Quarry, the completion cost has not been covered in this report.

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