

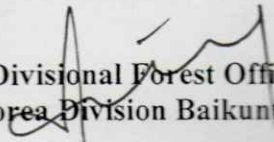
**CATEGORY OF PROPOSALS FOR WHICH COST BENEFIT
ANALYSIS IS APPLICABLE**

Annexure - VI (a)

Cost benefit Analysis in respect of Forest land needed by, PWD Road , State Highway for Widening & Upgradation of Amarapur to Chirmiri in Korea Forest Division of District - Korea (Chhattishgarh)

S.No.	Nature of Proposal	Applicable/ Not Applicable	Remark
1	2	3	4
01.	All category of proposal involving Forest Land less than 5 Hact. in plain and less than 2 Hact. in hills.	Applicable	10.469 Hact. Forest Land
02.	Proposal for defense installation purposes and oil prospecting. (Prospecting only)	Not Applicable	-----
03.	Habilitation Establishment of industrial units. Tourist Complex and other building Construction.	-----	-----
04.	All other proposals involving Forest land more than 5 Hact. in plains and more than 2 Hect. in hills including roads, transmission lines, minor, medium and major irrigation projects. Mining activity railway lines location specific installation like micro wave station auto repeater-centers T.V. towers etc.	Applicable	Project for Widening & Upgradation Amarapur to Chirmiri Road, District - Korea, Chhattishgarh
05.	Environmental losses (Soil erosion) affects on hydrological cycles wild life habitat micro-climate upsetting of ecological balance. A- Environmental Loss B- Value of Forest Growth of the Area 10.469 Hect.	Applicable	Average crop quality of the area is mixed IV B having average density 0.5 std. loss value of fully stocked Forest density 0.5 is Rs. 126.74 Lakhs per Hect. loss value of Revenue Forest Land 10.469 Hect. needed for Widening & Upgradation of Amarapur to Chirmiri Road, will be as under loss value Rs. - 126.74 X 10.469 X 0.5 Rs :- 663.42 Lakhs Rs :- 3.05 Lakhs


Sub Divisional Forest Officer
South Baikunthpur


Divisional Forest Officer,
Korea Division Baikunthpur

APPENDIX

EVALUATION OF LOSS OF FORESTS
(W.R.T. Annexure VI (b) of cost benefit analysis proforma)

CALCULATION DETAILS

Project	:	Widening & Upgradation of NH 43
Forest Land needed	:	Forest land - 10.352 & Revenue Forest 0.117 ha. = 10.469 ha.
Avg. quality of the crop	:	mixed - IV (b)
Avg. density of Forest	:	Below 0.5
Total nos. of trees as per enumeration List	:	562 Nos.
Estimated total volume	:	129.025 Cum.
Estimated timber volume	:	61.325 Cum.
Estimated fuel volume	:	67.700 Cum.

**A. Item No.- 1 EVALUATION OF LOSS OF TIMBER FUEL,
MINOR FOREST PRODUCE AND EXPECTATION
VALUE OF SOIL**

(a) - Value of Timber 61.325 cum	:	505717.00
at market rate as calculated		
(b) - Value of fuel 67.700 cmt.	:	168427.00
at market rate as calculated		
(c) - Value of minor Forest	:	103905.00
Total - Annual revenue from m.f.p. in the division		

(d) - VALUE OF MAN DAYS :

01 -	Cost of Coupes working 10.469 Hect.)	129.025 Cmt.
	as calculated in the upset price Rs. -	304553.00
	Therefore per hect. Rs. -	29090.93
	Man days	= Cost per hecter/ Daily wages
		= 29090.93/305
		= 95.38

02 -	Cost of M.F.P. Collection per Hectare cost of M.F.P.	
	collection is considered about 60% Grass Revenue	
	Per Hect.	= 397X60/100
		= 238.20 Rs/Hact.
	Therefor Man days	= Cost per hecter/ Daily wages
		= 238.20/305
		= 0.781 Man days.
	Total mandays	= 95.38+0.781 = 96.161 or 96
	Mandays XArea xRate	= 96 X 10.469 X 305

= 306532.00

(E - i) EXPECTATION OR POTENTIAL VALUE OF SOIL

$$Co = \left(\frac{R}{1.0 p^{n-1}} \right)$$

Where 'R' Rental in upset price of Forest growth of the Area (285889.00)
 'P' Rate of Interest - 4%
 'N' Relation - 20 Year.

$$\text{Reciprocal value of } \left\{ \frac{1}{1.0 p^{n-1}} \right\} = 0.8395$$

$$\begin{aligned} \text{Therefore co} &= \text{Upset price X Reciprocal value} \\ &= 303453 \times 0.8395 \\ &= 254748.79 \text{ Say} \qquad \qquad \qquad = 254749.00 \end{aligned}$$

(E - ii) RECENUE REALISABLE FROM INTERMEDIATE YIELD

$$Co = \left\{ \frac{T}{1.0 p^{n-1} - 1.0 p^n} \right\}$$

Where 'T' Revenue obtainable from thinning Rs. 29090.93 per Hect.
 'P' Rate of Interest - 4%
 'N' Year of thinning from thinning (10th)

$$\text{Reciprocal value of } \left\{ \frac{T}{1.0 p^{n-1} - 1.0 p^n} \right\} = \frac{1}{(1.04)^{30} - (1.04)^{20}} = 0.9502$$

$$\begin{aligned} C &= \text{Revenue per ha. X Reciprocal X Area for transfer value} \\ \text{Therefore} &= 29090.93 \times 0.9502 \times 10.469 \\ &= 289386.20 \text{ Say} \qquad \qquad \qquad = 289386.00 \end{aligned}$$

(E - iii) FIRE PROTECTION CHARGE

$$C = 25 \times R \times L$$

Where 'R' Fire protection expenditure per ha. (600.00)
 'L' 12.40 Km.

$$C = 25 \times 1500 \times 12.40 = 465000.00$$

Total Item No. - 1

$$(a+b+c+d+e) = 505717+168427+103905+306532+1009135 = \underline{2093716.00}$$

B :- Item No. - 2 :

(i) Estimated quantity of grass (In metric tones) based on the consideration that on Closure an area in capable of yielding on an average 1 metric tone of grass per ha.

$$10.469 \times 1.0 = 10.469 \text{ M.t.}$$

(ii) Loss of value of fodder :

(Average Local market rate is taken as)

Rs. 3000.00 per M.t.

$$10.4690 \text{ M.t.} \times \text{Rs. } 3000 = 31407.00$$

C :- Item No. - 3 : Loss of human resettlement

The Revenue Forest land needed is neither to used for the rehabilitation of the displaced due to the project.

Hence cost of Human re-settlement :- Nill

(i) Estimated quantity of grass (In metric tones) based on the consideration that on Closure an area in capable of yielding on an average 1 metric tone of grass per ha.

D :- Item No. - 4 : Loss of Public facilities administrative infrastructure :- Nill

E :- Item No. - 5 : Valuation of environmental losses :

Environmental losses - Standard loss X Area applied actual density

126.74 Lakhs in fully stocked density (0.5) Standard loss

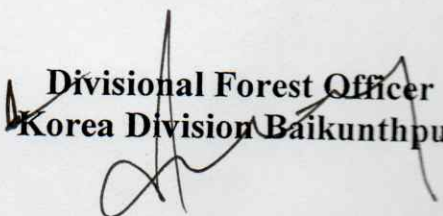
value X Area applied X Density

$$= 126.74 \times 10.469 \times 0.5 = 663.42 \text{ Lakhs}$$

F :- Item No. - 6 : Suffering to Oustees :- Nill

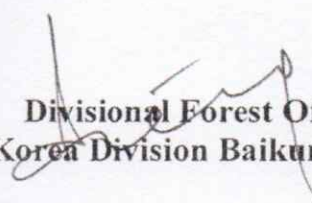
GRANT TOTAL:- = 684.67 Lakhs

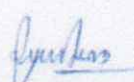

**Sub Divisional Forest Officer
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Widening & Upgradation of Amarpur to Chirmiri Road BENIFIT COST RATIO

S.No.	Cost of Parameter	For One Year	For Fifty Year
1	Loss of forest (for 50 years) (5.06+1.68+663.42)/50 +1.04+3.06+2.55+2.89+4.65 =27.59	27.59	1379.50
Total Loss of Forest			1379.50
2	Benefit of project by Fuel saving due to Widening and Upgradation of existing 93.67 Lakhs	93.67	4683.86
3	Employment generation of the Project constriction period approximate 50 labor/day average Rs. 500/- per manday 500rs.x50labourx730 days		182.50
4	Environmental benifit due to compensatory afforestation. 1/4 X rate of loss 1/4 X 10.469 X 126.74 X 0.5		165.85
Total Benefit of Project			5032.21
5	Cost Benefit Ratio (Co 2+3+4/ Co 1)		1: 3.64


Divisional Forest Officer
Korea Division Baikunthpur


Executive Engineer
PWD, Division Manendragarh


S.D.O (F)
South Baikunthpur

**Widening & Upgradation of Amarpur to Chirmiri Road
BENEFIT COST RATIO**

Sl. No.	Particulars	Data
1	Name of Project	Widening & Upgradation Amarpur to Chirmiri Road
2	District	Korea
3	Block	Baikunthpur
4	Total Cost	2178.70 Lakhs

**Fuel Consumption of Vehicle in present condition of Amarpur to Chirmiri Road
(Total distance 12.40 Km)**

Sl. No.	Particulars	Vehicle passing per day	Average (Km per litter)	Fuel Consumption in litters	Rate per litter	Amount
1	Commercial vehicle	223	8	45	64	2880
2	Non Commercial vehicle	1085	20	325.50	70	22785
				Total Expenditure per day		25665
				Total Expenditure per year		9367725
				Say		93.67 lakh


Executive Engineer
 P.W.D. Dn. Korea
 Manendragarh (C.C.)