Diversion of 7.2834 hac. of Forest Land for Rehabilitation and Upgradation to Four Lane Configuration and Strengthening of Sihuni to Rajol (Package IIA) from KM 51.00 to KM 72.00 (Design Length of 18.450 km) of NH 20 (New NH 154) of Pathankot Mandi Section in the State of Himachal Pradesh

FILE NO. : **FP/HP/Road/152261/2022**

DATE OF PROPOSAL : **15.07.2022**

CHECK LIST SERIAL NUMBER - 33

COST – BENEFIT ANALYSIS

TABLE – A – Cases under which a Cost Benefit Analysis for forest diversion is required

No.	Nature of Proposal	Applicable / Not Applicable	Remarks
1	All categories of proposals involving forest land upto 20 ha.in plains and upto 5 ha in hills	N/A	N/A
2	Proposal for defence installations purposes and oil prospecting (Prospecting only)	N/A	N/A
3	Habitation, establishment of Industrial units, tourists lodges complex and other building constructions	N/A	N/A
4	All other proposals involving forest land more than 20 ha in plains and more than 5 ha in hills including roads, transmission lines, minor, medium and major projects, hydro projects, mining activities, railway lines location specific installations like microwave stations, auto repeater centres, TV towers etc.	Applicable	Yes

TABLE - B – Estimation of Cost of forest diversion

Sr. No.	Parameter	Remarks
1.	Ecosystem services losses due to proposed forest diversion	88.18 Lakhs (as per NPV bill).
2.	Loss of animal husbandry, productivity, including loss of fodder	Rs. 8.82 Lakhs
3.	Cost of Human resettlement	Nil
4.	Loss of public facilities and administrative infrastructures (roads, buildings, schools, dispensaries, Electric Lines, railways, etc.) on forest land, which would require forest land, If these facilities were diverted due to project.	No Loss of Public Infrastructure like roads, hospitals, etc.
5.	Possession value of forest land diverted	Rs. 26.45 Lakhs (30% of NPV)
6.	Cost of suffering to oustees	Not Applicable
7.	Habitat fragmentation cost	Rs. 44.09 Lakhs (50% of NPV)
8.	Compensatory Afforestation and soil & moisture conservation cost.	Rs. 32.40 Lakhs (As per CA scheme)

TABLE – C – Existing Guidelines for estimating benefits of forest diversion in Cost Benefit Analysis

Sr. No.	Parameter	Remarks
1.	Increase in productivity attribute to the specific project	**Nil**
2.	Benefits to economy due to the specific project	**Nil**
3.	Number of population benefited due to specific project	**Rs. 2475 lakh**
4.	Economic benefits due to direct and indirect employment due to specific project.	**Rs. 674.00 Lakh**
5.	Economic benefits due to Compensatory Afforestation	**Rs. 192.26 Lakh**

TABLE - B – Estimation of cost of forest diversion

Parameter No. 2 Loss of animal husbandry productivity i.e. loss of fodder

Analysis

Approximate 1 ha area, if deforested, the cattle in this area will be deprived of the grazing land and it will create pressure on the adjoining area. The loss towards the grazing cost will be approximate Rs. 350/- per year for about 4 cattle only for area measuring 7.2834 ha in forest land.

Thus loss due to grazing land Rs. 350 X 4 X 7.2834 ha = Rs. 0.10197 Lakh / year or Rs. 0.10 Lakh / year.

The NPV of the forest land being diverted is Rs. 88,17,679/- for 99 years and the NPV of the forest land being diverted for 1 year is Rs. 89,067/-. Hence 10% of the NPV value is Rs. 8,81,780/-.

As per the Guideline for conducting Cost Benefit Analysis in format prescribed by MoEF&CC vide letter dated 01.08.2017, 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.

Parameter No. 5 – Possession value of forest land diverted

The NPV of the forest land being diverted is Rs. 88,17,679/- for 99 years. Hence possession value of forest land diverted is 30 % of the NPV value which amounts to Rs. 26,45,304/-.

Parameter No. 7 – Habitat Fragmentation cost

The NPV of the forest land being diverted is Rs. 88,17,679/- for 99 years. Hence Habitat Fragmentation Cost of forest land diverted is 50 % of the NPV value which amounts to Rs. 44,08,840/-.

TABLE – C – Existing Guidelines for estimating benefits of forest diversion in Cost Benefit Analysis

Sr. No.	Parameters 1 (to be quantified in productivity attribute to the specific project)	
1.	Increase in productivity attribute to the specific project	The proposed project for which diversion of forest land sought is for the Up-gradation of National Highway from Sihuni to Rajol on pathankot Mandi Section in District Kangra The proposed project shall provide better transport facility to the people of the state and people visiting Himachal Pradesh. The said Proposal is strategically very important route from defence point of view as it connects International Boundaries.
2.	Benefits to economy due to the specific project	Socio-economic benefits due to project : • Provide better Transport facility in the state of Himachal Pradesh. • Provide employment opportunity to the local people during the construction activities. • Overall enhancement of socio economic conditions of the area. • Provide better transport for the movement of army during crucial time of crisis.
3	No. of population benefited due to specific project	Total population of 25000 persons residing in the surrounded area shall be benefited with the development and up-gradation of this Road.
4	Economic benefits to direct and indirect employment due to the project	Direct Employment to 100-125 persons for 2 year during construction period (accordingly approx 59750 man days) and substantial indirect employment as a result of development of infrastructure and will also provide direct benefit to small scale industrial units in the area. Approx 50 persons will be engaged permanently as staff for maintenance of this highway.
5	Economic benefits due to Compensatory Afforestation	Compensatory Afforestation in lieu of forest land proposed shall be done in double the area proposed i.e. 15.17 ha. The cost of Compensatory Afforestation Rs. 32,39,735/- shall be deposited to carry the plantation activities. However plantation shall be done by the department along the road side. The Compensatory Afforestation shall be done in 15.17 ha of degraded forest land, which is having density of minimum 0.1. The ecological value for 50 years period for the density of 0.1 is Rs. 126.74 Lakh per ha (as per Forest Conservation Act 1980). By considering minimum 0.1 density, the ecological gain for this project shall be 126.74 x 0.1 x 15.17 = 192.26458 i.e. Rs. 192.26 Lakhs.

Sr. No.	Parameters 3 (Value Judgement)		
	Population benefit (HP Population 2011)		25000 persons
	Population based benefit due to specific project		
1	Increase in population till date approx 10%		2500
2	Total population directly benefited		27500 approx
3	Additional families benefited (considering 4 members in family)	27500 / 4 members	6875 families
4	Per year total benefit to additional families @ Rs. 600/-	6875 x Rs. 600	Rs. 41,25,000/-
5	Total Benefits for 50 years	**Rs. 41,25,000 x 50 years**	**Rs. 20,62,50,000/-**

Sr. No.	Parameters 4 (Value Judgement)		
	Economic benefits due to direct and indirect employment due to project		
1	**Indirect (during construction)**		
a.	50 Nos i.e. shops, local workshop etc @ Rs. 15000/- per month	**Rs. 15000 x 50 x 18 month**	**Rs. 1.35 crore**
2	**Direct (during construction)**		
a.	Daily approx 100-125 men for 18 months during construction	**81 men x 540 days**	**59750 mandays**
b.	Benefit for employment @ Rs. 350 / man / day@ 59750 Mandays	**59,750 x Rs 350**	**Rs. 2.09 crore**
3	**Direct (Industrial Sector)**		
a.	Out of total population, the labour requirement generated in industrial sector per day		75 man approx.
b.	Total mandays generated in industrial sector per year	75 x 730 days	**0.55 Lakh mandays**
c.	Benefit for employment in Industrial sector	**0.55 x Rs. 600**	**Rs. 3.30 Crore**
d	Total direct benefits for 50 years		**Rs. 5.39 crore**
e.	Total indirect benefits for 50 years		**Rs. 1.35 crore**

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COST – BENEFIT ANALYSIS

Total forest area applied for diversion – 7.2834 ha

TOTAL LOSS OF FORESTS FOR 50 YEARS

PARAMETER – I	Rs.	88.18 Lakh
PARAMETER – II	Rs.	8.82 Lakh
PARAMETER – III	Rs.	Nil
PARAMETER – IV	Rs.	Nil
PARAMETER – V	Rs.	26.45 Lakh
PARAMETER – VI	Rs.	Nil
PARAMETER – VII	Rs.	44.09 Lakh
PARAMETER – VIII	Rs.	32.40 Lakh
TOTAL LOSS FOR 50 YEARS	Rs.	**199.94 Lakh**

TOTAL BENEFITS OF FORESTS FOR 50 YEARS

PARAMETER – I	Rs.	Nil
PARAMETER – II	Rs.	Nil
PARAMETER – III	Rs.	2475.00 Lakh
PARAMETER – IV	Rs.	674.00 Lakh
PARAMETER – V	Rs.	192.26 Lakh
PARAMETER – VI	Rs.	Nil
PARAMETER – VII	Rs.	Nil
PARAMETER – VIII	Rs.	Nil
TOTAL BENEFITS FOR 50 YEARS	Rs.	**3341.26 Lakh**

Loss per ha of forest land = Total loss from the forest land / total area of forest land
Loss per ha = 199.94 / 7.2834 i.e. Rs. 27.45 Lakh.

Cost Benefit per ha of forest land = Total benefits from the forest land / total area of forest land
Benefit per ha = 3341.26 / 7.2834 i.e. Rs. 458.75 Lakh

Benefit to Loss ratio = Benefit per ha / loss per ha
458.75 / 27.45 = 1 : 16.71

Vikas Surjewala
G.M. / Project Director
NHAI, PIU Palampur
District Kanga, (H. P.)

Place : Palampur
Date : 26-01-2023

Countersigned by :

Dr. Sanjeev Sharma (HPFS)
(Nodal Officer)
Divisional Forest Officer
Dharamshala Forest Division
Dharamshala

Divisional Forest Officer
Forest Division
Dharamshala