

# SAI ETERNAL FOUNDATION

SAI BHAWAN, SECTOR-4, NEW SHIMLA-171009 (H.P.)  
PHONE: 0177-2670349 / 2671268 FAX NO: 0177-2672915


Full Title of the Project :- Tundah-II Hydro Electric Project.  
File No. :- FP/HP/HYD/49283/2020.  
Date of Proposal :- 31/08/2020.

Check List Serial No.29.

## COST BENEFIT ANALYSIS FOR DIVERSION OF FOREST LAND

**Table -A: Category of proposal for which Cost-Benefits Analysis is applicable**

S. 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 proposal involving forest land 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.



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**Table -B: Estimation of cost of Forest Diversion.**

S. No.	Parameters	Description
1.	Eco-system services losses due to proposed forest diversion.	<p>As per MoEF guidelines 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. Also as per GoI new Guidelines No. F.No.5-2011-FC (Vol-I) dated 6<sup>th</sup> January, 2022, 50% of the normal NPV.</p> <p>Total Forest Land (class-VI) proposed for diversion is 13.3082 ha. NPV Rates to open forest of class-VI @ Rs. 10,69,470/- ha. i.e. <math>13.3082 \times 10,69,470 = \text{Rs. } 1,42,32,721.00</math> As per New Guidelines = Rs. 1,42,32,721 x 50% <b>Total NPV cost is Rs. 71,16,361.00</b></p>
2.	Loss of animal husbandry productivity, including loss of fodder.	<p>As per MoEF guidelines - To be quantified and expressed in monetary terms or 10% of NPV applicable whichever is maximum.</p> <p>Total forest land (class-VI) proposed for diversion=13.3082 ha i) Economic value of fodder production/Rs. in lacs/year=<math>13.3082 \times 4514 = \text{Rs. } 60,073.00</math> ii) <b>10% of Total NPV cost Rs.7,11,636.00</b></p>
3.	Cost of human resettlement.	<p>MoEF guidelines states- To be quantified and expressed in monetary terms as per approved R&amp;R plan.</p> <p>There is no human resettlement on the entire land proposed for diversion. Hence <b><u>no cost of resettlement involved.</u></b></p>
4.	Loss of public facilities and administrative infrastructure (Roads, building, schools, dispensaries, electric lines. Railways. Etc.) on forest land, which would require forest land	<p>As per MoEF guidelines - To be quantified and expressed in monetary terms on actual cost basis at the time of diversion.</p> <p>There is no loss of public facilities and administrative infrastructure (Roads, building,</p>

	if these facilities were diverted due to the project.	schools, dispensaries, electric lines, railways. etc) on the entire land.
5.	Possession value of forest land diverted.	<p>MoEF guidelines-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 values of forestland whichever is maximum.</p> <p>Total forest land (Class-VI) proposed for diversion is 13.3082 ha. NPV Rates to open forest of class-VI @ Rs. 10,69,470/- ha.  i.e. <math>13.3082 \times 10,69,470 = \text{Rs. } 1,42,32,721/-</math>  As per GOI new Guidelines No. F.No.5-3/2011-FC (Vol-I) dated 6<sup>th</sup> January, 2022, 50% of the normal NPV.  = Rs. <math>1,42,32,721.00 \times 50\% = \text{Rs. } 71,16,361.00</math>  30% of Total NPV cost = <b><u>Rs.21,34,908.00</u></b></p>
6.	Cost of suffering to oustees.	<p>MoEF Guidelines. 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&amp;R plan) be worked out as 1.5 times of what oustees should have earned in two years had be not been shifted.</p> <p><b><u>There is no displacement of peoples.</u></b></p>
7.	Habitat fragmentation cost.	<p>MoEF Guidelines- 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.</p> <p>Total forest land (class-VI) proposed for diversion is 13.3082 ha. NPV Rates to open forest of class-VI @ Rs. 10,69,470/- ha.  i.e. <math>13.3082 \times 10,69,470 = \text{Rs. } 1,42,32,721.00</math>  As per GOI new Guidelines No. F.No.5-3/2011-FC (Vol-I) dated 6<sup>th</sup> January, 2022, 50% of the normal NPV.  = Rs. <math>1,42,32,721.00 \times 50\% = \text{Rs. } 71,16,361.00</math>  50% of Total NPV cost = <b><u>Rs. 35, 58,180.00</u></b></p>
8.	Compensatory afforestation and soil & moisture conservation cost.	<p>As per MoEF Guidelines -The actual cost of compensatory afforestation and soil &amp; moisture conservation and its maintenance in future at present discounted value.</p> <p><b><u>Cost of compensatory afforestation is Rs. 86,56,193/-</u></b></p>

**Table -C: Existing guidelines for estimating benefits of forest diversion in CBA**

S. No.	Parameters	Description
1.	Increase in productively attribute to the specific project	<p>MoEF Guidelines- To be quantified &amp; expressed in monetary terms avoiding double counting.</p> <p>It is proposed to supply this power to Northern Grid as entire Nation is facing power crises. This power can be used locally, which will avoid long transmission loss and ensures uninterrupted supply with proper voltage to the local population. This proposed power project shall generate employment during construction &amp; post commissioning / during operation as per the provision of Implementation Agreement. The project will also contribute towards reducing tree felling used for fossil fuels.</p> <p>Net Design Energy (Annual)= 119.539 MU  Cost of sale-able net  <u>Energy@3.27 /kwh(Levelling Tariff)</u>  =3.27/kwh =<b>5379 Lacs/yr.</b></p>
2.	Benefits to economy due to the specific project	<p>MoEF Guidelines:- The incremental economic benefit in monetary terms due to the activities attributed to the specific project.</p> <p>1. The annual energy benefits from the project have been estimated at about <b>119.539 MU.</b></p> <p>2. As one of the most important requirements for the overall development of a State and Nation is power/energy. Since hydro power is the cleanest, cheapest and environmental friendly source of energy. Small Hydro has also been categorised as white category project by Pollution Control Board. It is the top priority of the State and Nation to develop renewable energy resources. The energy obtained from the project will meet up the present shortage of State/National grid. Development of the project will facilitate the emergence of industries, trade and commerce and would thereby being more and more economic improvement.</p> <p>3. The overall improvement of the infrastructure like roads, eco-tourism, communication etc. would boost up the economy of State and living standard of the people will go up.</p>

		<p>4. Adding more employment opportunity and giving boost to economic growth.</p> <p>5. The project involved an investment of <b>Rs. 223.50 Cr.</b> State Govt as well as Centre Govt shall get the benefit on account of GST. Hence investment will bring growth in the GDP of state. As per terms and conditions of the Govt. Of Himachal Pradesh (GoHP), direct benefit to the state -Free power 12% (during 1st 12 Yrs), 18% (during next 18 yrs, 30% (During last 10yrs.) for a 75% dependable year with 85.50% Turbine Generator efficiency, the project will generate annual revenue from sale of free power. The free power for total 40 years of operation of the project works out as –</p> $\frac{119.539 \times (15 \times 12 + 18 \times 18 + 33 \times 10) \times 4.50}{100}$ <p>=Rs. 448.62 Crores.</p> <p>Thus the state of H.P. shall get free power worth of <b>Rs. 448.62 Crores</b> in 40 years from this project.</p>
3.	No. of population benefited due to the specific project	As per the Detailed Project Report.
4.	Economic benefits due to direct and indirect employment due to the project	<p>MoEF Guidelines:- As per the Detailed Project Report.</p> <p>During the peak construction stage employment will be generated about 270 people skilled and unskilled manpower. After the completion of the project, about 35 people are likely to be employed in various categories for operation, maintenance and security of the HEP.</p> <p>Assuming 35 people get employment after completion of project. So average benefits = <math>35 \times 45000.00 \text{ Av./month} \times 12 = 189.00 \text{ Lacs.}</math></p> <p>Hence the benefit for 40 years is Rs 168 x 40 years = <b>7560.00 Lacs.</b></p>
5.	Economic benefits due to Compensatory afforestation	<p>MoEF Guidelines:- Benefits from such compensatory afforestation accruing over next 40 years monetised and discounted to the present value should be included as benefits of compensatory afforestation.</p> <p>* For benefits of CA the guidelines of the ministry for NPV estimation may be consulted</p> <p>The forest area which required to be diverted for the project is 13.3082 hectare The</p>

		<p>compensatory afforestation will be done on the <b>area of approx. 26.62 hectare</b>, where about 29282 plants will be planted at a cost of <b>Rs.86,56,193/-</b>. Due to this afforestation, not only green cover will increase but the density of the forest will also increase. The money spent on compensatory afforestation will lead to indirect benefits to the local population as they will be employed for the plantation and thereafter maintenance of the afforestation area. Due to this afforestation decrease the pollution levels and increase the carbon credits.</p>
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