

## COST - BENEFIT ANALYSIS

Name of the Project: Attunli Hydro Electric Project (680 MW)

## Parameters for Evaluation of Losses of Forests

| Sl. No. | Parameter  | Applicability Vis-à-vis Nature of Proposal and Explanation   | Quantity of Losses   | Rate in Rupees Rs.  | Value of Loss (Rs. in Crores)   |
|---------|--|--|--|---|---|
| 1       | Loss of value of timber, fuel wood and minor forest produce on an annual basis, including loss of man-hours per annum of people who derived livelihood & wages from the harvest of these commodities.                                      | Loss of value of timber as per species - wise and diameter class wise abstract of the trees to be felled.  | Land requirement for the project – 247.34 Ha {excluding underground area (notional area) of 14.19 Ha}. Based on the terrestrial ecological survey, total No. of trees likely to be affected shall be calculated & total loss shall be worked out. These losses shall be worked out after forest survey & shall be submitted accordingly. | --  | To be assessed at a later stage (after Terrestrial Ecological Survey) |
| 2       | Loss of animal husbandry productivity inclusive of loss of fodder.   | The project does not have any effect on Animal husbandry.  | NIL  | --  | --  |
| 3       | Cost of human resettlement.  | After detailed Socio-Economic Survey by District Administration.   | NIL  | --  | --  |
| 4       | Loss of public facilities & administrative infrastructure (Roads, building, schools, dispensaries, electric lines, railways, etc) on forest land, or which would require forest land if these facilities were diverted due to the project. | Loss of any public facilities & administrative infrastructure is not known at present. However, the same shall be provided after conduct of survey by District Administration. | NIL  | --  | --  |
| 5       | Environmental losses: (soil erosion, effect on hydrological cycle, wild life habitat, microclimate upsetting of ecological balance).   | Environmental Losses.  | Although, Forest cover is not having the same density over the entire area of 247.34 Ha, Density value of 0.40 for entire land is assumed in order to have a liberal estimation of the cost towards Environmental losses.  | Rs. 126, 74, 000/- per Ha to acquire over a period of 50 years (as per FCA).(MoEF Notification Dated: 10/01/2003) | 125.40  |



|   |                       |    |  |     |    |               |
|---|-----------------------|----|--|-----|----|---------------|
| 6 | Suffering<br>Oustees. | to | Rehabilitation &<br>Resettlement plan shall<br>be finalized in<br>consultation with Distt.<br>Administration after<br>completion of Socio-<br>Economic survey. | NIL | -- | --            |
|   | <b>Total Amount</b>   |    |  |     |    | <b>125.40</b> |

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## COST - BENEFIT ANALYSIS

**Name of the Project: Attunli Hydro Electric Project (680 MW)**

**Parameters for Evaluation of Benefit, notwithstanding Loss of Forest**

| Sl. No. | Parameter  | Applicability Vis-à-vis Nature of Proposal and Explanation  | Quantum of Benefits  | Rate in Rupees (Rs.) | Value of Benefits (Rs. in Crores) |
|---------|--|---|--|----------------------|-----------------------------------|
| 1       | Increase in productivity attributable to the specific project. | Compensatory Afforestation  | An amount of Rs.20 Crores has been earmarked for Compensatory Afforestation & NPV in the DPR submitted to CEA.   | --                   | 20                                |
| 2       | Benefits to Economy  | <ul style="list-style-type: none"> <li>• Sale of Power.</li> <li>• Grid Stability.</li> <li>• Annual CO<sub>2</sub> emission reduction.</li> <li>• Free Power to State Govt.</li> <li>• Local Area Development (LAD)</li> </ul> | <ul style="list-style-type: none"> <li>• 2,446 Million Units.</li> <li>• The power from hydro projects in the north-eastern region would be in excess of the demand in the region and would have to be exported for utilization in other regions of the country. Presently there is no problem in the availability of transmission systems beyond the north-eastern power region for dispersal of power as the five power regions of the country are in the process of greater integration within a national grid.</li> <li>• Design Energy of Attunli HEP is 2,845 Gwh which results in equivalent emission reductions of approximately 26,97,131 tonnes of carbon dioxide equivalent, annually.</li> <li>• 12% free power from Commercial Operation Date (COD).</li> <li>• 1% of the deliverable energy of the project earmarked for LAD aimed at providing regular stream of revenue for income generation &amp; welfare schemes, creation of additional infrastructure for the PAFs.</li> <li>• Energy corresponding to 100 units of electricity to be provided free of cost every month to every Project Affected Family for a period of ten years from the date of commissioning.</li> </ul> | 5.80 / Unit          | 1,418.68 per Annum                |

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|---|---|---|---|----|----|
| 3 | Nos. of population benefited  | Such benefits of intangible nature cannot be quantified.  | <p>The increase in generation of power particularly the peaking power will give impetus to industrialization and urbanization in the whole northern grid of the country including Arunachal Pradesh, who will be getting 12% free power from Commercial Operation Date (COD). Also the project will be directly benefiting the Project Affected Families, whose land will be acquired in the project.</p> <p>However, as per Cl. 31 of the Memorandum of Agreement (MoA) signed between Government of Arunachal Pradesh, HPDCAPL and JPL for execution of Attunli HEP, the JV Company shall reserve the following category of posts against the Project to be filled up by the local tribal people, subject to the incumbents fulfilling the job requirements &amp; considered suitable by the JV Company:</p> <p>a) Managerial / Professional Post - 25%</p> <p>b) Ministerial / Clerical Post - 50%</p> <p>c) Skilled Jobs - 25%</p> <p>d) Unskilled Jobs - 75%</p> | -- | -- |
| 4 | Employment Potential  | Such benefits of intangible nature cannot be quantified.  | <p>The Project construction is likely to last for 5 years. The peak manpower strength likely to be employed during project construction stage is estimated about 2500 Nos. Beside this there will be huge amount of increase in employment as a result of increasing level of industrialization and urbanization and related activities. More alternative livelihood options will be available to the local people around the project area that will improve their standard of living. These benefits are of intangible nature and cannot be quantified.</p>  | -- | -- |
| 5 | Cost of acquisition of facility on non-forest land where ever feasible. | Private land will be acquired as per the Govt. of Arunachal Pradesh notified rate of land. The exact cost for Private land would be determined after the acquisition. | --  | -- | -- |

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|---|--|---|---|---------------|-------------------|
| 6 | Loss of (a) agricultural & (b) animal husbandry production due to diversion of forest land.                    | No such impacts are anticipated in the project activities.  | --  | --            | --                |
| 7 | Cost of rehabilitating the displaced persons as different from compensatory amounts given for displacement.    | --  | An amount of Rs. 40 Crores has been earmarked for Compensatory Afforestation & NPV in the DPR submitted to CEA. | --            | 40<br>(tentative) |
| 8 | Cost of supply of free fuel-wood to workers residing in or near forest area during the period of construction. | Wood will not be used by the labours and the workers. Free supply of Kerosene and LPG will be made available to them. | Cost towards use of Kerosene and LPG is not known at present & shall be accounted in EIA / EMP of the project.  | --            | --                |
|   | <b>Total Amount</b>  |   |   |               | <b>1478.68</b>    |
|   | <b>Total Losses (Cost)</b>   | <b>Rs.</b>  | <b>125.40</b>   | <b>Crores</b> |                   |
|   | <b>Total Benefits</b>  | <b>Rs.</b>  | <b>1478.68</b>  | <b>Crores</b> |                   |

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