

### **Cost-Benefit analysis**

**Name of the project:** Diversion of 26.9255 ha forest land for construction of diversion weir, Jackwell cum pump house, electrical substation, pipe line and power line in Kanakumbi, Chorle, Parvada & other villages of Khanapur Taluk in Belagavi District under Kalasa Nala Diversion Scheme.

**Table A: Category of proposals for which Cost Benefit Analysis are applicable**

| <b>Sl.No.</b> | <b>Nature of proposal</b>                                                                                                                                                                                                                                                                                                      | <b>Applicable/<br/>Not<br/>applicable</b> | <b>Remarks</b>                                                                                                                                                  |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1             | All categories of proposals involving forest land up to 20 Ha in Plains and up to 5 Ha in hills.                                                                                                                                                                                                                               | Not<br>Applicable                         | Nil                                                                                                                                                             |
| 2             | Proposals for defense installation purposes and oil prospecting (Prospecting only)                                                                                                                                                                                                                                             | Not<br>applicable                         | Nil                                                                                                                                                             |
| 3             | Habitation, establishment of industrial units, tourist lodges/complex and other building constructions.                                                                                                                                                                                                                        | Not<br>applicable                         | Nil                                                                                                                                                             |
| 4             | All other proposals involving forest land more than 20 Ha in plain and more than 5 Ha in hills including roads, transmission lines, minor medium and major irrigation projects, hydel projects, mining activities, Railway lines, location specific installation like Microwave station, auto repeater center, TV towers, etc. | Applicable                                | These are cases where a cost benefit analysis is necessary to determine whether diverting the forest land to non-forest use is in the overall public interests. |
| 5             | Proposal for renewal of Mining Lease for forest land.                                                                                                                                                                                                                                                                          | Not<br>Applicable                         | Nil                                                                                                                                                             |

**Table-B: Estimation of Cost of Forest Diversion**

| Sl.No | Parameter                                                                                                                         | Criteria                                                                                                                                                                                                                                                                                                                                                 | Cost per Year (lakhs) | Cost for 30 years (lakhs) |
|-------|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------------|
| 1     | Ecosystem services losses due to proposed forest diversion                                                                        | Economic Value of loss of eco-system services due to diversion of forest shall be the Net Present Value (NPV) of the forest land being diverted as prescribed by the Central Government (MoEF&CC). Present NPV for 1 Ha of forest land = 15, 95, 790 lakhs (Very dense)<br>Present NPV for 26.9255 Ha forest land = 26.9255 X 15, 95, 790 = 429.67 lakhs | 429.67                | 12890.23                  |
| 2     | Loss of animal Husbandry Productivity, Including loss of Fodder.                                                                  | 10% of the NPV                                                                                                                                                                                                                                                                                                                                           | 42.96                 | 1289.02                   |
| 3     | Cost of Human resettlement                                                                                                        | No R&R involved in the project                                                                                                                                                                                                                                                                                                                           | -                     | -                         |
| 4     | Loss of public facilities and administrative infrastructure (roads, building, schools, dispensary, electric lines, railways, etc) | No loss public facilities involved in the project                                                                                                                                                                                                                                                                                                        | -                     | -                         |
| 5     | Possession Value of Forest land Diverted                                                                                          | 30% of the NPV                                                                                                                                                                                                                                                                                                                                           | 128.90                | 3867.06                   |
| 6     | Cost of suffering to oustees                                                                                                      | No R&R involved in the project                                                                                                                                                                                                                                                                                                                           | -                     | -                         |
| 7     | Habitat Fragmentation Cost                                                                                                        | 50% of the NPV                                                                                                                                                                                                                                                                                                                                           | 214.83                | 6445.11                   |



| Sl.No        | Parameter                                                        | Criteria                                                                                                                                                                       | Cost per Year (lakhs) | Cost for 30 years (lakhs) |
|--------------|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------------|
| 5            | Compensatory afforestation and Soil & moisture conservation cost | Rate of C.A. for 1 Ha of forest land = 18,36,000 (as per Karnataka Forest Dept SR for the year 2022-23)<br>Value of C.A. for 26.9255 Ha forest land x 18,36,000 = 494.35 lakhs | 494.35                | 14830.56                  |
| <b>Total</b> |                                                                  |                                                                                                                                                                                | <b>1310.73</b>        | <b>39322.00</b>           |

**Table-C: Calculation of the Benefits**

(Parameters for Evaluation of Benefits)  
(Not withstanding loss of forest)

| Sl. No | Parameter                                                                      | Criteria                                                                                                             | Cost per Year (lakhs) | Cost for 30 years (lakhs) |
|--------|--------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------------|
| 1      | Increase in Productivity attribute to the Specific project                     | Not Applicable for Drinking water projects                                                                           | -                     | -                         |
| 2      | Benefits to economy due to the Specific project                                | Not Applicable for Drinking water projects                                                                           | -                     | -                         |
| 3      | No of Population Benefited due to specific project                             | Population of Hubli-Dharwad, Kundgol and en-route villages as per 2011 Census                                        | 12,30,000             |                           |
| 4      | Economic benefits due to of direct and indirect employment due to this project | Total employment = 25,000 (Per day wages as per minimum wages notifications 2021-2022)                               | -                     |                           |
|        |                                                                                | 5,000 skilled employees X Rs. 734/- (per day) X 30 days X 12 months = Rs. 1,32,12,00,000/- p.a.                      | 13,212                | 3,96,360                  |
|        |                                                                                | 20,000 unskilled employees X Rs. 553/- (per day) X 30 days X 12 months = Rs. 3,98,16,00,000/- p.a.                   | 39,816                | 11,94,480                 |
| 5      | Economic benefits due to Compensatory afforestation                            | Value of Carbon sequestration per Ha/year = Rs. 282734/- (per Ha/Yr) X 26.9255 Ha (forest land) = Rs. 76,12,754.31/- | 76.12                 | 2283.82                   |
|        |                                                                                | Value of Bio-Prospersing per Ha/year = Rs. 59816/- (per Ha/Yr) X 26.9255 Ha (forest land) = Rs. 16,10,575.71/-       | 16.10                 | 483.17                    |
|        |                                                                                | Value of NTFP Ha/year=Rs.178633/- (per                                                                               | 48.09                 | 1442.93                   |

| Sl. No | Parameter | Criteria                                                                                                                   | Cost per Year (lakhs) | Cost for 30 years (lakhs) |
|--------|-----------|----------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------------|
|        |           | Ha/Yr) X 26.9255 Ha (forest land) = Rs. 48,09,792.84/-                                                                     |                       |                           |
|        |           | Value of Eco-tourism Ha/year = Rs.152423/- (per Ha/Yr) x 26.9255 Ha (forest land) = Rs. 41,04,065.48/-                     | 41.04                 | 1231.21                   |
|        |           | Value of fodder Ha/year = Rs.17862/- (per Ha/Yr) X 26.9255 Ha (forest land) =Rs. 4,80,943.28/-                             | 4.80                  | 144.28                    |
|        |           | Value of Flagship species Ha/year=Rs.604888/- (per Ha/Yr) X 26.9255 Ha (forest land) = Rs.1,62,86,911.84/-                 | 162.86                | 4886.07                   |
|        |           | Value of Ecological services of forests per Ha/Year=Rs.337865/- (per Ha/Yr) X 26.9255 Ha (forest land) =Rs. 90,97,184.05/- | 90.97                 | 2729.15                   |
|        |           | <b>Total</b>                                                                                                               | <b>53,468</b>         | <b>16,04,040</b>          |

  
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**Calculation of Benefit/Cost Ratio**

Total Benefits (As per II calculations) = Rs. 16,04,040 Lakhs

Total Losses (As per I calculations) = Rs. 39322 Lakhs

Hence, Benefit/Cost Ratio  $\frac{16,04,040}{39322} = 40.79$

Thus, the project gives positive Benefit/Cost Ratio with minimal environmental losses.

  
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