

## CHAPTER –XI

### B. C. RATIO AND FINANCIAL ASPECTS

#### 11.0 General

The Kosi-Mechi intrastate link project will provide irrigation in new command area lying between river Parman and Mechi in Mahananda basin. The link will utilize existing EKMC after its remodelling for providing irrigation to the existing and new command areas enroute of the link canal. The main objective of the project is to provide irrigation to the water short areas of Mahananda basin which is not covered by any project so far. The cost of Hanuman Nagar barrage has not been included in the total cost.

#### 11.1 Construction duration and benefits

The link canal project is proposed to be completed in 5 years. The execution of remodelling of EKMC will be started in 2<sup>nd</sup> year and completed in 3<sup>rd</sup> year. The new canal and other canal components will be taken up simultaneously in 2<sup>nd</sup> year and proposed to be completed in 5<sup>th</sup> year. The development of command area will be started in 3<sup>rd</sup> year and completed in 5<sup>th</sup> year. As such it is expected that partial benefits can be started from 3<sup>rd</sup> year onwards. Full benefits of the project will be commenced from 6<sup>th</sup> year.

#### 11.2 Depreciation

The total life of the link canal project is assumed as 100 years. The depreciation of the items is considered as 1%.

#### 11.3 Annual costs

It is the recurring cost incurred to cover the interest on capital cost, maintenance of link project including canal command, 10% of interest on capital cost, 1% of apportioned cost of barrage for maintenance of headworks. Annual maintenance charges for command area have been considered as Rs. 600/- per ha. As explained in earlier chapters, the desiltation of canal is a challenging task in the project. Therefore, considering the huge silt deposition, adequate provision towards annual desilting of canal has been made in annual cost. After accounting for the above, the annual cost of the project works out to Rs.395.21 crore.

#### 11.4 Direct benefits

The Kosi-Mechi link will provide irrigation in the command area lying between river Parman and Mechi in Mahananda basin. The benefits are described in the following paragraphs.

### **11.4.1 Irrigation benefits**

It is seen from the earlier chapters that the link canal will benefit 2,14,812 ha of new CCA with 98% intensity of irrigation in kharif season only. Thus, 2,10,516 ha annual irrigation will be provided to new areas. For assessing net benefits from irrigation, the estimated value of agriculture produce, inputs, benefit from the pre-project and post project irrigation scenario in the command areas are worked out and furnished in Annexures 11.1 to 11.4 respectively. The net annual benefit due to irrigation is worked out to Rs.1448.10 crore.

### **11.5 Indirect benefits**

In addition to the direct benefit of irrigation, the project will provide additional indirect benefits on account of agro based industry bringing economic prosperity and employment opportunities to the people of the region. The project activities will lead to establishment of intensified infrastructural facility like roads, power and communications. Credit arrangements and extensive services would benefit the entire region. Ground water will get recharged through regeneration of water used for irrigation and the ground water table will also be raised. Thereby scarcity of drinking water in these areas can also be mitigated to some extent.

### **11.6 Annual benefit**

The irrigation benefits are the only direct benefits considered for assessment of Benefit-Cost ratio. The annual benefits from irrigation have been worked out to be Rs.1448.10 crore.

### **11.7 Benefit-Cost ratio**

Annual benefit from the project from irrigation has been worked out as Rs. 1448.10 crore, whereas annual cost has been worked out as Rs. 395.21 crore. Thus the B.C. ratio for the link project has been worked out as 3.66. The details are furnished in Annexure 11.5.

### **11.8 Internal rate of return (IRR)**

The internal rate of return is that rate of discount at which the net present value of the project is equal to the net present benefit. For working out the IRR, the capital cost of the project has been distributed over 5 years as yearly cost. The annual maintenance cost of head works, canal and canalization and command area has been taken from 6<sup>th</sup> year onwards. The full annual benefits will be started from 6<sup>th</sup> year onward as mentioned in the preceding paras. IRR has been worked out as 27%. Details are shown in Annexure 11.6.

## **11.9 Conclusion and recommendations**

The Benefit-Cost Ratio and Internal Rate of Return of the project work out to 3.66 and 27% respectively and the project is found to be technoeconomically viable.