10 ECONOMIC ANALYSIS

10.1 RESULTS OF ECONOMIC ANALYSIS

10.1.1 Base Analysis

127. The economic analysis has been undertaken for the project road by using RUCS equations. The results obtained are in terms of the Economic Internal Rate of Return (EIRR), Net Present Value (NPV), as presented below for project corridor as a whole.

Table 10.1: Result of Economic Analysis

Scenarios	Description	EIRR					
		Without Time		With Time		With Accidents	
		20 years	30 years	20 years	30 years	20 years	30 years
I	Base Costs + Base Benefits	30.77%	31.29%	49.29%	49.36%	55.84%	55.87%
		NPV (in million Rupees)					
I	Base Costs + Base Benefits	1,900	2,670	3,940	4,950	4,780	5,971

The project is economically viable, even in case of only savings in the VOCs. With VOT and accident cost savings, it becomes a very desirable project from the perspective of the society Sensitivity Analysis

128. Any investment is subject to risks and uncertainties. All risks culminate into either increase in project cost, reduction in benefits or both put together. In order to cover the above stated risks, a detailed sensitivity analysis, with respect to the sensitive parameters, has been undertaken. The various sensitivity scenarios considered are as follows:

- Sensitivity 1: Base Costs plus 15% and Base Benefits (15% Increase in cost);
- Sensitivity 2: Base Costs and Base Benefits minus15% (15% reduction in benefits); and
- Sensitivity 3: Base Costs plus 15% and Base Benefits minus 15% (15% Increase in costs and 15% reduction in benefits).

129. The results of the sensitivity analysis have been presented in Table 10.2.

Table 10.2: Results of Sensitivity Analysis

Scenarios	Description	EIRR					
		Without Time		With Time		With Accidents	
		20 years	30 years	20 years	30 years	20 years	30 years
I	Base Costs plus 15% and Base Benefits (15% Increase in cost)	27.76%	28.45%	44.37%	44.48%	50.29%	50.35%
II	Base Costs and Base Benefits minus 15% (15% reduction in benefits)	27.43%	28.13%	43.81%	43.92%	49.64%	49.71%
III	Base Costs plus 15% and Base Benefits minus 15% (15% Increase in costs and 15% reduction in benefits)	24.69%	25.59%	39.40%	39.58%	44.67%	44.77%
		NPV (in million Rupees)					
I	Base Costs + 15% and Base Benefits	1,768	2,538	3,807	4,817	4,647	5,839
II	Base Costs and Base Benefits minus 15%	1,488	2,143	3,222	4,080	3,936	4,949
III	Base Costs + 15% and Base Benefits minus 15 %	1,356	2,011	3,089	3,948	3,803	4,817

130. The sensitivity analysis reflects project viability in the worst scenario also, in case the VOT and/or accident cost savings are considered. If the analysis period is taken as 20 years, the project is viable in case of VOC and VOT savings (EIRR>12%). With additional benefit of accident cost savings, it tends to become more attractive.

131. The project needs to be planned and implemented soon. The savings in travel time is precious for the economy. In case, the project implementation is delayed, the cumulative loss in value of travel time is likely to go up from Rs 289.7 million in 2015 to about Rs 10163.7 million in the year 2040. Therefore, the state should get the project initiated soon. (Refer Figure 10.1).

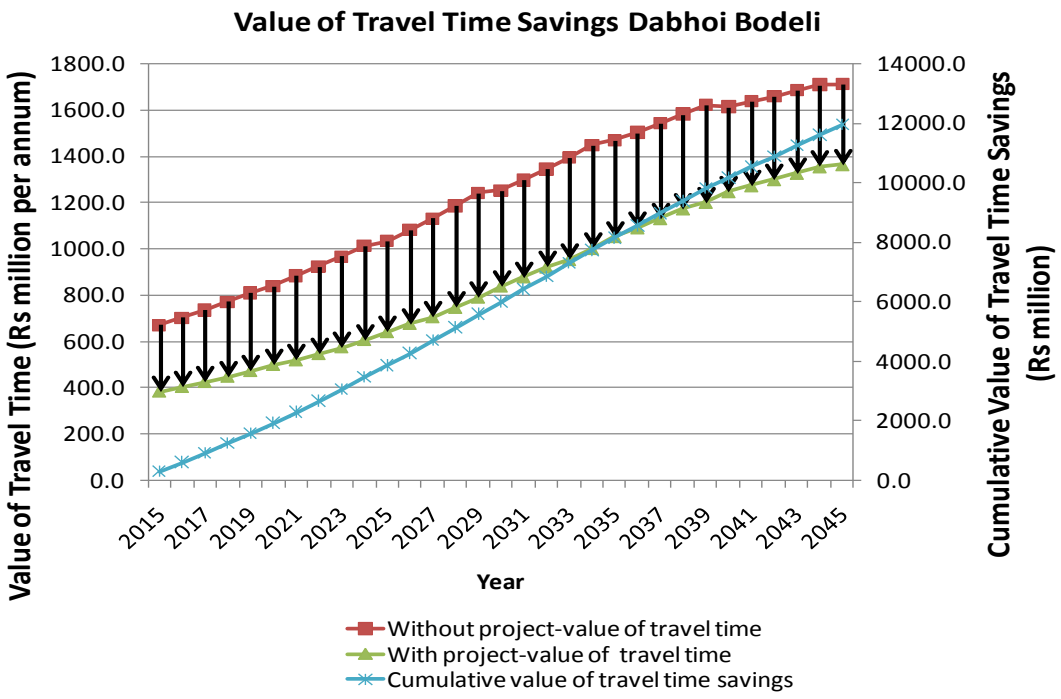

Figure 10.1: Value of Travel Time Savings

10.2 CONCLUSION

132. The road project ***is desirable from the society's point of view.*** The project corridor as a whole is found to be economically viable with positive net present values and EIRR greater than 12%, even in the worst scenario of drop in benefits coupled with increase in cost. Hence, based on the above results, the project is recommended for implementation.

133. Since the accident benefits are high, it is further recommended that due consideration should be given to the measures suggested from safety point of view. This would make Dabhoi-Bodeli a safe highway