10.0 Financial Feasibility

In this chapter, financial analysis and financial viability based on the following indicators, has been described:

- Estimated Cost of Production and Profitability
- Projected Cash Flow
- Projected Balance Sheet
- Financial Performance Indicators
- Sensitivity Analysis
- Indicators of Performance
- Review of Tariff and Pricing Policy

10.1 Financial Analysis

Financial analysis has taken into account the following considerations:

- Investment has been estimated at current costs and is understood to be in the accuracy range of ± 10-20%.
- The estimates for operating costs include the total annual Cost of Production of different packaging including PET bottle manufacturing.
- Profitability for the first 10 years of operation takes into consideration :
  - Investment estimates
  - A construction/ gestation period of 12 months.
  - Product packaging mix as considered in Industry and Market Scenario.
  - Landed cost of PET raw materials.
  - Cost of other inputs viz. power, water, consumables, stores & spares, salaries & wages and plant overhead expenses.
  - Sales and Administrative expenses.
  - Depreciation and Interest.
- The Risk and Sensitivity analysis takes cognizance of both:
  - Qualitative risks: These are risks associated with any industrial project and include events, which cannot be forecast with perfection. Contingent actions that may be taken to overcome qualitative risks have been suggested.
  - Quantitative risks: These include events, which can be quantified and analyzed in terms of “effect on project” with a higher degree of accuracy. For quantitative risks, sensitivity analysis has been done on the Break Even Point.

For the purpose of this report, capital expenditure during the first year has been considered as Investment Costs and the first year has been considered as ‘construction period’ in which no commercial production has been envisaged. In this period is considered only the acquisition of Land, erection of Building, acquisition of Plant & Machinery and their commissioning, up till their satisfactory trial run. It has been assumed that commercial production will commence and marketing network will be established, from the second year onwards.

a. Sales Realization

It is assumed that 60% capacity will be achieved during first year of operation and subsequently, 70% in second year and 80% from third year onwards. Revenues from the project, in terms of the cash flow from sales, would start accruing. The selling price of various packaged mineral water, based on the market study, has been considered as given below in table 10.1:

S. No.	Particulars	Production (per Day Bottles)	Production per Annum (Lacs Bottles)	Rate per Bottle (Nu.)	Total Amount per Annum (Nu. in Lacs)
1	Packaged Natural Mineral Water 200ml Packing	0.00	0.00	5.50	0.00
2	Packaged Natural Mineral Water 500ml Packing	20100.00	60.30	7.00	422.10
3	Packaged Natural Mineral Water 1,000ml Packing	30000.00	90.00	9.00	810.00
4	Packaged Natural Mineral Water 2,000ml Packing	0.00	0.00	15.00	0.00
		Total	**150.30**		**1232.10**

Table 10.1: Sales Realization

(Nu. in Lacs)

- Total Sales Realization at 100% 1232.00
- First Year 60% 739.26
- Second Year 70% 862.47
- Third Year 80% 985.68

b. Details Showing Production Mix

b.1 Production Output per Shot

Injection Moulding Machine Specification	Cavities per Die			
	200 ml	500 ml	1,000 ml	2,000 ml
SMG110	16	12	10	8
SR2KS	2	2	2	2
SMG110 (if caps produced)	12	12	12	12

Table10.2: Production Mix Cavity

b.2 Production Mix (Preform and Pet Bottle)

Particulars	Preform				Pet Blow			
	200 ml	500 ml	1,000 ml	2,000 ml	200 ml	500 ml	1,000 ml	2,000 ml
Cycle Time	20	20	20	20	7	8.5	9.6	11
Pieces per Cycle	16	12	10	8	4	4	4	4
Production per Min	48	36	30	24	34.29	28.24	25	21.82
Production per Hour	2,880	2,160	1,800	1,440	2,057	1,694	1,500	1,309
No. of Machine					2	2	2	2
Rounded Off					**4,000**	**3,350**	**3,000**	**2,600**

Table 10.3: Production Mix (Preform and Pet Bottle)

b.3 Production Mix Filling

Particulars	Filling			
	200 ml	500 ml	1000 ml	2000 ml
Cycle Time	1 Minute	1 Minute	1 Minute	1 Minute
Pcs per Cycle	40	30	25	10
Production per Min	40	30	25	10
Production per Hour	2,400	1,800	1,500	600

Table 10.4: Production Mix Filling

b.4 Total Production Details

Total Water Available		**72000 Litre**			
Particulars	**Pcs. per Min**	**Production per Hour**	**Hours***	**Total Bottle**	**Total Water in Litre**
200 ml	34	4,000	0	0	0
500 ml	28	3,350	6	20,100	10,050
1000 ml	25	3,000	10	30,000	30,000
		Total	**16**	**50,100**	**40,050**

Table 10.5: Total Production Details
*Derivatives only considering 2 shifts of 8 hours each

c. Estimated Cost of Production and Profitability

The profitability projections has been worked out for 10 years, at 60% capacity utilization will be achieved during first year of operation, 70% second year and 80% from third year onwards and following assumptions as relevant and applicable to Bhutan have been considered while preparing the profitability.

- Repairs & maintenance have been taken as @ 4% p.a. on plant & machinery and misc. fixed assets.
- Bank interest rate has been calculated @ 12% p.a. on term loan & @ 13 % p.a on working capital loan, based on the prevailing bank rates in Bhutan at the time of preparing this profile.
- Insurance charges @ 0.25% on all assets in first year, then @ 5% decrease every year.
- Power and water charges are increased @ 5% every year. However, in case it increase @10% annually, it will not make any significant impact on profitability of the project.
- Administrative expenses have been increased @ 5% every year.
- Margin money on bank loan has been considered @ 50% on building, @ 50% on plant & machinery and @ 50% on misc. fixed assets.
- Bank loan has been considered for repayment in 8 years with one year moratorium.
- Preliminary expenses will be written off @ 10% every year in next 10 years.
- Pre operative expenses will be written off from 2nd year @ 10% every year in next 10 years.
- Depreciation has been charged on Straight Line Method.
- Salary & wages, fringe benefits, administrative expenses, insurance, lease rent & interest and depreciation has been taken as fixed cost for calculating B.E.P.
- Income tax has been charged @ 30% every year as per Bhutan's tax rates.

Estimated Cost of Production and Profitability is given in the below table 10.6:

S. No.	Year / Particulars	I	II	III	IV	V	VI	VII	VIII	IX	X
1	Installed Capacity (Nu. in Lacs)100%	1232.10	1232.10	1232.10	1232.10	1232.10	1232.10	1232.10	1232.10	1232.10	1232.10
2	Capacity Utilization	60%	70%	80%	80%	80%	80%	80%	80%	80%	80%
3	Actual Sales in Lacs Nu.	739.26	862.47	985.68	985.68	985.68	985.68	985.68	985.68	985.68	985.68
4	**COST OF PRODUCTION**										
4.1	Raw Material Consumed	344.76	402.22	459.68	459.68	459.68	459.68	459.68	459.68	459.68	459.68
4.2	Consumables @5%	17.24	20.11	22.98	22.98	22.98	22.98	22.98	22.98	22.98	22.98
4.3	Power, Fuel & Water	10.25	10.76	11.30	11.87	12.46	13.08	13.74	14.42	15.15	15.90
4.4	Salary & Wages	48.54	50.97	53.52	56.19	59.00	61.95	65.05	68.30	71.72	75.30
4.5	Fringe Benefits @15%	7.28	7.65	8.03	8.43	8.85	9.29	9.76	10.25	10.76	11.30
4.6	Insurance	0.88	0.79	0.71	0.64	0.58	0.52	0.47	0.42	0.38	0.34
4.7	Repair & Maintenance @4%	9.31	9.77	10.26	10.77	11.31	11.88	12.47	13.09	13.75	14.44
4.8	Land Lease Rent	1.70	1.70	1.70	2.56	2.64	2.73	2.81	2.90	2.98	3.07
4.9	Other Administrative Expenses	9.00	9.45	9.92	10.42	10.94	11.49	12.06	12.66	13.30	13.96
	Total	448.96	513.43	578.11	583.54	588.45	593.60	599.02	604.71	610.69	616.97
5	Selling & Distribution Expenses @15% on Sales	110.89	129.37	147.85	147.85	147.85	147.85	147.85	147.85	147.85	147.85
6	**COST OF SALES**	559.85	642.80	725.96	731.40	736.30	741.46	746.87	752.57	758.55	764.83
7	**SALES**	739.26	862.47	985.68	985.68	985.68	985.68	985.68	985.68	985.68	985.68
8	**PROFIT BEFORE INTT. & DEP.**	179.41	219.67	259.72	254.28	249.38	244.22	238.81	233.11	227.13	220.85
9	Interest on Term Loan @12%	29.19	27.36	23.71	20.07	16.42	12.77	9.12	5.47	1.83	0.00
10	On Working Capital @13 %	6.06	6.06	6.06	6.06	6.06	6.06	6.06	6.06	6.06	6.06
11	Total Interest	35.24	33.42	29.77	26.12	22.47	18.83	15.18	11.53	7.88	6.06
12	Profit before Depreciation.	144.17	186.25	229.95	228.16	226.90	225.40	223.63	221.58	219.25	214.80

S. No.	Year / Particulars	I	II	III	IV	V	VI	VII	VIII	IX	X
13	**DEPRECIATION**	38.49	38.49	38.49	38.49	38.49	38.49	26.86	3.59	3.59	3.59
14	Profit after Depreciation	105.68	147.77	191.46	189.67	188.42	186.91	196.77	217.99	215.66	211.21
15	Pre-operative Expenses Written Off	0.00	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.13
16	Preliminary Expenses Written Off	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
17	**PROFIT BEFORE TAXATION**	105.58	142.54	186.23	184.45	183.19	181.68	191.55	212.77	210.43	205.98
18	Taxation @30% of Net Profit	31.67	42.76	55.87	55.33	54.96	54.50	57.46	63.83	63.13	61.79
19	Accumulated Profit	73.90	173.68	304.04	433.16	561.39	688.57	822.65	971.58	1118.89	1263.07
20	**PROFIT AFTER TAXATION**	73.90	99.78	130.36	129.11	128.23	127.18	134.08	148.94	147.30	144.19
21	Add : Depreciation	38.49	38.49	38.49	38.49	38.49	38.49	26.86	3.59	3.59	3.59
22	Add: Interest on Term Loan	29.19	27.36	23.71	20.07	16.42	12.77	9.12	5.47	1.83	0.00
	Total (A)	141.58	165.63	192.57	187.67	183.14	178.44	170.06	158.00	152.72	147.78
23	Interest on Term Loan	29.19	27.36	23.71	20.07	16.42	12.77	9.12	5.47	1.83	0.00
24	Repayment on Term Loan	0	30.40	30.40	30.40	30.40	30.40	30.40	30.40	30.42	
	Total (B)	29.19	57.76	54.11	50.47	46.82	43.17	39.52	35.87	32.25	0.00
	SURPLUS (A) - (B)	112.39	107.87	138.45	137.20	136.32	135.27	130.54	122.13	120.47	147.78
	DSCR (A/B)	**4.85**	**2.87**	**3.56**	**3.72**	**3.91**	**4.13**	**4.30**	**4.40**	**4.74**	
	AVERAGE DSCR	**4.05**									

Table 10.6: Estimated Cost of Production & Profitability

d. Calculation of Interest on Term Loan

Requirement of working capital increases perpetually every year, on account of increasing production levels. The additional requirements are, however, envisaged to be met from internal accruals. Thus, the loan amount considered is the amount of bank finance taken during the first year of project operations. The interest on short-term loan for working capital from commercial banks has been considered @ 13% p.a.

The details of quarterly interest calculations and the schedule of repayment for term loan for the project have been shown in table 10.7. After a moratorium period of one year, the term loan has been assumed to be fully repaid in thirty-two equal quarterly installments.

(Nu. in Lacs)

S. No.	Year	Opening Balance	Repayment	Closing Balance	Interest	
A	**1st year**	**243.22**	**0**	**243.22**	**29.19**	**29.19**
B	**2nd year**					
	I Qtr	243.22	7.60	235.62	7.18	
	II Qtr	235.62	7.60	228.02	6.95	
	III Qtr	228.02	7.60	220.42	6.73	
	IV Qtr	220.42	7.60	212.82	6.50	**27.36**
C	**3rd year**					
	I Qtr	212.82	7.60	205.22	6.27	
	II Qtr	205.22	7.60	197.62	6.04	
	III Qtr	197.62	7.60	190.02	5.81	
	IV Qtr	190.02	7.60	182.42	5.59	**23.71**
D	**4th year**					
	I Qtr	182.42	7.60	174.82	5.36	
	II Qtr	174.82	7.60	167.22	5.13	
	III Qtr	167.22	7.60	159.62	4.90	
	IV Qtr	159.62	7.60	152.02	4.67	**20.07**
E	**5th year**					
	I Qtr	152.02	7.60	144.42	4.45	
	II Qtr	144.42	7.60	136.82	4.22	
	III Qtr	136.82	7.60	129.22	3.99	
	IV Qtr	129.22	7.60	121.62	3.76	**16.42**
F	**6th year**					

S. No.	Year	Opening Balance	Repayment	Closing Balance	Interest	
	I Qtr	121.62	7.60	114.02	3.53	
	II Qtr	114.02	7.60	106.42	3.31	
	III Qtr	106.42	7.60	98.82	3.08	
	IV Qtr	98.82	7.60	91.22	2.85	**12.77**
G	**7th year**					
	I Qtr	91.22	7.60	83.62	2.62	
	II Qtr	83.62	7.60	76.02	2.39	
	III Qtr	76.02	7.60	68.42	2.17	
	IV Qtr	68.42	7.60	60.82	1.94	**9.12**
H	**8th year**					
	I Qtr	60.82	7.60	53.22	1.71	
	II Qtr	53.22	7.60	45.62	1.48	
	III Qtr	45.62	7.60	38.02	1.25	
	IV Qtr	38.02	7.60	30.42	1.03	**5.47**
I	**9th year**					
	I Qtr	30.42	7.60	22.82	0.80	
	II Qtr	22.82	7.60	15.22	0.57	
	III Qtr	15.22	7.60	7.62	0.34	
	IV Qtr	7.62	7.62	0.00	0.11	**1.83**

Table 10.7: Calculation of Interest on Term Loan

e. Depreciation Calculations

Depreciation, as shown in table 10.8 has been worked out using the straight Line Method (SLM), based on rates approved by the Royal Government of Bhutan given in table 10.9.

i. Depreciation Chart (As Per Income Tax Law, Bhutan)

S. No.	Description	Total Investment (Nu. in Lacs)	Rate of Dep. %	Amount of Dep. (Nu. in Lacs)	Rate of Dep. %	Amount of Dep. (Nu. in Lacs)	Rate of Dep. %	Amount of Dep. (Nu. in Lacs)
	On S. L. Method up to 6 Years				For 7th Year		For 8th Year Onwards	
1	Land 4,000 sq. meter	0.00	0	0.00	0	0	0	0
2	Building & Civil Construction	119.71	3%	3.59	3%	3.59	3%	3.59
3	Plant & Machinery	165.54	15%	24.83	10%	16.55	0%	0
4	Misc. Fixed Assets	67.10	15%	10.07	10%	6.71	0%	0
	Total	**352.36**		**38.49**		**26.86**		**3.59**

Table 10.8: Depreciation Chart (As Per Income Tax Law, Bhutan)

ii. Depreciation Calculations (by Straight Line Method) (Nu. in Lacs)

Description	**Opening Balance**	**St. Line Rate**	**Dep. Amount**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Land & Site Development	0	0	0	0	0	0	0	0	0	0	0	0	0
Depreciation				0	0	0	0	0	0	0	0	0	0
Factory Buildings	119.71	3%	3.59	116.12	112.53	108.94	105.35	101.76	98.16	94.57	90.98	87.39	83.80
Depreciation				3.59	3.59	3.59	3.59	3.59	3.59	3.59	3.59	3.59	3.59
Plant & Machinery excl. Foundation etc.	165.54	15%	24.83	140.71	115.88	91.05	66.22	41.39	16.55	0.00	0.00	0.00	0.00
Depreciation				24.83	24.83	24.83	24.83	24.83	24.83	16.55			
Misc. Fixed Assets													
Furniture	3.00	15%	0.45	2.55	2.10	1.65	1.20	0.75	0.30	0.00	0.00	0.00	0.00
Depreciation				0.45	0.45	0.45	0.45	0.45	0.45	0.30			
Office Equipment	2.25	15%	0.34	1.91	1.58	1.24	0.90	0.56	0.23	0.00	0.00	0.00	0.00
Depreciation				0.34	0.34	0.34	0.34	0.34	0.34	0.23			
Misc. Tools & Equipments	45.85	15%	6.88	38.98	32.10	25.22	18.34	11.46	4.59	0.00	0.00	0.00	0.00
Depreciation				6.88	6.88	6.88	6.88	6.88	6.88	4.59			
Vehicles	16.00	15%	2.40	13.60	11.20	8.80	6.40	4.00	1.60	0.00	0.00	0.00	0.00
Depreciation				2.40	2.40	2.40	2.40	2.40	2.40	1.60			
Total Dep. for the Year				**38.49**	**38.49**	**38.49**	**38.49**	**38.49**	**38.49**	**26.86**	**3.59**	**3.59**	**3.59**
Gross Fixed Assets	**352.36**	**352.36**	**352.36**	**352.36**	**352.36**	**352.36**	**352.36**	**352.36**	**352.36**	**352.36**	**352.36**	**352.36**	**352.36**
Total Dep. for 10 Years			**268.56**										

Table 10.9: Depreciation Calculations

iii Additional Replacement Costs during the Project Lifetime

Since the plant machinery life span is more than 10 years, hence except normal maintenance costs @ 4%, no plant machinery replacement costs have been considered in 10 years analysis. The life spans considered for different types of plant equipment are as given in table 10.10:

S. No.	Equipment Type	Life Span (Years)
A	**Mineral Water treatment**	
1	Treatment Plant Complete	10
B	**PET Bottle making, Filling, Sealing**	
1	Pet Preform Injection Moulding Machine	12
2	Hopper dryer with Loader	12
3	Dehumidifier	10
4	Cooling Tower	10
5	Chilling Plant	10
6	Pet Blowing Machine	10
7	Compressor	10
8	Washing, Filling, Capping, Sealing	10
9	Batch Coding	10
10	Semi Automatic Taping Machine	10
11	Inspection Station	10
12	Material Handling	12
13	Hot Air Generators	12
14	Compressors	15
15	Misc. Equipment	25
C	**Electrical & Instrumentation**	
1	Transformers	15
2	Main Control Panel	45
3	Distribution Boards	45
4	Cables	45
5	Motors	15

Table 10.10: Life Span of Machinery

f. Interest Calculation and Loan Repayment

Yearly interest payment and loan repayment schedule for term loan and working capital borrowing has been work out as per the table 10.11 given bellow:

(Nu. in Lacs)

Operating Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Term Loan										
Rate of Interest	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Loan (outstanding at beginning of year)	243.22	243.22	212.82	182.42	152.02	121.62	91.22	60.82	30.42	0.00
Repayment	0.00	30.40	30.40	30.40	30.40	30.40	30.40	30.40	30.42	0.00
Loan (outstanding at end of year)	243.22	212.82	182.42	152.02	121.62	91.22	60.82	30.42	0.00	0.00
Average Balance	243.22	228.02	197.62	167.22	136.82	106.42	76.02	45.62	15.21	0.00
Moratorium	Yes									
Interest (A)	29.19	27.36	23.71	20.07	16.42	12.77	9.12	5.47	1.83	0.00
Total Debt Service	29.19	57.76	54.11	50.47	46.82	43.17	39.52	35.87	32.25	0.00
Working Capital Loan										
Rate of Interest	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%
Loan Outstanding (Ob)	46.59	46.59	46.59	46.59	46.59	46.59	46.59	46.59	46.59	46.59
Interest (B)	6.06	6.06	6.06	6.06	6.06	6.06	6.06	6.06	6.06	6.06
Moratorium	N.A.									
Repayment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Closing Balance	46.59	46.59	46.59	46.59	46.59	46.59	46.59	46.59	46.59	46.59
Total Interest (A+B)	35.24	33.42	29.77	26.12	22.47	18.83	15.18	11.53	7.88	6.06
Total Loan Repayment (Term Loan + Working Capital Loan)	0.00	30.40	30.40	30.40	30.40	30.40	30.40	30.40	30.42	0.00

Table 10.11: Interest Calculation and Loan Repayment

g. Tax Calculations

(Nu. in Lacs)

S. No.	Operating Years	1	2	3	4	5	6	7	8	9	10
1	Profit/Loss before Taxation (PBT)	105.58	142.54	186.23	184.45	183.19	181.68	191.55	212.77	210.43	205.98
2	Add Back Depreciation	38.49	38.49	38.49	38.49	38.49	38.49	26.86	3.59	3.59	3.59
3	Profit/Loss before Depr. & Tax (PBDT)	144.07	181.03	224.72	222.94	221.68	220.17	218.40	216.36	214.03	209.57
4	B/F Loss Previous Year	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	Previous Year Loss Adjusted	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Adjusted PBDT	144.07	181.03	224.72	222.94	221.68	220.17	218.40	216.36	214.03	209.57
7	Unabsorbed Loss Current Year	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	Unabsorbed Loss Previous Year	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Unabsorbed Loss C/F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	B/F Depreciation Previous Year	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	Depreciation as Per Income Tax Act (SLM)	38.49	38.49	38.49	38.49	38.49	38.49	26.86	3.59	3.59	3.59
12	Total Taxable Income	105.58	142.54	186.23	184.45	183.19	181.68	191.55	212.77	210.43	205.98
13	Tax on Total Income	31.67	42.76	55.87	55.33	54.96	54.50	57.46	63.83	63.13	61.79
	Tax Rates	**30%**	**30%**	**30%**	**30%**	**30%**	**30%**	**30%**	**30%**	**30%**	**30%**

Table 10.12: Tax Calculations

h. Projected Cash Flow

(Nu. in Lacs)

S. No.	Years	Construction Period	1	2	3	4	5	6	7	8	9	10
1	**Sources of Funds**											
1.1	Equity	171.40	36.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.2	Debt	243.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.3	PBT with Interest Added Back	0.00	140.82	175.96	216.00	210.57	205.67	200.51	206.72	224.30	218.32	212.04
1.4	Depreciation	0.00	38.49	38.49	38.49	38.49	38.49	38.49	26.86	3.59	3.59	3.59
1.5	Preliminary Expenses Written Off	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
1.6	Pre Operative Expenses Written Off	0.00	0.00	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.13
1.7	Loan for WC	0.00	46.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.8	Increase in Liability for Sales Tax	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.9	Short Term Loans	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10	MODVAT Adjustment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Sources	**414.62**	**262.58**	**219.67**	**259.72**	**254.28**	**249.38**	**244.22**	**238.81**	**233.11**	**227.13**	**220.85**
2	**Disposition of Funds**											
2.1	Fixed Assets Purchases	352.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.2	Decrease in Liability for Sales Tax	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.3	Increase in Current Assets	0	75.97	12.66	12.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.4	Repayment of Term Loan	0.00	0.00	30.4	30.4	30.4	30.4	30.4	30.4	30.4	30.42	0
2.5	Payment of Interest on Term Loan	0.00	29.19	27.36	23.71	20.07	16.42	12.77	9.12	5.47	1.83	0.00
2.6	Repayment of Bridge Loan (for Ed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.7	Payment of Interest on St Loan (for Ed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.8	Repayment of Working Capital Loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.6	Payment of Interest on W/C Loan	0.00	6.06	6.06	6.06	6.06	6.06	6.06	6.06	6.06	6.06	6.06
2.7	Payment of Dividends	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.8	Capital Expenditure	52.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.9	Taxation	0.00	31.67	42.76	55.87	55.33	54.96	54.50	57.46	63.83	63.13	61.79
	Total Disposition	**404.62**	**142.89**	**119.24**	**128.70**	**111.86**	**107.83**	**103.73**	**103.04**	**105.76**	**101.43**	**67.85**
3	**Surplus/(Deficit)**	10.00	119.70	100.43	131.01	142.43	141.55	140.49	135.76	127.35	125.70	153.00
4	**Opening Cash & Bank Balance**	0	10.00	129.70	230.13	361.14	503.57	645.12	785.61	921.37	1048.73	1174.43
5	**Closing Cash & Bank Balance**	10.00	129.70	230.13	361.14	503.57	645.12	785.61	921.37	1048.73	1174.43	1327.43

Table 10.13: Projected Cash Flow

i. Projected Balance Sheet

(Nu. in Lacs)

S. No.	Description	Construction Period	Operation Period									
		1	1	2	3	4	5	6	7	8	9	10
1	**Liabilities**											
1.1	Equity	171.40	207.98	207.98	207.98	207.98	207.98	207.98	207.98	207.98	207.98	207.98
1.2	General Reserves	0	73.90	173.68	304.04	433.16	561.39	688.57	822.65	971.58	1118.89	1263.07
1.3	Debt	243.22	243.22	212.82	182.42	152.02	121.62	91.22	60.82	30.42	0.00	0.00
1.4	Working Capital Loan	0	46.59	46.59	46.59	46.59	46.59	46.59	46.59	46.59	46.59	46.59
	Total Liabilities	**414.62**	**571.70**	**641.07**	**741.04**	**839.75**	**937.58**	**1034.36**	**1138.04**	**1256.58**	**1373.46**	**1517.65**
2	**Assets**											
2.1	Gross Fixed Assets	352.36	352.36	352.36	352.36	352.36	352.36	352.36	352.36	352.36	352.36	352.36
2.2	Accumulated Depreciation	0	38.49	76.98	115.47	153.95	192.44	230.93	257.79	261.38	264.97	268.56
2.3	Net Fixed Assets (2.01-2.02)	352.36	313.87	275.38	236.89	198.41	159.92	121.43	94.57	90.98	87.39	83.80
2.4	Preliminary Expenses	1.00	0.90	0.80	0.70	0.60	0.50	0.40	0.30	0.20	0.10	0.00
2.5	Pre-operative Expenses	51.26	51.26	46.13	41.01	35.88	30.75	25.63	20.50	15.38	10.25	5.13
2.6	Net Current Assets	0	75.97	88.63	101.29	101.29	101.29	101.29	101.29	101.29	101.29	101.29
2.7	Profit & Loss Account	0	0	0	0	0	0	0	0	0	0	0
2.8	Cash & Bank Balance	10.00	129.70	230.13	361.14	503.57	645.12	785.61	921.37	1048.73	1174.43	1327.43
	Total Assets	**414.62**	**571.70**	**641.07**	**741.04**	**839.75**	**937.58**	**1034.36**	**1138.04**	**1256.58**	**1373.46**	**1517.65**

Table 10.14: Projected Balance Sheet

10.2 Financial Performance Indicators

a. Calculation of Financial Performance Indicators are given in the following tables 10.16, 10.17,10.18 and 10.19.

(Nu. in Lacs Unless Otherwise Mentioned)

Operating Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Debt Service Coverage Ratio	4.85	2.87	3.56	3.72	3.91	4.13	4.30	4.40	4.74	
Average DSCR	4.05									
Net Worth (Rs. Lacs)										
Total Equity	171.40	207.98	207.98	207.98	207.98	207.98	207.98	207.98	207.98	207.98
General Reserves	0.00	73.90	173.68	304.04	433.16	561.39	688.57	822.65	971.58	1118.89
Profit & Loss A/C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Worth (Rs. Lacs)	171.40	281.89	381.67	512.03	641.14	769.37	896.55	1030.63	1179.57	1326.87
Net Debt (Rs. Lacs)										
Term Loans	243.22	243.22	212.82	182.42	152.02	121.62	91.22	60.82	30.42	0.00
Net Debt (Long Term)	243.22	243.22	212.82	182.42	152.02	121.62	91.22	60.82	30.42	0.00
Bridge Loans	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan Repayment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Debt (Bridge Loan)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Debt : Equity	1.42	0.86	0.56	0.36	0.24	0.16	0.10	0.06	0.03	0.00
Working Capital Loan	0.00	46.59	46.59	46.59	46.59	46.59	46.59	46.59	46.59	46.59
Net Debt (Short Term)	0.00	46.59	46.59	46.59	46.59	46.59	46.59	46.59	46.59	46.59
Net Profit after Tax	73.90	99.78	130.36	129.11	128.23	127.18	134.08	148.94	147.30	144.19
Capital Employed	414.62	571.70	641.07	741.04	839.75	937.58	1034.36	1138.04	1256.58	1373.46
Return on Capital Employed	17.82%	17.45%	20.33%	17.42%	15.27%	13.56%	12.96%	13.09%	11.72%	10.50%

Table 10.15: Financial Performance Indicators

b. Break Even Point

Calculation of B.E.P.	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year
Variable Cost	492.45	572.24	652.08	653.16	654.29	655.48	656.73	658.04	659.41	660.86
Fixed Cost	141.14	142.47	142.14	142.85	142.97	143.29	132.18	109.65	110.61	113.62
Break Even Point (B.E.P.)	**57.18%**	**49.09%**	**42.61%**	**42.96%**	**43.14%**	**43.40%**	**40.18%**	**33.47%**	**33.90%**	**34.98%**
Average B.E.P.	**42.09%**									

Table 10.16: Break Even Point

c. NPR and RI

Net Profit Ratio (NPR)	**14.28%**	**16.53%**	**18.89%**	**18.71%**	**18.59%**	**18.43%**	**19.43%**	**21.59%**	**21.35%**	**20.90%**
Average Net Profit Ratio	**18.87%**									

Table 10.17: NPR and RI

d. Return on Investment and Payback Period

Return on Investment (RI)	**30.39%**	**41.02%**	**53.60%**	**53.08%**	**52.72%**	**52.29%**	**55.13%**	**61.23%**	**60.56%**	**59.28%**
Average Return on Investment	**51.93%**									
Payback Period in Years	**3.29**									

Table 10.18: Return on Investment & Payback Period

e. Financial Internal Rate of Return (FIRR)

S. No.	YEARS	Construction period	1	2	3	4	5	6	7	8	9	10
1	**INFLOWS**											
1.1	Net Profit after taxation	0.00	73.90	99.78	130.36	129.11	128.23	127.18	134.08	148.94	147.30	144.19
1.2	Depreciation	0.00	38.49	38.49	38.49	38.49	38.49	38.49	26.86	3.59	3.59	3.59
1.3	Interest on Term Loan & WC	0.00	35.24	33.42	29.77	26.12	22.47	18.83	15.18	11.53	7.88	6.06
1.4	Preliminary exp. written off	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
1.5	Pre operative exp. written off	0.00	0.00	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.13
1.6	Salvage Value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Inflow	**0.00**	**147.74**	**176.91**	**203.85**	**198.95**	**194.42**	**189.72**	**181.34**	**169.28**	**164.00**	**159.06**
2	**OUTFLOWS**											
2.1	Investment in Fixed assets	439.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.2	Investment in working capital	46.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Outflows	**486.44**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
3	**NET CASH FLOW**	-486.44	147.74	176.91	203.85	198.95	194.42	189.72	181.34	169.28	164.00	159.06

Table 10. 19: Discounted Cash Flow Statement for FIRR Calculation

Summary of financial analysis reveals the following performance indicators given in table 10.20, wherever applicable:

S. No.	Indicator	Values
1	Payback Period	3.29 years
2	Debt Service Coverage Ratio (Average)	4.05
3	Return on Investment (Average)	51.93%
4	Net Profit Ratio (Average)	18.87%
5	Break Even Point (Average)	42.09%
6	Debt Equity Ratio (Average)	0.38
7	Return on Capital Employed (Average)	15.01%
8.	Net Profit after Tax (Average)	Nu. 126.31 Lacs
9.	Financial Internal Rate of Return(FIRR)	34.47%
10.	Economic Internal Rate of Return (FIRR)	29.50%

Table 10.20: Performance Indicators

- Financial Internal Rate of Return (FIRR) 34.47%
- Net Present Value (NPV) Nu. 524.73 Lacs
- Weighted Average Cost of Capital (WACC) 12%

The NPV of the project is positive (Nu. 524.73 lacs) at the discount factor of 12% (i.e. the WACC) during the first 10 years of operation considered. This implies that the project generates sufficient funds to cover its cost, including loan repayments and interest payments during the period. This also indicates that the project can continue making profits even after 10 years and hence the project is financially viable.

10.3 Risk and Sensitivity Analysis

- **Equipment Supply Delays –** The key plant and machineries required for the plant, as well as the power distribution system, are to be imported from India. Delays in dispatch or transportation can result in a delay in project completion. This delay can be mitigated if project implementation is entrusted to qualified consultants with considerable knowledge about the delivery track record of different suppliers. The equipment supply contract should be one that quantifies the liquidated damages to be borne by the supplier in the event of a delay in project implementation.

- **Funding Delays –** The progress of the project can always suffer from lack of timely availability of funds. The funding of the project is initially envisaged to take place through equity, while loan disbursements are scheduled along with the placement of the main machinery order. It is critical for the project to have the funding completely tied-up well before this date, so that funds are readily available without causing any interruption in project implementation.

a. Macro Economic Risks

Any slowdown in the economic growth, either as a consequence of political uncertainty/instability, or on account of macroeconomic factors, is likely to affect the transportation of mineral water to India and through India to other countries.

The consumption of mineral water will not slow down. However, the setting up of more mineral water units in India may affect the market for Bhutanese Mineral water.

b. Raw Material & Utility Supply Risks

The raw material water has to be transported through piping across the road from the source to the plant. The PVC raw material for PET bottles will be transported from India to Bhutan and part of the area en route is affected by insurgency and this may cause disturbance in the timely receipt of raw materials.

Sensitivity Analysis

The parameters considered on investment are summarized for sensitivity analysis in table 10.21 given below:

Case No.	Description	DSCR	B. E. P.	Net Profit Ratio	Return on Investment
	Normal Case	2.32	57.18%	13.59%	28.91%
1	10 % Increase in Raw Material Cost	1.91	66.47%	8.92%	18.99%
2	10 % Increase in Salary & Wages	2.25	59.45%	12.83%	27.30%
3	10 % Increase in Project Cost	2.23	60.15%	12.55%	26.69%
4	5% Increase in Selling & Distribution Exp.	1.88	67.26%	8.59%	18.27%
5	10 % Increase in Fixed Cost	2.16	62.90%	11.68%	24.85%
6	10 % Decrease in Selling Prices	1.45	81.64%	3.99%	7.63%
7	5 % Increase in Variable Cost + 5 % Increase in Fixed Cost	1.95	66.70%	9.30%	19.79%
8	15 % Increase in Raw Material Cost	1.68	73.31%	6.24%	13.28%
9	15 % Decrease in Selling Prices	1.01	103.83%	-1.66%	-3.00%
10	10% Increase in Selling & Distribution Exp.	1.45	81.64%	3.59%	7.63%

Table 10.21: Parameters for Sensitivity Analysis

In order to determine operating flexibility, the sensitivity of project break-even to variations in certain key operating parameters has been tested and given in table 10.22 given below:

S. No.	Particulars	Normal	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9	Case 10
1	Installed Capacity (Nu. in Lacs) 100%	1232.10	1232.10	1232.10	1232.10	1232.10	1232.10	1232.10	1232.10	1232.10	1232.10	1232.10
2	Capacity Utilization	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
3	Actual Sales in Lacs Nu.	739.26	739.26	739.26	739.26	739.26	739.26	739.26	739.26	739.26	739.26	739.26
4	**COST OF PRODUCTION**											
4.1	Raw Material Consumed	344.76	379.24	344.76	344.76	344.76	344.76	344.76	362.00	396.48	344.76	344.76
4.2	Consumables @5%	17.24	17.24	17.24	17.24	17.24	17.24	17.24	18.10	19.82	17.24	17.24
4.3	Power, Fuel & Water	10.25	10.25	10.25	10.25	10.25	10.25	10.25	10.76	10.25	10.25	10.25
4.4	Salary & Wages	48.54	48.54	53.39	48.54	48.54	53.39	48.54	50.97	48.54	48.54	48.54
4.5	Fringe Benefits @15%	7.28	7.28	8.01	7.28	7.28	8.01	7.28	7.65	7.28	7.28	7.28
4.6	Insurance	0.88	0.88	0.88	0.88	0.88	0.97	0.88	0.92	0.88	0.88	0.88
4.7	Repair & Maintenance @4%	9.31	9.31	9.31	10.24	9.31	9.31	9.31	9.77	9.31	9.31	9.31
4.8	Land Lease Rent	1.70	1.70	1.70	1.70	1.70	1.88	1.70	1.79	1.70	1.70	1.70
4.9	Other Administrative Expenses	9.00	9.00	9.00	9.00	9.00	9.90	9.00	9.45	9.00	9.00	9.00
	Total	448.96	483.44	454.55	449.89	448.96	455.70	448.96	471.41	503.26	448.96	448.96
5	Selling & Distribution Expenses @15% on Sales	110.89	110.89	110.89	110.89	147.85	110.89	110.89	116.43	110.89	110.89	184.82
6	**COST OF SALES**	559.85	594.33	565.43	560.78	596.81	566.59	559.85	587.84	614.15	559.85	633.78
7	**SALES**	739.26	739.26	739.26	739.26	739.26	739.26	665.33	739.26	739.26	628.37	739.26
8	**PROFIT BEFORE INTT. AND DEPR**	179.41	144.93	173.83	178.48	142.45	172.67	105.48	151.42	125.11	68.52	105.48
9	Interest on Term Loan @12%	29.19	29.19	29.19	32.11	29.19	32.11	29.19	30.65	29.19	29.19	29.19
10	On Working Capital @13 %	6.06	6.06	6.06	6.06	6.06	6.66	6.06	6.36	6.06	6.06	6.06
11	Total Interest	35.24	35.24	35.24	38.16	35.24	38.77	35.24	37.01	35.24	35.24	35.24
12	Profit before Depreciation.	144.17	109.69	138.58	140.32	107.20	133.90	70.24	114.41	89.87	33.28	70.24
13	**DEPRECIATION**	38.49	38.49	38.49	42.34	38.49	42.34	38.49	40.41	38.49	38.49	38.49
14	Profit after Depreciation	105.68	71.20	100.09	97.98	68.71	91.56	31.75	74.00	51.38	-5.21	31.75
15	Pre-operative Expenses Written Off	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.13

S. No.	Particulars	Normal	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9	Case 10
16	Preliminary Exp. Written Off	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
17	**PROFIT BEFORE TAXATION**	100.45	65.97	94.87	92.75	63.49	86.34	26.52	68.77	46.15	-10.44	26.52
18	Taxation @30% of Net Profit	30.14	19.79	28.46	27.83	19.05	25.90	7.96	20.63	13.85	0.00	7.96
19	**PROFIT AFTER TAXATION**	70.32	46.18	66.41	64.93	44.44	60.44	18.57	48.14	32.31	-10.44	18.57
20	Add : Depreciation	38.49	38.49	38.49	42.34	38.49	42.34	38.49	40.41	38.49	38.49	38.49
21	Add: Interest on Term Loan	29.19	29.19	29.19	32.11	29.19	32.11	29.19	30.65	29.19	29.19	29.19
	Total (A)	137.99	113.86	134.08	139.37	112.12	134.88	86.24	119.20	99.98	60.37	86.24
22	Interest on Term Loan	29.19	29.19	29.19	32.11	29.19	32.11	29.19	30.65	29.19	29.19	29.19
23	Repayment on Term Loan	30.40	30.40	30.40	30.40	30.40	30.40	30.40	30.40	30.40	30.40	30.40
	Total (B)	59.59	59.59	59.59	62.51	59.59	62.51	59.59	61.05	59.59	59.59	59.59
	SURPLUS (A) - (B)	78.40	54.27	74.50	76.86	52.53	72.37	26.66	58.15	40.39	0.78	26.66
	DSCR (A/B)	**2.32**	**1.91**	**2.25**	**2.23**	**1.88**	**2.16**	**1.45**	**1.95**	**1.68**	**1.01**	**1.45**

Table 10.22: Sensitivity Analysis

c. Calculations of B.E.P., NPR and RI with Parameters for Sensitivity Analysis given in table 10.23 are as follows:

Case	Base	1	2	3	4	5	6	7	8	9	10
Variable Cost	492.45	526.92	492.45	493.38	529.41	492.45	492.45	517.07	546.75	492.45	566.37
Fixed Cost	141.14	141.14	146.72	147.90	141.14	155.25	141.14	148.19	141.14	141.14	141.14
Break Even Point (B.E.P.)	**57.18%**	**66.47%**	**59.45%**	**60.15%**	**67.26%**	**62.90%**	**81.64%**	**66.70%**	**73.31%**	**103.83%**	**81.64%**
Net Profit Ratio (NPR)	**13.59%**	**8.92%**	**12.83%**	**12.55%**	**8.59%**	**11.68%**	**3.99%**	**9.30%**	**6.24%**	**-1.66%**	**3.59%**
Return on Investment (RI)	**28.91%**	**18.99%**	**27.30%**	**26.69%**	**18.27%**	**24.85%**	**7.63%**	**19.79%**	**13.28%**	**-3.00%**	**7.63%**

Table 10.23: Calculations of B.E.P., NPR and RI with Parameters for Sensitivity Analysis

- Indicative only considering 2 shifts of 8 hours each

10.3.1 Risk and Sensitivity Case Analysis

Case 1: 10% increase in raw material cost will change the important project financial parameters as under:

- Total cost of production will rise by 7.68%, reducing the profit after taxation from Nu.70.32 lacs to Nu.46.18 lacs.
- DSCR will decrease to 1.91 from 2.32, which is more than one and shows the loan servicing capability comfortably.
- The B.E.P., which is 57.18%, will rise to 66.47. It will require more operational efficiency.
- Net Profit Ratio will decrease to 8.92% from 13.59% affecting the profit margin by 4.67%. Return on investment will decrease by 9.92% from 28.81% to 18.99%, which is reasonable.

All other important financial parameters are in the safe limit and the project will be financially viable in this case.

Case 2: 10 % increase in salary & wages

- Total cost of production will rise by 1.24%, reducing the profit after taxation from Nu.70.32 lacs to Nu. 66.41lacs.
- DSCR will decrease to 2.25 from 2.32, which is more than one and shows the loan servicing capability comfortably.
- The B.E.P., which is 57.18%, will rise to 59.45%. It will require increased operational efficiency during running.
- Net Profit Ratio will decrease to 12.83% from 13.59% affecting the profit margin by 0.76%. Return on investment will decrease by 1.61% from 28.91% to 27.30%, which is quite reasonable.

All other important financial parameters are in the safe limit and the project will be financially viable in this case.

Case 3: 10 % increase in project cost

- Total cost of production will rise by 0.21%, reducing the profit after taxation from Nu.70.32 lacs to Nu.64.93 lacs. The interest (cost of finance) will increase from Nu.35.24 lacs to Nu.38.16 lacs.
- DSCR will decrease to 2.23 from 2.32, which is more than one and shows the loan servicing capability comfortably.
- The B.E.P., which is 57.18%, will rise to 60.15%. It shows minor effect on the operational parameter of the project.
- Net Profit Ratio will decrease to 12.55% from 13.59% affecting the profit margin by 1.04%. Return on investment will decrease by 2.22% from 28.91% to 26.69%, which is still higher.

All other important financial parameters are in the safe limit and the project will be financially viable in this case.

Case 4: 5% increase in selling & distribution expenses

- Cost of sales will increase by 6.60%, reducing the profit after taxation from Nu.70.32 lacs to Nu. 44.44 lacs.
- DSCR will decrease to 1.88 from 2.32, which is more than one and shows the loan servicing capability comfortably.
- The B.E.P., which is 57.18%, will rise to 67.26%. It will require more efficient working.

- Net Profit Ratio will decrease to 8.59% from 13.59% affecting the profit margin by 5.00%. Return on investment will decrease by 10.64% from 28.91% to 18.27%, which is reasonable.

All other important financial parameters are in the safe limit and the project will be financially viable in this case.

Case 5: 10 % increase in fixed cost

- Total cost of production will rise by 1.5%, reducing the profit after taxation from Nu.70.32 lacs to Nu.60.44 lacs. The interest (cost of finance) will increase from Nu.35.24 lacs to Nu.38.77 lacs.
- DSCR will decrease to 2.16 from 2.32, which is more than one and shows the loan servicing capability comfortably.
- The B.E.P., which is 57.18%, will rise to 62.90%. It will require more efficient working.
-
- Net Profit Ratio will decrease to 11.68% from 13.59% affecting the profit margin by 1.91%. Return on investment will decrease by 4.06% from 28.91% to 24.85%, which is still higher.

All other important financial parameters are in the safe limit and the project will be financially viable in this case.

Case 6: 10 % decrease in selling prices

- The profit before interests and depreciation will decrease by 41.20%, reducing the profit after taxation from Nu. 70.32 lacs to Nu.18.57 lacs.
- DSCR will decrease to 1.45 from 2.32, which is more than one and shows the loan servicing capability comfortably.
- The B.E.P., which is 57.18% will rise to 81.64%.It will only create minor effect on the financial viability of the project.
- Net Profit Ratio will decrease to 3.99% from 13.59% affecting the profit margin by 9.6%. Return on investment will decrease by 21.28% from 28.91% to 7.63%, which is comfortable.

All other important financial parameters are in the safe limit and the project will be financially viable in this case.

Case 7: 5 % increase in variable cost + 5 % increase in fixed cost

- Total cost of production will increase by 5%, reducing the profit after taxation by 31.54 % from Nu.70.32 lacs to Nu. 48.14 lacs. The interest (cost of finance) will increase from Nu.35.24 lacs to Nu.37.01 lacs.
- DSCR will decrease to 1.95 from 2.32, which is more than one and shows the loan servicing capability comfortably.
- The B.E.P., which is 57.18%, will rise to 66.70%.It will require more efficient working.
- Net Profit Ratio will decrease to 9.3% from 13.59% affecting the profit margin by 4.29%. Return on investment will decrease by 9.12% from 28.91% to 19.79%, which is reasonable.

All other important financial parameters are in the safe limit and the project will be financially viable in this case.

Case 8: 15 % increase in raw material cost

- Total cost of production will rise by 12.09%, reducing the profit after taxation from Nu. 70.32 lacs to Nu.32.31lacs.
- DSCR will decrease to 1.68 from 2.32, which is more than one and shows the loan servicing capability comfortably.
- The B.E.P., which is 57.18% will rise to73.31%. It will require more efficient working.
- Net Profit Ratio will decrease to 6.24% from 13.59% affecting the profit margin by 7.35%. Return on investment will decrease by 15.63% from 28.91% to 13.28%, showing reasonable profit.

All other important financial parameters are in the safe limit and the project will be financially viable in this case.

Case 9: 15 % decrease in selling prices

- The profit before interests and depreciation will decrease by 61.81%, reducing the profit after taxation from Nu 70.32 lacs to (-) Nu.10.44 lacs.
- DSCR will decrease to 1.01 from 2.32, which is more than one and shows the loan servicing capability comfortably.
- The B.E.P., which is 57.18% will rise to 103.83%,
- Net Profit Ratio will decrease to -1.66% from 13.59% affecting the profit margin by 15.25%. Return on investment will decrease by 31.91% from 28.91% to -3%.

In this case B.E.P. is more than 100% and NPR is negative. Thus, it is concluded that 15% decrease in selling price will make this project financially unviable. However, with a less rate of depreciation the project will become financially viable.

Case 10: 10% increase in selling & distribution expenses

- Total cost of sales will rise from Nu. 559.85 lacs to Nu.663.78 lacs by 13.20%, reducing the profit after taxation from Nu.70.32 lacs to Nu.18.57 lacs.
- DSCR will decrease to 1.45 from 2.32 in this case, which is more than one and shows the loan servicing capability comfortably.
- The B.E.P., which is 57.18%, will rise to 81.64%. It will require more efficient operational working.
- Net Profit Ratio will decrease to 3.59% from 13.59% affecting the profit margin by 10%. Return on investment will decrease by 21.28% from 28.91% to 7.63%, which is reasonable

All other important financial parameters are in the safe limit and the project will be financially viable in this case.

10.4 Cost Benefit Analysis

The proposed Mineral water project at Gelephu will not only contribute to the national exchequer but will also bring local economic development in the vicinity.

Mineral water is a natural resource, which without disturbing the local environment will be put to use for significant gain in the local economic development of the area.

There is no significant industrial activity in Sarpang Dzongkhag. The local population has a significant percentage in search of employment. The setting up of the project will generate local employment, boost local business and revenues for the state.

The total project cost estimate for the proposed project works out to Nu. 486.44 lacs. This project will generate direct employment for 84 persons and the local economy will get a boost by way of transportation services for input raw material for PET bottles, consumables and packed cartons as finished goods for distribution in Bhutan and rest of the word through India, development of local support services to the plant. The general business environment will substantially improve as the export of the mineral water increases.

The following table gives the annual inflows to the economy after the project becomes operational:

S. No.	Parameter	Cost benefits in terms of annual inflows to economy	
		Before (Present)	**After** (Future)
1	Employment – Direct	0	84
2	Employment – Indirect comprising services for • Transport of raw materials • Transport of finished products • Transport of personnel	0	140 (estimated)
3	Direct impact on economy • Land lease charges (1st year) • Interest paid out (1st year)) • Insurance charges (1st year) • Employee salaries (1st year) • Employee fringe benefits (1st year) • Income Tax paid (1st year) • Power consumption charges (1st year)	 0 0 0 0 0 0 0	 Nu. 1.70 Lacs Nu. 35.24 Lacs Nu. 0.88 Lacs Nu. 48.54 Lacs Nu. 7.28 Lacs Nu. 31.66 Lacs Nu. 10.00 Lacs

Table 10.24 Annual Inflows to Economy due to Project Implementation

The local economy will get a boost by way of transportation services for raw material, finished goods as well as personnel. The general business environment will substantially improve as the export of the mineral water increases. The unit will contribute to the national exchequer by way of income tax, land lease charges, power consumption charges. Product export will earn in Indian currency as well as hard currencies as the Japanese, Middle Eastern and European markets are tapped progressively. At the national level, it will help in solving the unemployment problem to some extent.

The project offers many important advantages to Bhutan, viz.:

- The cost of the main raw material, which is water from aquifer near Gelephu in Sarpang Dzongkhag is free and is presently wasted, will be put to economic use without any detrimental impact on the local ecology and environment.
- Availability of drinking water in most of the countries including neighboring India and Bangladesh is a serious problem. The pure water from Bhutan will cater to these markets and the country will join the elite group of countries, which produce the top end pristine Mineral water directly from source.
- International Branding for Mineral water will make the area Aipoly known internationally.
- The area is near to Indian border and thus, can be developed economically as business will increase due to increased economic activities in the area like Phuentsholing It will now be famous as source of pure spring water.
- Development of other small agro based industries for export to cash on the established name of the area in the Mineral Water segment.

Project has no polluting processes and no adverse impact on the environment.

The Sarpang Dzongkhag will benefit in the following other ways also:

- At present the industrial environment is non-existent for non-metallurgical industry and this unit will provide the nucleus for agro industries growth in the Dzongkhag
- This will spur the growth of agri-processing support technical institutions in the Dzongkhag.
- An impetus will be provided for generation of services to support the increasing economic activities in the region.