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FINANCIAL AND ECONOMIC ANALYSIS

1.1 Project Location

Teknaf Upazila is the southern-most city on the mainland in Bangladesh, on the narrow strip running along the coast of Myanmar. It's a dusty featureless frontier town - this is remote Bangladesh and it feels like it. Electricity can be scarce, so having a flashlight for the dark evenings is wise. Teknaf Upazila (cox's Bazar district) area 388.68 sq km, located in between 20°23' and 21°09' north latitudes and in between 92°05' and 92°23' east longitudes. It is bounded by ukhia upazila on the north, the Bay of Bengal on the south, arakan state of Myanmar on the east, the Bay of Bengal on the west. Teknaf upazila, located on the south east extremity of Bangladesh, is 86 km on the south of Cox's Bazar Town.

Teknaf is an Upazila of Cox's Bazar District in the Division of Chittagong, Bangladesh. It forms the southern-most point in mainland Bangladesh (St. Martin's Island is the southern-most point). The name of the region comes from the Naf River which forms the Eastern boundary of the upazila. It shares the border with Myanmar. Tourist spot of teknaf is St. Matin's Island (It is located 12 km from the main land and is the only coral island of Bangladesh). St. Martin's Island is comprised with four islands such as Zinzira, Dakshin Para, Chhalchhira and Bechhadia. The total area of the island is 4.8 km.



Figure 2.1: Colorful Boats at Teknaf Beach

Teknaf beach is a large beach about 5km west of the center of town, very popular with locals at sunset. It's much quieter than Cox's Bazar, though the 50+ motorcyclists racing back and forth along the shoreline won't help you to relax, nor will all of your new friends. There's a small snack shack where the road meets the beach.

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Figure 2.2: Sea Beach of Teknaf

Take a walk over the bridge, passing the river filled with colorful fishing boats, makeshift houses filled with curious children, and beautiful farmland looking out towards Myanmar, dotted with patrolling soldiers.

1.2 Route Description

Buses running from Cox's Bazar are crowded and pass through nice scenery as get closer to Teknaf. It takes nearly two hours to enter into teknaf from cox's bazaar. There are also Straight bus service Directly from Dhaka to Teknaf. Naf Tourism Park is located on an egg-shaped island raised in the middle of the Naf River under Teknaf Upazilla of Cox's Bazar. It has scenic Beauty with a hill view on both Myanmar and Bangladesh. The cable car connection will be constructed from Ne-Taung Hill to Naf Tourism Park (9.5km).



Figure 2.3: Distant View of Jaliardwip

1.3 Terminal Locations

The cable car connection will be constructed from Ne-Taung Hill to Naf Tourism Park (9.5km). There will be three terminals which have been named Terminal A, B and C. In this three terminals only B point will be in an elevated position from ground and other two terminals will be on ground.



Figure 2.4: Approximate location of point A- Near Marine drive side



Figure 2.5: Approximate location of point B- Top of the Ne-Taung Hill



Figure 2.6: Approximate location of point C- Jaliardwip



Figure 2.7: Project Area Land use map locating three terminals

2.1 The Project

Teknaf Upazila is the southern-most city on the mainland in Bangladesh, on the narrow strip running along the coast of Myanmar. Teknaf Upazila (cox's Bazar district) area 388.68 sq km, located in between 20°23' and 21°09' north latitudes and in between 92°05' and 92°23' east longitudes. It is bounded by ukhia upazila on the north, the Bay of Bengal on the south, arakan state of Myanmar on the east, the Bay of Bengal on the west. Teknaf upazila, located on the south east extremity of Bangladesh, is 86 km on the south of Cox's Bazar Town.

The project site is located at approximately 7 km from the center of Teknaf Upazila. The proposed EZ will be connected with the Marine Drive at the northern periphery, which will be used for access to the EZ. The proposed project is planned for Station-A to Station-B and Station-A to Station-B & Station-C on area of 16.84 acres and 19.52 acres respectively of which the Government land (Nal, Khila, Canal & River) 0.731 acres and 3.276 acres respectively and private land (Nal, Khila) 16.11 acres and 16.244 respectively. Highway Teknaf-Shahparirdwip Road (Z1099) runs parallel to the site at a distance of 5 KM. It connects the National Highway N1. The site is about 210 KM from Chittagong Railway Station and around 96 KM from Cox's Bazar Domestic Airport. A cable car connection will be constructed from Ne-Taung Hill to Naf Tourism Park (9.5km). A cable car route station B to station C is not considered to be feasible as a separate route, because station point B is on the top of the hill and station point C is on an island, which is situated in the middle of Naf river that divides Myanmer and Bangladesh.

2.2 Demand Assessment

The demand assessment estimated that the capacity at design level for cable car in Teknaf can accommodate 12,000 tourist-travelers daily for 8 hours duration. For the service area, in the later part of project life, the required capacity for cable car has been estimated and can also be extended to accommodate 20,000 tourist-travelers per day for 8 hours duration.

2.3 Methodology

The feasibility analysis will be done in two parts. Part I analyzes the financial feasibility of the project keeping in view ability of return the investment to the Government of Bangladesh. The financial feasibility enables us not only to assess the financial viability of the project, but also to guide any pricing and timing issues that may be able to influence the profitability of the project, and identify any requirements for public support. Part II analyzes the feasibility using economic analysis of projects where both direct and indirect net benefits (external effects) f the project are included. This analysis reveals economic feasibility of the project.

The methodology adopted for financial and economic analyses for this study will be outlined in **Figure 2.1**.



Figure-2.1: Financial and Economic Analysis Methodology

3.1 Financial Analysis

Financial analysis of a project is carried out to know the direct benefit received by an entrepreneur an individual. It doesn't analyze the indirect benefits received by the society and the country. A model was developed in a spreadsheet to calculate projected financial direct benefits (revenue streams) from tourist ticket fare of riding cable car, and capital and O&M costs, to enable the testing of a number of parameters for their effects on the finances of the cable car project in the Naf Tourism Park, Teknaf. The primary outputs of the model are estimates of the Financial Internal Rate of Return (FIRR) and Net Present Value (NPV) of the net benefits flow generated by the Cable Car Project along with Benefit-Cost ratio (BCR).

3.1.1 Key Assumptions of Financial and Economic Analysis Model

In order to carry out the Financial and Economic analysis, the following assum ons are made:

- 1) 7% of the annual tourists in Cox Bazar Districts will be in the project site, who will ride cable car, as the base case.
- 2) The cable car will operate only for 240 days in a year.

- 3) Per tourist ticket fare (price) is 1000 BDT and 1500 BDT per round trip for Station A to B1, and Station A to B1&B2 to Station C respectively, for cable car ride, as a base case.
- 4) All costs, benefits and revenues are expressed as on March, 2023 prices.
- 5) The implementation period of this project is three years covering all the interventions proposed within the project.
- 6) The project life for both financial and economic analysis is assumed to be 30 years.
- 7) The real opportunity cost of the capital investment adopted in this analysis is assumed as 12% per annum, which represents the social opportunity cost of capital (SOCC) for Bangladesh
- 8) The country will get more investments due to the tourist attractions, recreational facilities created by the Govt.
- Local inflation at zero percent for the implementation period and during the operation period a 5% compound rate for every five years for O&M costs has been considered.
- 10) A Standard Conversion Factor (SCF) of 0.84 has been used for economic analysis in the study.
- 11) Service Revenue (Direct benefits) growth will be @5% per year.

4.1 Costs Estimates

Project costs include capital cost of the project for construction of Cable Car & its Accessories and land acquisition costs. The other component of the project cost is Operation and Maintenance of the project. This has included both O&M of the Cable Car and the distribution system.

4.1.2 Capital Cost of Project

The total capital cost for construction of cable car, its accessories and accessories' building including land acquisition cost with CD, IT and VAT is estimated to be BDT 66600.1 Lac and BDT 112153.1 Lac for Cable Car route station A to B1 and Cable Car route station A to B1 & B2 to station C respectively in terms of March 2023 prices excluding off-site costs for utility connection and other off-site infrastructure. The summary of capital cost for construction of Cable car project (BOQ with Tender Documents for Cable Car) is shown in Table 1.

Table 2A and Table 2B show not only the decomposition of capital costs for the Cable car project in terms of station wise but also inclusion of 8% of capital costs for physical contingency and 5% of capital costs for price contingency in the capital costs of the project for Cable Car route station A to B1 and Cable Car route station A to B1 & B2 to station C respectively. The capital cost of the cable car project stands at **BDT 75259 Lac** and **BDT 126733 Lac** for Cable Car route station A to B1 and Cable Car route station A to B1 & B2 to station C respectively, which has been considered in financial analysis.

4.1.2 Operation and Maintenance (O&M) Costs

Annual Operating and maintenance costs is assumed to be 10% of total project costs and then after every five years, O&M cost will increase @10%.

Alternative way of estimating O&M costs is as follows. Operation and Maintenance costs (O&M) regarding Cable car project are assumed for four areas — administration/staffing costs, promotion costs, provision of costs for operating and maintaining utility services, and provision of security services. Administration costs are based on upper level managers, mid/low level officers, technical workers, and unskilled workers including security personnel initially. Annual marketing and promotion costs are set to Taka 50 Lac (35 Lac for cable route station A to B1 only), which will continue to increase @5% per year. Annual provision of O&M costs is assumed to be four per cent of capital costs initially and thereafter is growing @5% per year. Annual estimated O&M costs are provided in Table 3A and Table 3B respectively for cable car route A to B1 and cable car route A to B1&B2 to C. Annual O&M costs and Annual Estimated one are shown in Table 4A and Table 4B respectively for cable car route A to B1&B2 to C.

Table 1: Capital Costs for Construction of Cable Car at Naf Tourism Park

Construction of Cable Car including all materials, Pr	rice Estimation p	er March'2023
Items	Path A to B1 & Station A & B	Path A to B1 and B2 to C & Station A, B & C
Cost for Cable Car & its Acc	essories	
Construction of Cable Car Drive, Return, Parking & Line Equipment with Electrical Equipment, Accessories & Shipping & L/C Commissioning without CD & VAT.	€ 22,930,581.74	€ 45,095,210.76
N.B. h 1 = Tk.118	2,705,808,645	5,321,234,869
CD & VAT (35%) for above item	1,456,973,886	2,865,280,314
Construction of Cable Car Drive, Return, Parking & Line Equipment with Electrical Equipment, Accessories & Shipping & L/C Commissioning including CD & VAT.	4,162,782,531	8,186,515,183
SUMMARY of Land Qty. and its Valuation	86,175,453	99,933,661
Cost for Accessories' Bu	ilding	
Civil & Sanitary Works.	989,078,845	1,215,065,063
Electrical works.	699,360,521	770,885,958
Mechanical works (Fire Fighting & Fire protection, air Conditioning System and Lift & Escalator).	373,048,869	518,221,696
Accessories, Building including Civil Works, electrical works and Mechanical works (Fire Fighting & Fire protection, air Conditioning System and Lift & Escalator) Excluding VAT & IT	2,061,488,235	2,504,172,718
VAT (7.5%)	180,832,301	219,664,273
TAX (7%)	168,776,815	205,019,989
Accessories, Building including Civil Works, electrical works and Mechanical works (Fire Fighting & Fire protection, air Conditioning System and Lift & Escalator) including VAT & IT	2,411,097,350	2,928,856,980
Cost for Cable Car & its Accessories and	Accesssories'	Building
Completion of the Project including Cable car works, Civil Works, electrical works and Mechanical works (Fire Fighting & Fire protection, air Conditioning System and Lift & Escalator) Excluding VAT & IT	4,767,296,880	7,825,407,587
CD & VAT (35%) and VAT(7.5%) & TAX (7%)	1,806,583,002	3,289,964,576
Completion of the Project including Cable car works, Civil Works, electrical works and Mechanical works (Fire Fighting & Fire protection, air conditioning System and Lift & Escalator) Including CD &VAT and VAT & IT	6,660,055,335	11,215,305,824

Part I: BOQ with Tender Documents for Cable Car

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Table 2A: Services for Construction of Cable Car at Naf Tourism Park							
Part VI : BOQ with Tender Documents for All works (Path Station-A to Station-B).							
Construction of Cable Car including all materials, Price Estimation per March'2023							
Item	Station-A	Station-B1 & B2	Station-C	Sum	Unit		
Construction of Cable Car Drive, Return, Parking & Line Equipment with Electrical				€ 22,930,581.74			
Equipment, Accessories & Shipping & L/C Commissioning. (h1 = TK.118)				2,705,808,645	BDT		
CD & VAT (35%) for above item				1,456,973,886			
Construction Cable Car Drive, Return, Parking & Line Equipment with Electrical Equipment, Accessories & Shipping & L/C Commissioning including CD & VAT.				4,162,782,531			
SUMMARY of Land Qty. and its Valuation				86,175,453			
Accessories' Building Civil & Sanitary works.	879,569,812	109,509,032	-	989,078,844	BDT		
Accessories' Building Electrical works.	672,592,757	26,767,764	-	699,360,521	BDT		
Accessories' Building Mechanical works (Fire Fighting & Fire protection, air conditioning System and Lift & Escalator).	227,876,041	145,172,828	-	373,048,869	BDT		
Accessories' Building (Civil & Sanitary works + Electrical works + Mechanical works) without VAT & IT	1,780,038,610	281,449,624	-	2,061,488,234	BDT		
VAT (7.5%)	156,143,738	24,688,564	-	180,832,301	BDT		
Tax (7%)	145,734,155	23,042,659	-	168,776,814	BDT		
Accessories' Building (Civil & Sanitary works + Electrical works + Mechanical works) including VAT & IT	2,081,916,503	329,180,847	-	2,411,097,350			
Project Cost Excluding CD, VAT & IT				4,853,472,332			
CD & VAT(35%) and VAT(7.5%) & IT(7%)				1,806,583,002	BDT		
Project Cost With VAT & IT				6,660,055,334			
Physical Contingency (8%)				532,804,427	BDT		
Price Contingency (5%)				333,002,767	BDT		
Grant Total (Total Project Cost)				7,525,862,527	BDT		
Grant Total (Total Project Cost) in Lac Unit				75,259	BDT		

2B: Services for Construction of Cable Car at Naf Tourism Park							
Part VI : BOQ with Tender Documents for All works (Path Station-A to Station-B to Station-C).							
Construction of Cable Car including all materials, Price Estimation per March'2023							
Item	Station-A	Station-B1 & B2	Station-C	Sum	Unit		
Construction Cable Car Drive, Return, Parking & Line Equipment with Electrical Equipment, Accessories & Shipping & L/C Commissioning. (h1 = TK.118)				€ 45,095,210.76 5,321,234,869	EURO BDT		
CD & VAT (35%) for above item				2,865,280,314			
Construction Cable Car Drive, Return, Parking & Line Equipment with Electrical Equipment, Accessories & Shipping & L/C Commissioning including CD & VAT.				8,186,515,183			
SUMMARY of Land Qty. and its Valuation				99,933,661			
Accessories' Building Civil & Sanitary works.	879,569,812	109,509,032	225,986,218	1,215,065,062	BDT		
Accessories' Building Electrical works.	672,592,757	26,767,764	71,525,437	770,885,958	BDT		
Accessories' Building Mechanical works (Fire Fighting & Fire protection, air Conditioning System and Lift & Escalator).	227,876,041	145,172,828	145,172,828	518,221,697	BDT		
Accessories' Building (Civil & Sanitary works + Electrical works + Mechanical works) without VAT & IT	1,780,038,610	281,449,624	442,684,483	2,504,172,717	BDT		
VAT (7.5%)	156,143,738	24,688,564	38,831,972	219,664,273	BDT		
Tax (7%)	145,734,155	23,042,659	36,243,174	205,019,989	BDT		
Accessories' Building (Civil & Sanitary works + Electrical works + Mechanical works) including VAT & IT	2,081,916,503	329,180,847	517,759,629	2,928,856,979			
Project Cost Excluding CD, VAT & IT				7,925,341,247			
CD & VAT(35%) and VAT(7.5%) & IT(7%)				3,289,964,576	BDT		
Project Cost With VAT & IT				11,215,305,823			
Physical Contingency (8%)				897,224,466	BDT		
Price Contingency (5%)				560,765,291	BDT		
Grant Total (Total Project Cost)				12,673,295,580	BDT		
Grant Total (Total Project Cost) in Lac Unit				126,733	BDT		

			Table	3A : An	nual O&M	Costs Es	timated f	or Cable	Car Rou	ute A to	B1			
Year/Head	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Personnel														
Managerial			10	10	10	10	10	10	10	10	10	10	10	10
Technical			20	20	20	20	20	20	20	20	20	20	20	20
Unskilled (Security)			70	70	70	70	70	70	70	70	70	70	70	70
Personnel costs														
Managerial			60000	63000	66150	69457.5	72930.4	76577	80406	84426	88647	93079.7	97733.7	102620
Technical			40000	42000	44100	46305	48620.3	51051	53604	56284	59098	62053.1	65155.8	68413.6
Unskilled (Security)			20000	21000	22050	23152.5	24310.1	25526	26802	28142	29549	31026.6	32577.9	34206.8
TK. (Lakh)			392.0	411.6	432.2	453.8	476.5	500.3	525.3	551.6	579.2	608.1	638.5	670.5
Marketing (& Promotion Cost) in TK.(Lakh)			35	36.8	38.6	40.5	42.5	44.7	46.9	49.2	51.7	54.3	57.0	59.9
CPF + Graduity			19.6	20.6	21.6	22.7	23.8	25.0	26.3	27.6	29.0	1247	1309	1374
Operation and Maintenance Costs of the Project														
Year/Head	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Administration in Tk. (Lakhs)			446.6	468.9	492.4	517.0	542.8	570.0	598.5	628.4	659.8	1,909	2,005	2,105
& Marketing														
Electricity Cost in TK. (Lac)				577	606	636	668	701	736	773	812	852	895	940
Other Operation and Maintenance Costs of Cable Car														
4% of Capital Costs in Tk. (Lakhs)	0	0	0	5,008	5,259	5,522	5,798	6,088	6,392	6,712	7,047	7,400	7,770	8,158
Operation Of All utilities in TK.(Lakhs)				50.0	52.5	55.1	57.9	60.8	63.8	67.0	70.4	73.9	77.6	81.4
Total O&M Costs			446.6	6,104	6,410	6,730	7,067	7,420	7,791	8,180	8,589	10,235	10,747	11,284
Accessories' Building	А		В	С	KW SUM		days/yr.	hr./day		factor				
	453	3	94	204	847		365	off-peak	1	0.5				
Cable Car	Α	B1	B2	С				peak	4	1.0				
	100	406	553	100	506		240	off-peak	2	1.1				
	Total k	Total KW			1353		240		5769	9730				
Electicity cost in Tk. (Lakhs)	57	77		Rate	ot increase	per yr.	5%							
Payroll increase every yr.	5%													
Other Operation and Maintenance Costs		Start a	fter 3yrs.	4% of To	tal Cost for 1	st year. Th	ereafter O8	kM will incr	ease@5%	6 per yeai				

Continued

			Table 3	A : Annu	al O&M	Costs Est	imated f	for Cable (Car Route	A to B1					Continued	
2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055
10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
107751	113139	118796	124736	130972	137521	144397	151617	159197.9	167157.8	175516	184291.4	193506	203181	213340	224007	235208
71834	75426	79197.3	83157	87315	91681	96265	101078	106131.9	111438.5	117010	122861	129004	135454	142227	149338	156805
35917	37713	39598.6	41579	43657.5	45840	48132	50539	53065.95	55719.25	58505.2	61430.48	64502	67727.1	71113.5	74669.1	78402.6
704.0	739.2	776.1	814.9	855.7	898.5	943.4	990.6	1,040.1	1,092.1	1,146.7	1,204.0	1,264.2	1,327.5	1,393.8	1,463.5	1,536.7
62.9	66.0	69.3	72.8	76.4	80.2	84.2	88.4	92.9	97.5	102.4	107.5	112.9	118.5	124.4	130.7	137.2
1443	1515	1591	1671	1754	1842	1934	2031	2132	2239	2351	2468	2592	2721	2857	3000	3150
2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055
2,210.0	2,320.5	2,436.5	2,558.3	2,686.2	2,821	2,962	3,109.7	3,265.1	3,428.4	3,599.8	3,779.8	3,968.8	4,167.2	4,375.6	4,594.4	4,824.1
987	1036	1088	1142	1200	1260	1322	1389	1458	1531	1607	1688	1772	1861	1954	2052	2154
8,566	8,994	9,444	9,916	10,412	10,933	11,479	12,053	12,656	13,289	13,953	14,651	15,383	16,153	16,960	17,808	18,699
85.5	89.8	94.3	99.0	103.9	109.1	114.6	120.3	126.3	132.7	139.3	146.3	153.6	161.3	169.3	177.8	186.7
11,848	12,441	13,063	13,716	14,402	15,122	15,878	16,672	17,505	18,381	19,300	20,265	21,278	22,342	23,459	24,632	25,864

		Table	3B : Annu	ual O&M C	osts Estimate	ed for Cat	ole car rout	e A to B18	B2 to C					
Year/Head	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Personnel														
Managerial			15	15	15	15	15	15	15	15	15	15	15	15
Technical			30	30	30	30	30	30	30	30	30	30	30	30
Unskilled (Security)			100	100	100	100	100	100	100	100	100	100	100	100
Personnel costs														
Managerial			60000	63000	66150	69458	72930	76577	80406	84426	88647	93080	97733.7	102620
Technical			40000	42000	44100	46305	48620	51051	53604	56284	59098	62053	65155.8	68414
Unskilled (Security)			20000	21000	22050	23153	24310	25526	26802	28142	29549	31027	32577.9	34207
TK. (Lakh)			574.0	602.7	632.8	664.5	697.7	732.6	769.2	807.7	848.1	890.5	935.0	981.7
Marketing (& Promotion Cost) in TK.(Lakh)			50	52.5	55.1	57.9	60.8	63.8	67.0	70.4	73.9	77.6	81.4	85.5
CPF + Gratuity			28.7	30.1	31.6	33.2	34.9	36.6	38.5	40.4	42.4	1825	1917	2013
Operation and Maintenance Costs of the project														
Year/Head	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Administration in Tk. (Lac)			652.7	685.3	719.6	755.6	793.4	833.0	874.7	918.4	964.3	2,793.5	2,933	3,080
& Marketing														
Electricity Cost in TK. (Lac)				887	931	978	1027	1078	1132	1188	1248	1310	1376	1444
Other Operation and Maintenance Costs of Cable Car														
4% of Capital Costs in Tk. (Lakhs)	0	0	0	5,008	5,259	5,522	5,798	6,088	6,392	6,712	7,047	7,400	7,770	8,158
Operation Of All utilities in TK.(Lakhs)				50.0	52.5	55.1	57.9	60.8	63.8	67.0	70.4	73.9	77.6	81.4
Total O&M Costs			652.7	6,630.5	6,962.0	7,310	7,676	8,059	8,462	8,885.5	9,330	11,577	12,156	12,764
Accessories' Building	Α		В	С	KW SUM		days/yr.	hr./day		factor				
	453	3	94	204	1051		365	off- peak	1	0.5				
Cable Car	А	B1	B2	С				peak	4	1.0				
	100	100		100	4450		240	off-						
	100	406	553	100	1159		240	peak	2	1.1				
Total KW					2210		240		8867	77850				
Electricity cost in Tk. (Lakhs)	88	887		Rate o	of increase pe	er yr.	5%							
Payroll increase every yr. 5%														
Other Operation and Maintenance Costs	Other Operation and Maintenance Costs Start after 3yrs. 4% of Total Cost for 1st year. Thereafter O&M will increase@5% every year.													

Continued

	FEASIBILITY STUDY	REPORT ON	FINANCIAL AND	ECONOMIC	ANALYSIS
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			Table 3B	: Annual O	&M Costs E	stimated f	or Cable car	route A to	B1&B2 to C					Continued		
2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055
15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
107751	113139	118796	124736	130972	137521	144397	151617	159198	167158	175515.6	184291	193506	203181	213340	224007	235208
71834	75426	79197	83157.1	87315	91680.7	96265	101078	106132	111439	117010.4	122861	129004	135454	142227	149338	156805
35917	37713	39599	41578.6	43657.5	45840.4	48132	50539	53066	55719.3	58505.21	61430.5	64502	67727.1	71113.5	74669.1	78402.6
1,030.8	1,082.4	1,136.5	1,193.3	1,253.0	1,315.6	1,381.4	1,450.5	1,523.0	1,599.1	1,679.1	1,763.1	1,851.2	1,943.8	2,041.0	2,143.0	2,250.2
89.8	94.3	99.0	103.9	109.1	114.6	120.3	126.3	132.7	139.3	146.3	153.6	161.3	169.3	177.8	186.7	196.0
2113	2219	2330	2446	2569	2697	2832	2973	3122	3278	3442	3614	3795	3985	4184	4393	4613
2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055
3,233.8	3,395.5	3,565.3	3,743.5	3,930.7	4,127.2	4,333.6	4,550.3	4,777.8	5,016.7	5,267.5	5,530.9	5,807.4	6,097.8	6,402.7	6,722.8	7,059.0
1517	1593	1672	1756	1844	1936	2033	2134	2241	2353	2471	2594	2724	2860	3003	3153	3311
8,566	8,994	9,444	9,916	10,412	10,933	11,479	12,053	12,656	13,289	13,953	14,651	15,383	16,153	16,960	17,808	18,699
85.5	89.8	94.3	99.0	103.9	109.1	114.6	120.3	126.3	132.7	139.3	146.3	153.6	161.3	169.3	177.8	186.7
13,402	14,072	14,776	15,515	16,290	17,105	17,960	18,858.0	19,800.9	20,791.0	21,830.5	22,922.1	24,068.2	25,272	26,535	27,862	29,255

Annual (Annual		
Sl. No.	Fiscal Year	Total O&M Cost in Lac BDT	Estimated O&M Cost
0	2024-2025	0.00	0
1	2025-2026	0.00	0
2	2026-2027	0.00	446.6
3	2027-2028	7,525.86	6104.3
4	2028-2029	7,525.86	6409.5
5	2029-2030	7,525.86	6730.0
6	2030-2031	7,525.86	7066.5
7	2031-2032	7,525.86	7419.8
8	2032-2033	8,278.45	7790.8
9	2033-2034	8,278.45	8180.4
10	2034-2035	8,278.45	8589.4
11	2035-2036	8,278.45	10235.1
12	2036-2037	8,278.45	10746.9
13	2037-2038	9,106.29	11284.2
14	2038-2039	9,106.29	11848.4
15	2039-2040	9,106.29	12440.8
16	2040-2041	9,106.29	13062.9
17	2041-2042	9,106.29	13716.0
18	2042-2043	10,016.92	14401.8
19	2043-2044	10,016.92	15121.9
20	2044-2045	10,016.92	15878.0
21	2045-2046	10,016.92	16671.9
22	2046-2047	10,016.92	17505.5
23	2047-2048	11,018.62	18380.8
24	2048-2049	11,018.62	19299.8
25	2049-2050	11,018.62	20264.8
26	2050-2051	11,018.62	21278.0
27	2051-2052	11,018.62	22341.9
28	2052-2053	12,120.48	23459.0
29	2053-2054	12,120.48	24632.0
30	2054-2055	12,120.48	25863.6
Key Assumptions	5:		

Table 4A Annual O&M Costs for cable car route A to B1

1. Project Year-30 years

2. After every five year, the O & M cost will increase @ 10%

Annual	Operation and	Annual	
Sl. No.	Fiscal Year	Total O&M Cost in Lac BDT	Estimated O&M Cost
0	2024-2025	0.00	0
1	2025-2026	0.00	0
2	2026-2027	0.00	652.7
3	2027-2028	12,673.30	6630.5
4	2028-2029	12,673.30	6962.0
5	2029-2030	12,673.30	7310.1
6	2030-2031	12,673.30	7675.6
7	2031-2032	12,673.30	8059.4
8	2032-2033	13,940.63	8462.4
9	2033-2034	13,940.63	8885.5
10	2034-2035	13,940.63	9329.8
11	2035-2036	13,940.63	11577.2
12	2036-2037	13,940.63	12156.1
13	2037-2038	15,334.69	12763.9
14	2038-2039	15,334.69	13402.1
15	2039-2040	15,334.69	14072.2
16	2040-2041	15,334.69	14775.8
17	2041-2042	15,334.69	15514.6
18	2042-2043	16,868.16	16290.3
19	2043-2044	16,868.16	17104.8
20	2044-2045	16,868.16	17960.0
21	2045-2046	16,868.16	18858.0
22	2046-2047	16,868.16	19800.9
23	2047-2048	18,554.97	20791.0
24	2048-2049	18,554.97	21830.5
25	2049-2050	18,554.97	22922.1
26	2050-2051	18,554.97	24068.2
27	2051-2052	18,554.97	25271.6
28	2052-2053	20,410.47	26535.2
29	2053-2054	20,410.47	27861.9
30	2054-2055	20,410.47	29255.0
Key Assur	nptions:		

Table 4B Annual O&M costs for cable car route A to B1&B2 to C

1. Project Year-30 years

2. After every five year, the O & M costs will

increase @ 10%

5. Benefit (Revenue) Estimates

Direct benefit from the cable car project that will accrue to the project owner cum operator is required to be estimated. Direct benefit or Revenue will mainly be generated from the selling of tourist ticket for riding the cable car of the project. The following issues and assumptions are considered to estimate direct financial benefits (revenue) from the cable car project:

- The over 500 hotels, motels and guest houses at Cox's Bazar can accommodate around 160,000 tourists daily. With mounting pressure, though, the tourists tend to crowd the rooms.¹ Tourists in Cox's Bazar District are then 58400000 annually for 365 days. The cable car project will operate only for 240 days per year.
- 2) 7% of the annual tourists in Cox Bazar Districts will be in the project site, who will ride cable car, as the base case.
- 3) Per tourist ticket fare (price) is 1000 BDT and 1500 BDT per round trip for Station A to B1, and Station A to B1&B2 to Station C respectively, for cable car ride, as a base case.
- 4) 2% of project's revenue is to be paid as City Corporation's surcharge.
- 5) 5% growth of service revenue will occur per year.

Based on the above issues and assumptions, total amount of annual revenue generated from the Tourist Ticket Fare of riding cable car is estimated to be BDT 26342 Lac and BDT 39514 Lac, net of 2% of project revenue as surcharge by City Corporation, respectively for cable car route A to B1 and cable car route A to B1&B2 to C. Table 5A and Table 5B depict the estimated annual amount of project's revenue (direct financial benefits) for cable car route A to B1 and cable car route A to B1&B2 to C. This service revenue will continue to grow @5 % per year to estimate revenue streams over the life of project.

Sl. No.	Items	Amount BDT in Lac	Comments and Assumptions
1	% of Tourists in the project Site	7%	For a base case scenario, assume 7% of the annual tourists in Cox Bazer District will be in the project site, who will ride cable car.
2	Cable Car Ticket Fare in BDT	1000	Assume that per tourist ticket fare is 1000 BDT per round trip for cable car ride, for a base case scenario.
3	Revenue from the Tourist Ticket Fare (net of 2% of revenue as city corporation charge/surcharge suggested by BEZA) Direct Financial Benefit (Total	26342 26,342	 The over 500 hotels, motels and guest houses at Cox's Bazar can accommodate around 160,000 tourists daily With mounting pressure, though, the tourists tend to crowd the rooms. Annual Tourists in Cox's Bazar District are 58400000 for 365 days. The cable car project operates only for 240 days per year. Web link: https://en.prothomalo.com/bangladesh/one- million-tourists-to-spend-eid-holidays-at-coxs- bazar#:~:text=The% 20over% 20500% 20hotels% 2C% 20m otels,tend% 20to% 20crowd% 20the% 20rooms.
4	Revenue)		

Table 5A: Financial Direct Benefit (Revenue) for Cable car route A to B1

¹ Weblink: <u>https://en.prothomalo.com/bangladesh/one-million-tourists-to-spend-eid-holidays-at-coxs-</u>

bazar#:~:text=The%20over%20500%20hotels%2C%20motels.tend%20to%20crowd%20the%20room.

Та	able 5B: Financial Di	irect Benefit (Revenue) for Cable car route A to B1&B2 to C
Sl. No.	Items	Amount BDT in Lac	Comments and Assumptions
1	% of Tourists in the project Site	7%	For a base case scenario, assume 7% of the annual tourists in Cox Bazar District will be in the project site, who will ride cable car.
2	Cable Car Ticket Fare in BDT	1500	Assume that per tourist ticket fare is 1500 BDT per round trip for cable car ride, for a base case scenario.
3	Revenue from the Tourist Ticket Fare (net of 2% of revenue as city corporation charge/surcharge -suggested by BEZA)	39514	 The over 500 hotels, motels and guest houses at Cox's Bazar can accommodate around 160,000 tourists daily With mounting pressure, though, the tourists tend to crowd the rooms. Annual Tourists in Cox's Bazar District are 58400000 for 365 days. The cable car project operates only for 240 days per year. web link: https://en.prothomalo.com/bangladesh/one- million-tourists-to-spend-eid-holidays-at-coxs- bazar#:~:text=The% 20over% 20500% 20hotels% 2C% 20 motels,tend% 20to% 20crowd% 20the% 20rooms.
	Direct Financial Benefit (Total	39,514	
4	Revenue)	;	

Table 6A and 6B provide financial analysis table showing indicators of financial viability of cable car project for cable car route A to B1 and cable car route A to B1& B2 to C respectively.

6. Summary Results of Financial Analysis for Base Case Scenario

Based on the estimated costs and revenues, the cable car project Internal Rates of Returns (IRRs) in the financial feasibility analysis stand at 26% and 23% respectively for cable car route A to B1 and cable car route A to B1&B2 to C. The above IRRs could be achieved by funding all capital expenditures through cash instead of debt. Key financial indicators of financial analysis for the cable car project are presented in Table 7 below in terms of BDT in lac including the NPV of the project, project's FIRR and BCR. As the project's NPV @ 12% (SOCC) is positive and BCR is greater than one, while the FIRR of the project is greater than social cost of capital of 12%, this implies that the cable car project is financially viable.

Nai Tuunsin Faik			
Base Case (7% of	Situation of O&M	Financial Analysis for	Financial Analysis for Cable
tourists and Price of	Cost	Cable Car Route A to	Car Route A to B1&B2 to C
cable car riding -		B1 (Price of cable car	(Price of cable car riding –
Tk. 1500/1000)		riding –Tk. 1000)	Tk. 1500)
Project's NPV	O&M Costs in %	130,653.6	173,884.9
@12% (SOCC)	O&M Cost Estimated	121 048 0	104 851 3
BDT in Lac		121,948.0	194,031.3
FIRR	O&M Costs in %	26%	23%
	O&M Cost Estimated	26%	26%
BCR	O&M Costs in %	2.09	1.86
	O&M Cost Estimated	1.95	2.07

 Table 7: Summary Results of Financial Analysis --NPV, FIRR, and BCR of Cable Car Project at

 Naf Tourism Park

Table 6	Cable Car Route A to B1										
		All Co	sts and Rev	enue are in l	Lac BDT						
Fiscal Year	Capital Investment	O&M Expenses	Financial Cost of the Project	Financial Benifit of the Project	Discounted Financial Cost of the Project	Discounted Financial Benefit of the Project	Net Financial Benefits of the Project				
2024-2025	15051.73	0.00	15051.73	0.00	15051.73	0.00	-15051.73				
2025-2026	37629.31	0.00	37629.31	0.00	33597.60	0.00	-37629.31				
2026-2027	22577.59	0.00	22577.59	0.00	17998.71	0.00	-22577.59				
2027-2028		7525.86	7525.86	26342.40	5356.76	18750.00	18816.54				
2028-2029		7525.86	7525.86	27659.52	4782.82	17578.13	20133.66				
2029-2030		7525.86	7525.86	29042.50	4270.38	16479.49	21516.63				
2030-2031		7525.86	7525.86	30494.62	3812.84	15449.52	22968.76				
2031-2032		7525.86	7525.86	32019.35	3404.32	14483.93	24493.49				
2032-2033		8278.45	8278.45	33620.32	3343.53	13578.68	25341.87				
2033-2034		8278.45	8278.45	35301.34	2985.29	12730.02	27022.89				
2034-2035		8278.45	8278.45	37066.40	2665.44	11934.39	28787.95				
2035-2036		8278.45	8278.45	38919.72	2379.86	11188.49	30641.27				
2036-2037		8278.45	8278.45	40865.71	2124.87	10489.21	32587.26				
2037-2038		9106.29	9106.29	42908.99	2086.93	9833.63	33802.70				
2038-2039		9106.29	9106.29	45054.44	1863.33	9219.03	35948.15				
2039-2040		9106.29	9106.29	47307.17	1663.69	8642.84	38200.87				
2040-2041		9106.29	9106.29	49672.52	1485.43	8102.66	40566.23				
2041-2042		9106.29	9106.29	52156.15	1326.28	7596.25	43049.86				
2042-2043		10016.92	10016.92	54763.96	1302.60	7121.48	44747.03				
2043-2044		10016.92	10016.92	57502.16	1163.03	6676.39	47485.23				
2044-2045		10016.92	10016.92	60377.26	1038.42	6259.12	50360.34				
2045-2046		10016.92	10016.92	63396.13	927.16	5867.92	53379.20				
2046-2047		10016.92	10016.92	66565.93	827.82	5501.18	56549.01				
2047-2048		11018.62	11018.62	69894.23	813.04	5157.35	58875.61				
2048-2049		11018.62	11018.62	73388.94	725.93	4835.02	62370.33				
2049-2050		11018.62	11018.62	77058.39	648.15	4532.83	66039.77				
2050-2051		11018.62	11018.62	80911.31	578.71	4249.53	69892.69				
2051-2052		11018.62	11018.62	84956.87	516.70	3983.93	73938.26				
2052-2053		12120.48	12120.48	89204.72	507.48	3734.94	77084.24				
2053-2054		12120.48	12120.48	93664.95	453.10	3501.50	81544.48				
2054-2055		12120.48	12120.48	98348.20	404.56	3282.66	86227.72				
Sum	75258.63				120106.50	250760.12	130653.62				
					NPV(12	2%,J8:J37)+J7	130653.62				
						FIRR	26%				
						BCR	2.09				

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Table 64	Table 6A2: Financial Analysis Estimated O&M Costs for Cable Car Route A to B1										
		All Co	sts and Ben	efits are in I	Lac BDT						
Fiscal Year	Capital Investment	O&M Expenses Estimated	Financial Cost of the Project	Financial Benefit of the Project	Discounted Financial Cost of the Project	Discounted Financial Benefit of the Project	Net Financial Benefit of the Project				
2024-2025	15051.73	0.00	15051.73	0.00	15051.73	0.00	-15051.73				
2025-2026	37629.31	0.00	37629.31	0.00	33597.60	0.00	-37629.31				
2026-2027	22577.59	446.60	22577.59	0.00	17998.71	0.00	-22577.59				
2027-2028		6104.32	6104.32	26342.40	4344.93	18750.00	20238.08				
2028-2029		6409.53	6409.53	27659.52	4073.37	17578.13	21249.99				
2029-2030		6730.01	6730.01	29042.50	3818.79	16479.49	22312.49				
2030-2031		7066.51	7066.51	30494.62	3580.11	15449.52	23428.11				
2031-2032		7419.84	7419.84	32019.35	3356.36	14483.93	24599.52				
2032-2033		7790.83	7790.83	33620.32	3146.58	13578.68	25829.49				
2033-2034		8180.37	8180.37	35301.34	2949.92	12730.02	27120.97				
2034-2035		8589.39	8589.39	37066.40	2765.55	11934.39	28477.01				
2035-2036		10235.10	10235.10	38919.72	2942.35	11188.49	28684.62				
2036-2037		10746.85	10746.85	40865.71	2758.45	10489.21	30118.85				
2037-2038		11284.20	11284.20	42908.99	2586.05	9833.63	31624.80				
2038-2039		11848.41	11848.41	45054.44	2424.42	9219.03	33206.04				
2039-2040		12440.83	12440.83	47307.17	2272.89	8642.84	34866.34				
2040-2041		13062.87	13062.87	49672.52	2130.84	8102.66	36609.66				
2041-2042		13716.01	13716.01	52156.15	1997.66	7596.25	38440.14				
2042-2043		14401.81	14401.81	54763.96	1872.81	7121.48	40362.15				
2043-2044		15121.90	15121.90	57502.16	1755.76	6676.39	42380.25				
2044-2045		15878.00	15878.00	60377.26	1646.02	6259.12	44499.27				
2045-2046		16671.90	16671.90	63396.13	1543.14	5867.92	46724.23				
2046-2047		17505.49	17505.49	66565.93	1446.70	5501.18	49060.44				
2047-2048		18380.77	18380.77	69894.23	1356.28	5157.35	51513.46				
2048-2049		19299.81	19299.81	73388.94	1271.51	4835.02	54089.14				
2049-2050		20264.80	20264.80	77058.39	1192.04	4532.83	56793.59				
2050-2051		21278.04	21278.04	80911.31	1117.54	4249.53	59633.27				
2051-2052		22341.94	22341.94	84956.87	1047.69	3983.93	62614.94				
2052-2053		23459.03	23459.03	89204.72	982.21	3734.94	65745.68				
2053-2054		24631.99	24631.99	93664.95	920.82	3501.50	69032.97				
2054-2055		25863.58	25863.58	98348.20	863.27	3282.66	72484.62				
Sum	75258.63				128812.12	250760.12	121948.00				
					NPV(1	2%,J8:J37)+J7	121948.00				
						FIRR	26%				
						BCR	1.95				

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FEASIBILITY STUDY REPORT ON FINANCIAL AND ECONOMIC ANALYSIS

Table 6B1	Table 6B1: Financial Analysis with Annual O&M Costs (10% of project Cost) for CableCar Route A to B1&B2 to C									
		All (Costs and Be	nefits are in 1	Lac BDT					
Fiscal Year	Capital Investment	O&M Expenses	Financial Cost of the Project	Financial Benefit of the Project	Discounted Financial Cost of the Project	Discounted Financial Benefit of the Project	Net Financial Benefits of the Project			
2024-2025	25346.59	0.00	25346.59	0.00	25346.59	0.00	-25346.59			
2025-2026	63366.48	0.00	63366.48	0.00	56577.21	0.00	-63366.48			
2026-2027	38019.89	0.00	38019.89	0.00	30309.22	0.00	-38019.89			
2027-2028		12673.30	12673.30	39513.60	9020.60	28125.00	26840.30			
2028-2029		12673.30	12673.30	41489.28	8054.11	26367.19	28815.98			
2029-2030		12673.30	12673.30	43563.74	7191.17	24719.24	30890.45			
2030-2031		12673.30	12673.30	45741.93	6420.69	23174.29	33068.64			
2031-2032		12673.30	12673.30	48029.03	5732.76	21725.89	35355.73			
2032-2033		13940.63	13940.63	50430.48	5630.38	20368.02	36489.85			
2033-2034		13940.63	13940.63	52952.00	5027.13	19095.02	39011.38			
2034-2035		13940.63	13940.63	55599.60	4488.51	17901.58	41658.98			
2035-2036		13940.63	13940.63	58379.58	4007.60	16782.74	44438.96			
2036-2037		13940.63	13940.63	61298.56	3578.21	15733.81	47357.94			
2037-2038		15334.69	15334.69	64363.49	3514.31	14750.45	49028.80			
2038-2039		15334.69	15334.69	67581.67	3137.78	13828.55	52246.98			
2039-2040		15334.69	15334.69	70960.75	2801.59	12964.26	55626.06			
2040-2041		15334.69	15334.69	74508.79	2501.42	12154.00	59174.10			
2041-2042		15334.69	15334.69	78234.23	2233.41	11394.37	62899.54			
2042-2043		16868.16	16868.16	82145.94	2193.53	10682.22	65277.78			
2043-2044		16868.16	16868.16	86253.23	1958.51	10014.58	69385.08			
2044-2045		16868.16	16868.16	90565.90	1748.67	9388.67	73697.74			
2045-2046		16868.16	16868.16	95094.19	1561.31	8801.88	78226.03			
2046-2047		16868.16	16868.16	99848.90	1394.03	8251.76	82980.74			
2047-2048		18554.97	18554.97	104841.34	1369.13	7736.03	86286.37			
2048-2049		18554.97	18554.97	110083.41	1222.44	7252.53	91528.44			
2049-2050		18554.97	18554.97	115587.58	1091.46	6799.24	97032.61			
2050-2051		18554.97	18554.97	121366.96	974.52	6374.29	102811.99			
2051-2052		18554.97	18554.97	127435.31	870.11	5975.90	108880.34			
2052-2053		20410.47	20410.47	133807.07	854.57	5602.40	113396.61			
2053-2054		20410.47	20410.47	140497.43	763.01	5252.25	120086.96			
2054-2055		20410.47	20410.47	147522.30	681.26	4923.99	127111.83			
	126732.96				202255.24	376140.18	173884.94			
					NPV(12%,J8:J37)+J7	173884.94			
						FIRR	23%			
						BCR	1.86			

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Table 6B2	Table 6B2: Financial Analysis with Estimated O&M Cost for Cable Car Route A to B1										
		All Co	sts and Ben	efits are in I	Lac BDT						
Fiscal Year	Capital Investment	O&M Expenses Estimated	Financial Cost of the Project	Financial Benefit of the Project	Discounted Financial Cost of the Project	Discounted Financial Benefit of the Project	Net Financial Benefit of the Project				
2024-2025	25346.59	0.00	25346.59	0.00	25346.59	0.00	-25346.59				
2025-2026	63366.48	0.00	63366.48	0.00	56577.21	0.00	-63366.48				
2026-2027	38019.89	652.70	38019.89	0.00	30309.22	0.00	-38019.89				
2027-2028		6630.50	6630.50	39513.60	4719.46	28125.00	32883.10				
2028-2029		6962.03	6962.03	41489.28	4424.50	26367.19	34527.25				
2029-2030		7310.13	7310.13	43563.74	4147.96	24719.24	36253.61				
2030-2031		7675.64	7675.64	45741.93	3888.72	23174.29	38066.29				
2031-2032		8059.42	8059.42	48029.03	3645.67	21725.89	39969.61				
2032-2033		8462.39	8462.39	50430.48	3417.82	20368.02	41968.09				
2033-2034		8885.51	8885.51	52952.00	3204.20	19095.02	44066.49				
2034-2035		9329.78	9329.78	55599.60	3003.94	17901.58	46269.82				
2035-2036		11577.20	11577.20	58379.58	3328.17	16782.74	46802.38				
2036-2037		12156.06	12156.06	61298.56	3120.16	15733.81	49142.50				
2037-2038		12763.86	12763.86	64363.49	2925.15	14750.45	51599.63				
2038-2039		13402.05	13402.05	67581.67	2742.33	13828.55	54179.61				
2039-2040		14072.16	14072.16	70960.75	2570.93	12964.26	56888.59				
2040-2041		14775.77	14775.77	74508.79	2410.25	12154.00	59733.02				
2041-2042		15514.55	15514.55	78234.23	2259.61	11394.37	62719.67				
2042-2043		16290.28	16290.28	82145.94	2118.38	10682.22	65855.66				
2043-2044		17104.80	17104.80	86253.23	1985.98	10014.58	69148.44				
2044-2045		17960.04	17960.04	90565.90	1861.86	9388.67	72605.86				
2045-2046		18858.04	18858.04	95094.19	1745.49	8801.88	76236.15				
2046-2047		19800.94	19800.94	99848.90	1636.40	8251.76	80047.96				
2047-2048		20790.99	20790.99	104841.34	1534.12	7736.03	84050.36				
2048-2049		21830.54	21830.54	110083.41	1438.24	7252.53	88252.88				
2049-2050		22922.06	22922.06	115587.58	1348.35	6799.24	92665.52				
2050-2051		24068.16	24068.16	121366.96	1264.08	6374.29	97298.80				
2051-2052		25271.57	25271.57	127435.31	1185.07	5975.90	102163.74				
2052-2053		26535.15	26535.15	133807.07	1111.01	5602.40	107271.92				
2053-2054		27861.91	27861.91	140497.43	1041.57	5252.25	112635.52				
2054-2055		29255.00	29255.00	147522.30	976.47	4923.99	118267.29				
Sum	126732.96				181288.92	376140.18	194851.26				
					NPV(12	%,J8:J37)+J7	194851.26				
						FIRR	26%				
						BCR	2.07				

7.1 Economic Analysis

Economic analysis of a project is carried out to find out the benefit of the project accrued to the society and the country. Thus the analysis is done for indirect benefit received by the society and the country.

7.1.1 Environmental Aspects

Environmental aspects of the project were also analyzed. This analysis has been used to develop appropriate mitigation strategy for the project during construction and operation of the project as well as the recommended environmental management plan for the plant too.

7.1.2 Indirect Net Economic Benefits of the Project

Indirect Net Economic Benefits from Cable car to these areas include

- Second-order benefits to the economy and/or society arising from sources of induced income growth outside the project itself;
- indirect benefits accrued to the people due to better transportation system;
- Economic benefits due to increased business opportunities.

Apportionment of all on-site project costs into net of relevant taxes and 'para-tariffs' (such as supplementary duties and the like), and government's tax yield has been done, with the latter being added to the government revenue from the implementation of the Cable car project in question.

Let us now worked out indirect net economic benefit resulting from Cable car project:

- Bangladesh loses \$14 billion/15091048.00 lac a year due to air pollution, says a report from Greenpeace Southeast Asia and Centre for Research on Energy and Clean Air published recently.²
- Let us assume that there will be demerit of the project @0.05% (Pollution cost) for polluting fresh air a bit. Hence environmental pollution cost will be BDT 15091048 x 0.0005 = 7545.52 lac in BDT.
- 3) Due to increase of tourism facilities people will travel in greater number in the country instead of going outside the country. Let us assume that there will be some saving of opportunity cost for travelling other country, which may be taken @ 5% of the project revenue.
- 4) Due to development of tourism sector there will be indirect local business development in many other sectors, which is assumed to be 25% of the project revenue.
- 5) Due to development of tourism sector, there will be indirect income from transport sectors, which is assumed to be 10% of the project's revenue.

Indirect benefits could not be quantified in this study using primary data because it was beyond the scope of this study. As such, benefit transfer method has been used to monetize the indirect benefits. Based on the above issues and assumptions regarding second order benefit to the economy and the society, total amount of annual indirect net economic benefits is estimated to be BDT 2991.4 Lac and BDT 8259.9 Lac, respectively for cable car route A to B1 and cable car route A to B1&B2 to C. Table 8A and Table 8B show the estimated annual amount of indirect net economic benefits of the project for cable car route A to B1 and cable car route A to B1 and cable car source benefits will continue to grow @5 % per year to estimate indirect net benefits streams over the life of project.

² Web Link: <u>https://www.tbsnews.net/environment/bangladesh-loses-14bn-year-air-pollution-44359</u>

	Table 8A : Total Indirect Net Economic Benefits for Cable Car Route A to B1							
SI.		Amount						
No.	Items	BDT in Lac	Comments and Assumptions					
			 Bangladesh loses \$14 billion/15091048.00 lac a year due to air pollution, says a report from Greenpeace Southeast Asia and Center for Research on Energy and Clean Air published recently. Web Link: https://www.tbsnews.net/environment/bangladesh-loses-14bn-year-air-pollution-44359 					
1	Environmental Pollution	-7545.52	3. Let us assume that there will be demerit of the project 0.05% (Pollution cost) for polluting fresh air a bit.					
2	Revenue from the Tourist Ticket Fare (net of 2% of revenue as city corporation charge/surchargesuggested by BEZA)	26342	Derived from SI # 3 of Table 5A regarding estimation of Direct financial benefits of cable car project.					
3	Saving of Opportunity Cost of Travelling Other Country	1317	Due to increase of tourism facilities people will travel in greater number in the country instead of going outside the country. Let us assume that there will be some saving for not going outside the country which may be taken @ 5% of the project's revenue.					
4	Indirect Local Business Development	6585.6	Due to development of tourism sector, there will be indirect development in many other sectors which is assumed to be 25% of the project's revenue.					
5	Income from Transport Sector	2634.24	Due to development of tourism sector, there will be indirect income from transport sectors, which is assumed to be 10% of the project's revenue.					
6	Total Indirect Net Economic Benefits (sum of Amounts in Column 3 of SL # 1, 3, 4 and 5)	2991.44						

	Table 8B : Total Inc	lirect Net Eco	nomic Benefits for Cable Car Route A to B1&B2 to C
Sl.		Amount	
No.	Items	BDT in Lac	Comments and Assumptions
			1. Bangladesh loses \$14 billion/15091048.00 lac a year due to air pollution, says a report from
			Greenpeace Southeast Asia and Center for Research on Energy and Clean Air published recently,
			2. Web Link: https://www.tbsnews.net/environment/bangladesh-loses-14bn-year-air-pollution-44359
1		== 4= =0	3. Let us assume that there will be demerit of the project @0.05% (Pollution cost) for polluting fresh
1	Environmental Pollution	-7545.52	air a bit.
	Revenue from the Tourist Ticket Fare (net of		
	2% of revenue as city corporation		
2	charge/surchargesuggested by BEZA)	39514	Derived from SI # 3 of Table 5B regarding estimation of Direct financial benefits of cable car project.
			Due to increase of tourism facilities people will travel in greater number in the country
	Saving of Opportunity Cost of Travelling Other		instead of going outside the country. Let us assume that there will be some saving for not
3	Country	1976	going outside the country which may be taken @ 5% of the project's revenue
			Due to development of tourism sector, there will be indirect development in many other
4	Indirect Local Business Development	9878.4	sectors which is assumed to be 25% of the project's revenue.
			Due to development of tourism sector, there will be indirect income from transport sectors,
5	Income from Transport Sector	3951.36	which is assumed to be 10% of the project's revenue.
	Total Indirect Net Economic Benefits (sum		
6	of Amounts in Column 3 of SL # 1, 3, 4 and 5)	8259.92	

Table 9A and 9B provide economic analysis table showing indicators of economic viability of cable car project for cable car route A to B1 and cable car route A to B1& B2 to C respectively

_	Table	9A1: Eco	nomic Analys for	sis with An Cable Car	nual O&N Route A	A Costs (10 to B1	% of Proj	ect Costs)	
			A	ll costs are	bin Lac B	BDT			
Fiscal Year	Project Cost and O&M Cost	Project Financial Benefit	Net Economic Indirect Benefits for Project incl. Vat & Tax Transfer Payments	Project Benefit	Economic Cost of the Project	Economic Benefit of the Project	Discounted Economic Cost of the Project	Discounted Economic Benefit of the Project	Net Economic Benefit of the Project
2024-2025	15051.7		361.32	361.32	12643.45	303.51	12643.45	303.51	-12339.94
2025-2026	37629.3		903.29	903.29	31608.62	758.76	28221.98	677.47	-30849.86
2026-2027	22577.5		541.97	541.97	18965.17	455.26	15118.92	362.93	-18509.91
2027-2028	7525.86	26342.40	2991.44	29333.84	6321.72	24640.42	4499.68	17538.57	18318.70
2028-2029	7525.86	27659.52	3141.01	30800.53	6321.72	25872.44	4017.57	16442.41	19550.72
2029-2030	7525.86	29042.50	3298.06	32340.55	6321.72	27166.07	3587.12	15414.76	20844.34
2030-2031	7525.86	30494.62	3462.96	33957.58	6321.72	28524.37	3202.78	14451.33	22202.64
2031-2032	7525.86	32019.35	3636.11	35655.46	6321.72	29950.59	2859.63	13548.12	23628.86
2032-2033	8278.45	33620.32	3817.91	37438.23	6953.90	31448.12	2808.56	12701.37	24494.22
2033-2034	8278.45	35301.34	4008.81	39310.15	6953.90	33020.52	2507.64	11907.53	26066.63
2034-2035	8278.45	37066.40	4209.25	41275.65	6953.90	34671.55	2238.97	11163.31	27717.65
2035-2036	8278.45	38919.72	4419.71	43339.44	6953.90	36405.13	1999.08	10465.60	29451.23
2036-2037	8278.45	40865.71	4640.70	45506.41	6953.90	38225.38	1784.89	9811.50	31271.49
2037-2038	9106.29	42908.99	4872.73	47781.73	7649.29	40136.65	1753.02	9198.28	32487.36
2038-2039	9106.29	45054.44	5116.37	50170.81	7649.29	42143.48	1565.20	8623.39	34494.20
2039-2040	9106.29	47307.17	5372.19	52679.35	7649.29	44250.66	1397.50	8084.43	36601.37
2040-2041	9106.29	49672.52	5640.80	55313.32	7649.29	46463.19	1247.76	7579.15	38813.90
2041-2042	9106.29	52156.15	5922.84	58078.99	7649.29	48786.35	1114.08	7105.46	41137.06
2042-2043	10016.9	54763.96	6218.98	60982.94	8414.22	51225.67	1094.18	6661.36	42811.45
2043-2044	10016.9	57502.16	6529.93	64032.09	8414.22	53786.95	976.95	6245.03	45372.74
2044-2045	10016.9	60377.26	6856.43	67233.69	8414.22	56476.30	872.27	5854.72	48062.08
2045-2046	10016.9	63396.13	7199.25	70595.37	8414.22	59300.11	778.82	5488.80	50885.90
2046-2047	10016.9	66565.93	7559.21	74125.14	8414.22	62265.12	695.37	5145.75	53850.90
2047-2048	11018.6	69894.23	7937.17	77831.40	9255.64	65378.38	682.95	4824.14	56122.74
2048-2049	11018.6	73388.94	8334.03	81722.97	9255.64	68647.29	609.78	4522.63	59391.66
2049-2050	11018.6	77058.39	8750.73	85809.12	9255.64	72079.66	544.45	4239.96	62824.02
2050-2051	11018.6	80911.31	9188.27	90099.57	9255.64	75683.64	486.11	3974.97	66428.01
2051-2052	11018.6	84956.87	9647.68	94604.55	9255.64	79467.82	434.03	3726.53	70212.19
2052-2053	12120.4	89204.72	10130.06	99334.78	10181.20	83441.22	426.28	3493.62	73260.02
2053-2054	12120.4	93664.95	10636.57	104301.52	10181.20	87613.28	380.61	3275.27	77432.08
2054-2055	12120.4	98348.20	11168.40	109516.60	10181.20	91993.94	339.83	3070.57	81812.74
							100889.4	235902.4	135,013
						NI	PV(12%, K7	:K36)+K6	135,013
								EIRR	29%
								BCR	2.34

Table 9A2: Economic Analysis with Estimated O&M cost for Cable Car Route A to B1									
			A	All costs an	re in Lac B	BDT			
Fiscal Year	Project Cost and O&M Cost	Project Financial Benefit	Net Economic Indirect Benefits for Project incl. Vat & Tax Transfer Payments	Project Benefit	Economic Cost of the Project	Economic Benefit of the Project	Discounted Economic Cost of the Project	Discounted Economic Benefit of the Project	Net Economic Benefit of the Project
2024-2025	15051.7		69.9	69.9	12643.4	58.7	12643.4	58.7	-12584.7
2025-2026	37629.3		174.8	174.8	31608.6	146.8	28222.0	131.1	-31461.8
2026-2027	23024.2		104.9	104.9	19340.3	88.1	15418.0	70.2	-19252.2
2027-2028	6104.3	26342.4	2991.4	29333.8	5127.6	24640.4	3649.7	17538.6	19512.8
2028-2029	6409.5	27659.5	3141.0	30800.5	5384.0	25872.4	3421.6	16442.4	20488.4
2029-2030	6730.0	29042.5	3298.1	32340.6	5653.2	27166.1	3207.8	15414.8	21512.9
2030-2031	7066.5	30494.6	3463.0	33957.6	5935.9	28524.4	3007.3	14451.3	22588.5
2031-2032	7419.8	32019.4	3636.1	35655.5	6232.7	29950.6	2819.3	13548.1	23717.9
2032-2033	7790.8	33620.3	3817.9	37438.2	6544.3	31448.1	2643.1	12701.4	24903.8
2033-2034	8180.4	35301.3	4008.8	39310.1	6871.5	33020.5	2477.9	11907.5	26149.0
2034-2035	8589.4	37066.4	4209.3	41275.7	7215.1	34671.5	2323.1	11163.3	27456.5
2035-2036	10235.1	38919.7	4419.7	43339.4	8597.5	36405.1	2471.6	10465.6	27807.6
2036-2037	10746.9	40865.7	4640.7	45506.4	9027.4	38225.4	2317.1	9811.5	29198.0
2037-2038	11284.2	42909.0	4872.7	47781.7	9478.7	40136.7	2172.3	9198.3	30657.9
2038-2039	11848.4	45054.4	5116.4	50170.8	9952.7	42143.5	2036.5	8623.4	32190.8
2039-2040	12440.8	47307.2	5372.2	52679.4	10450.3	44250.7	1909.2	8084.4	33800.4
2040-2041	13062.9	49672.5	5640.8	55313.3	10972.8	46463.2	1789.9	7579.2	35490.4
2041-2042	13716.0	52156.2	5922.8	58079.0	11521.4	48786.4	1678.0	7105.5	37264.9
2042-2043	14401.8	54764.0	6219.0	60982.9	12097.5	51225.7	1573.2	6661.4	39128.1
2043-2044	15121.9	57502.2	6529.9	64032.1	12702.4	53787.0	1474.8	6245.0	41084.6
2044-2045	15878.0	60377.3	6856.4	67233.7	13337.5	56476.3	1382.7	5854.7	43138.8
2045-2046	16671.9	63396.1	7199.2	70595.4	14004.4	59300.1	1296.2	5488.8	45295.7
2046-2047	17505.5	66565.9	7559.2	74125.1	14704.6	62265.1	1215.2	5145.7	47560.5
2047-2048	18380.8	69894.2	7937.2	77831.4	15439.8	65378.4	1139.3	4824.1	49938.5
2048-2049	19299.8	73388.9	8334.0	81723.0	16211.8	68647.3	1068.1	4522.6	52435.5
2049-2050	20264.8	77058.4	8750.7	85809.1	17022.4	72079.7	1001.3	4240.0	55057.2
2050-2051	21278.0	80911.3	9188.3	90099.6	17873.5	75683.6	938.7	3975.0	57810.1
2051-2052	22341.9	84956.9	9647.7	94604.6	18767.2	79467.8	880.1	3726.5	60700.6
2052-2053	23459.0	89204.7	10130.1	99334.8	19705.6	83441.2	825.1	3493.6	63735.6
2053-2054	24632.0	93665.0	10636.6	104301.5	20690.9	87613.3	773.5	3275.3	66922.4
2054-2055	25863.6	98348.2	11168.4	109516.6	21725.4	91993.9	725.1	3070.6	70268.5
							108501.2	234818.6	126,317
						Ν	PV(@12%,	k7:k36)+K6	126,317
								EIRR	28.9%
								BCR	2.16

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]	Table 9B1: Economic Analysis with Annual O&M Costs (10% of Project Costs) for Cable Car Route A to B1&B2 to C										
			All costs	and hene	fits are in	Lac BDT	·				
			Net								
Fiscal Year	Project Cost and O&M Cost	Project Financial Benefit	Economic Indirect Benefits for Project incl. Vat & Tax Transfer Payments	Project Benefit	Economic Cost of the Project	Economic Benefit of the Project	Discounted Economic Cost of the Project	Discounted Economic Benefit of the Project	Net Economic Benefit of the Project		
2024-2025	25347		658	658	21291	553	21291	553	-20738		
2025-2026	63366		1645	1645	53228	1382	47525	1234	-51846		
2026-2027	38020		987	987	31937	829	25460	661	-31108		
2027-2028	12673	39514	8260	47774	10646	40130	7577	28564	29484		
2028-2029	12673	41489	8673	50162	10646	42136	6765	26778	31491		
2029-2030	12673	43564	9107	52670	10646	44243	6041	25105	33597		
2030-2031	12673	45742	9562	55304	10646	46455	5393	23536	35810		
2031-2032	12673	48029	10040	58069	10646	48778	4816	22065	38132		
2032-2033	13941	50430	10542	60972	11710	51217	4730	20686	39507		
2033-2034	13941	52952	11069	64021	11710	53778	4223	19393	42068		
2034-2035	13941	55600	11623	67222	11710	56467	3770	18181	44756		
2035-2036	13941	58380	12204	70583	11710	59290	3366	17044	47580		
2036-2037	13941	61299	12814	74112	11710	62254	3006	15979	50544		
2037-2038	15335	64363	13455	77818	12881	65367	2952	14980	52486		
2038-2039	15335	67582	14127	81709	12881	68635	2636	14044	55754		
2039-2040	15335	70961	14834	85794	12881	72067	2353	13166	59186		
2040-2041	15335	74509	15575	90084	12881	75671	2101	12344	62789		
2041-2042	15335	78234	16354	94588	12881	79454	1876	11572	66573		
2042-2043	16868	82146	17172	99318	14169	83427	1843	10849	69258		
2043-2044	16868	86253	18030	104284	14169	87598	1645	10171	73429		
2044-2045	16868	90566	18932	109498	14169	91978	1469	9535	77809		
2045-2046	16868	95094	19878	114973	14169	96577	1312	8939	82408		
2046-2047	16868	99849	20872	120721	14169	101406	1171	8380	87237		
2047-2048	18555	104841	21916	126757	15586	106476	1150	7857	90890		
2048-2049	18555	110083	23012	133095	15586	111800	1027	7366	96214		
2049-2050	18555	115588	24162	139750	15586	117390	917	6905	101804		
2050-2051	18555	121367	25371	146737	15586	123259	819	6474	107673		
2051-2052	18555	127435	26639	154074	15586	129422	731	6069	113836		
2052-2053	20410	133807	27971	161778	17145	135894	718	5690	118749		
2053-2054	20410	140497	29370	169867	17145	142688	641	5334	125543		
2054-2055	20410	147522	30838	178360	17145	149823	572	5001	132678		
							169894	384453	214,558		
						NI	PV(12%, K7	:K36)+K6	214,558		
								EIKR PCP	28.4%		

Table 9B2: Economic Analysis with Estimated O&M Costs for Cable Car Route A to B1&B2 to C									
All costs are in Lac BDT									
Fiscal Year	Project Cost and O&M Cost	Project Financial Benifit	Net Economic Indirect Benefit for Project incl. Vat & Tax Transfer Payments	Project Benefit	Economic Cost of the Project	Economic Benefit of the Project	Discounted Economic Cost of the Project	Discounted Economic Benefit of the Project	Net Economic Benefit of the Project
2024-2025	25347		658	658	21291	553	21291	553	-20738
2025-2026	63366		1645	1645	53228	1382	47525	1234	-51846
2026-2027	38673		987	987	32485	829	25897	661	-31656
2027-2028	6631	39514	8260	47774	5570	40130	3964	28564	34560
2028-2029	6962	41489	8673	50162	5848	42136	3717	26778	36288
2029-2030	7310	43564	9107	52670	6141	44243	3484	25105	38103
2030-2031	7676	45742	9562	55304	6448	46455	3267	23536	40008
2031-2032	8059	48029	10040	58069	6770	48778	3062	22065	42008
2032-2033	8462	50430	10542	60972	7108	51217	2871	20686	44108
2033-2034	8886	52952	11069	64021	7464	53778	2692	19393	46314
2034-2035	9330	55600	11623	67222	7837	56467	2523	18181	48630
2035-2036	11577	58380	12204	70583	9725	59290	2796	17044	49565
2036-2037	12156	61299	12814	74112	10211	62254	2621	15979	52043
2037-2038	12764	64363	13455	77818	10722	65367	2457	14980	54645
2038-2039	13402	67582	14127	81709	11258	68635	2304	14044	57378
2039-2040	14072	70961	14834	85794	11821	72067	2160	13166	60247
2040-2041	14776	74509	15575	90084	12412	75671	2025	12344	63259
2041-2042	15515	78234	16354	94588	13032	79454	1898	11572	66422
2042-2043	16290	82146	17172	99318	13684	83427	1779	10849	69743
2043-2044	17105	86253	18030	104284	14368	87598	1668	10171	73230
2044-2045	17960	90566	18932	109498	15086	91978	1564	9535	76892
2045-2046	18858	95094	19878	114973	15841	96577	1466	8939	80736
2046-2047	19801	99849	20872	120721	16633	101406	1375	8380	84773
2047-2048	20791	104841	21916	126757	17464	106476	1289	7857	89012
2048-2049	21831	110083	23012	133095	18338	111800	1208	7366	93462
2049-2050	22922	115588	24162	139750	19255	117390	1133	6905	98135
2050-2051	24068	121367	25371	146737	20217	123259	1062	6474	103042
2051-2052	25272	127435	26639	154074	21228	129422	995	6069	108194
2052-2053	26535	133807	27971	161778	22290	135894	933	5690	113604
2053-2054	27862	140497	29370	169867	23404	142688	875	5334	119284
2054-2055	29255	147522	30838	178360	24574	149823	820	5001	125248
							152720	384453	231,733
							NPV(12%,	k7:k36)+K6	231,733
								EIRR	30.5%
								BCR	2.52

8 Summary Results of Economic Analysis for Base Case Scenario

Based on the estimated costs and direct and second order revenues, the cable car project Economic Internal Rates of Returns (EIRRs) in the financial feasibility analysis stand at 29.2% and 28.4% respectively for cable car route A to B1 and cable car route A to B1&B2 to C. Key economic indicators of Economic analysis for the cable car project are presented in Table 10 below in terms of BDT in lac including the NPV of the project, project's EIRR and BCR. As the project's NPV @ 12% (SOCC) is positive and BCR is greater than one, while the EIRR of the project is greater than social cost of capital of 12%, this implies that the cable car project is economically viable too.

Table 10 : Summary of Results of Economic	AnalysisNPV,	EIRR, and BCR	of Cable Car
Project at Naf Tourism Park			

Base Case (7% of	Situation of O&M	Economic Analysis for	Economic Analysis for
tourists and Price of	Cost	Cable Car Route A to	Cable Car Route A to
cable car riding -		B1 (Price of cable car	B1&B2 to C
Tk. 1500/1000)		riding –Tk. 1000)	(Price of cable car riding –
			Tk. 1500)
Project's NPV	O&M Costs in %	135,013.0	214,558.5
@12% (SOCC)	O&M Cost Estimated	126 217 /	221 722 1
BDT in Lac		120,517.4	231,733.1
FIRR	O&M Costs in %	29.2%	28.4%
	O&M Cost Estimated	28.9%	30.5%
BCR	O&M Costs in %	2.34	2.26
	O&M Cost Estimated	2.16	2.52

9. Sensitivity Analysis

The assumptions of the feasibility study are its foundation. These will be selected based on review of relevant literature. However, it is also important to understand whether the analysis is robust if these assumptions change, cost increase and also cable car riding price decrease take place. As such feasibility analyses for these parameters were done.

In order to make the project resistant to cost escalation and to avoid the sensitivity analysis to cost increase, the cost more than 10% increase (8% for physical contingency and 5% for price contingency) is already included in the capital costs of the project. Table 11A and Table 11B show sensitivity analysis of cable car riding price along with reduction of per cent of tourists in the project side for riding the cable car for cable car route A to B1 and route A to B1 & B2 to C respectively.

The net present value (NPV) of the project at the social cost of capital (SOCC) of 12% is positive, the benefit cost ratio is greater than 1, and the FIRR (EIRR) is greater than 12% in the worst case scenario of sensitivity analysis with a cable car riding price (fare) decrease of more than 10% and a reduction in tourists at the project site of more than 28%. As a result, the project is both financially and economically viable.

For Cable Car Route A to B1										
Option	% of	Price for Riding	Condition of ORM Coast	Financial Analysis			Economic Analysis			
Орион	Tourists	Cable Car- (TK.)	Condition of Oalvi Cost	NPV	FIRR	BCR	NPV	EIRR	BCR	
I	7%	1000	O&M Cost in %	130,653.6	26%	2.09	135,013.0	29.2%	2.34	
(Base Case)	7 70	1000	O&M Cost in Estimated	121,948.0	26%	1.95	126,317.4	28.9%	2.16	
	70/	000	O&M Cost in %	105,577.6	24%	1.88	105,523.6	25.9%	2.05	
11	1 %	900	O&M Cost in Estimated	96,872.0	24%	1.75	96,828.0	Economic Analysis IPV EIRR I ,013.0 29.2%	1.89	
	70/	800	O&M Cost in %	80,501.6	21%	1.67	76,034.2	22.4%	1.75	
111	1%		O&M Cost in Estimated	71,796.0	21%	1.56	67,338.6	21.9%	1.62	
11/	6%	1000	O&M Cost in %	94,830.8	23%	1.79	92,885.3	24.4%	1.92	
IV			O&M Cost in Estimated	86,625.1	23%	1.67	84,189.7	24.0%	1.78	
	00/	000	O&M Cost in %	73,337.0	20%	1.61	67,608.7	21.4%	1.67	
V	6%	900	O&M Cost in Estimated	64,631.4	20%	1.50	58,913.1	Dimic Analysis EIRR 29.2% 28.9% 25.9% 25.5% 22.4% 21.9% 24.4% 21.4% 20.0% 18.1% 17.4% 19.2% 18.6% 16.4% 13.4% 12.0%	1.54	
	001	222	O&M Cost in %	51,843.3	18%	1.43	Economic A NPV EIR 135,013.0 29.2 126,317.4 28.9 105,523.6 25.9 96,828.0 25.5 76,034.2 22.4 67,338.6 21.9 92,885.3 24.4 84,189.7 24.0 67,608.7 21.4 58,913.1 20.0 42,332.1 18.1 33,636.4 17.4 50,757.6 19.2 42,062.0 18.6 29,693.8 16.4 20,998.1 15.5 8,629.0 13.4 6,572.0 12.0	18.1%	1.42	
VI	6%	800	O&M Cost in Estimated	43,137.7	18%	1.33	33,636.4	17.4%	1.31	
N/II	5%	1000	O&M Cost in %	59,007.9	19%	1.49	50,757.6	19.2%	1.50	
VII			O&M Cost in Estimated	50,302.3	19%	1.39	42,062.0	18.6%	1.39	
N/III	-0/	900	O&M Cost in %	41,096.4	17%	1.34	29,693.8	16.4%	1.29	
VIII	5%		O&M Cost in Estimated	32,390.8	16%	1.25	20,998.1	15.5%	1.19	
IX		800	O&M Cost in %	23185.0	15%	1.19	8,629.0	13.4%	1.09	
(Worst Case)	5%		O&M Cost in Estimated	14,479.4	14%	1.11	6,572.0	12.0%	1.00	

Table 11A: SENSITIVITY ANALYSIS OF CABLE CAR PRICE

For Cable Car Route A to B1 & B2 to C										
Option	% of	Price for Riding		Financial Analysis			Economic Analysis			
Option	Tourists	Cable Car- (TK.)	Condition of O&M Cost	NPV	FIRR	BCR	NPV	EIRR	BCR	
I	70/	4500	O&M Cost in %	173,884.9	23%	1.86	214,558.5	28.4	2.26	
(Base Case)	170	1500	O&M Cost in Estimated	194,851.3	26%	2.07	231,733.1	Economic AnalysisNPVEIRRBCR4,558.528.42.261,733.130.52.525,069.126.42.092,243.728.52.325,579.724.4%1.922,754.326.5%2.131,366.924.1%1.898,541.626.2%2.106,090.322.3%1.743,265.024.3%1.940,813.720.4%1.597,988.322.4%1.773,175.419.5%1.525,350.021.5%1.697,111.517.8%1.404,286.219.8%1.55	2.52	
	70/	1 4 0 0	O&M Cost in %	148,808.9	22%	1.74	185,069.1	26.4	2.09	
11	1%	1400	O&M Cost in Estimated	A to B1 & B2 to C Financial Analysis NPV FIRR BCI 173,884.9 23% 1.80 194,851.3 26% 2.00 148,808.9 22% 1.74 169,775.3 24% 1.94 123,732 20% 1.66 120,150.6 20% 1.59 141,117.0 22% 1.74 98,656.9 19% 1.44 119,623.2 21% 1.66 777,163.2 17% 1.33 98,129.5 19% 1.44 48,504.9 16% 1.24 48,504.9 16% 1.24 48,504.9 16% 1.24 48,504.9 16% 1.24 48,504.9 16% 1.24 48,504.9 16% 1.24 48,504.9 16% 1.24 41,551,559.8 16% 1.24	1.94	202,243.7	28.5	2.32		
	70/	1200	O&M Cost in %	123,732	20%	1.61	155,579.7	24.4%	1.92	
111	1%	1300	O&M Cost in Estimated	144,699.2	23%	1.80	172,754.3	26.5%	2.13	
11/	6%	1500	O&M Cost in %	120,150.6	20%	1.59	151,366.9	24.1%	1.89	
IV			O&M Cost in Estimated	141,117.0	22%	1.78	168,541.6	26.2%	2.10	
V	6%	1400	O&M Cost in %	98,656.9	19%	1.49	126,090.3	22.3%	1.74	
			O&M Cost in Estimated	119,623.2	21%	1.66	143,265.0	24.3%	1.94	
M	6%	1300	O&M Cost in %	77,163.2	17%	1.38	100,813.7	20.4%	1.59	
VI			O&M Cost in Estimated	98,129.5	19%	1.54	117,988.3	22.4%	1.77	
VII	5%	1500	O&M Cost in %	66,416.3	17%	1.33	88,175.4	19.5%	1.52	
			O&M Cost in Estimated	87,382.6	19%	1.48	105,350.0	21.5%	1.69	
N/III	5%	1400	O&M Cost in %	48,504.9	16%	1.24	67,111.5	17.8%	1.40	
VIII			O&M Cost in Estimated	69,471.2	17%	1.38	84,286.2	19.8%	1.55	
IX	5%	1300	O&M Cost in %	30,593.4	14%	1.15	46,047.7	16.1%	1.29	
(Worst Case)	5%		O&M Cost in Estimated	51,559.8	16%	1.28	63,222.3	18.0%	1.41	

Table 11B: SENSITIVITY ANALYSIS OF CABLE CAR PRICEFor Cable Car Route A to B1 & B2 to C

10. Conclusion and Recommendation

To test the question of feasibility, the study team chose the cable car alignment. This service was recommended by the study team for several reasons. Due to its short length and three-station arrangement of this proposed service would be an economically attractive demonstration system with relatively low capital and operating costs. Technological risks related to climate control would be mitigated by short trip lengths. From a markets perspective, this project serves clearly established markets related to parking demand, entertainment, and cultural activities tapping into several reliable and substantial sources of tourist-passenger demand. The project's return like, NPV is positive and BCR is greater than one, and especially the IRR is greater than 12%. Indeed, the cost more than 10% increase (8% for physical contingency and 5% for price contingency) is already included in the capital costs of the project to make the project resistant to cost escalation and to avert the sensitivity analysis to cost increase. In case of sensitivity analysis with cable car riding price (fare) more than 10% decrease and also with more than 28% reduction in % of tourists in the project is still positive, benefit cost ratio is greater than one, and FIRR (EIRR) is more than 12%. Hence, the project is both economically and financially viable. It is, therefore recommended for implementation of the project.