# 8-5 Economic Analysis for the Delhi - Kanpur Railway Project - Case (C) ( UNIT : 1000 RS )

							1004	1005		1007	1000	1002	2000	0001	0000	2002	2004	2005	2008	2007	2008	2009	2010	2011	2012	2013	
INVESTHENT DIFF	1988 58788	1989 099100	1990 985092	1991 -160884	1092 -151174	1993 -151174	1994 -151174	1995 1310590	1996 2960106	1997 4034727	1998 5201406	1838198	-4412453	-840426	-863881	-378020	2004 -878987	2005 -517284	-1082772	-1154907	-1887332	-5933	-4103659	-792837	-1177087	-849332	
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WITH	58788  58788	999109  999109	985092  \$85092	219617	219617	219617	219617 219617	1690381  245565	3489455 245565	245585	245585	2439835	-350809 	298081	298081	456007 300636	298081		156500	156500		158751	0	345434	0	0	
THE SECTION ELECTRIFICATION	0	51839	51849	0	0	. 0	0	0	0	0	Q	0	0	0	0	0		0	0	0	0	0	0	35140	0	0	alter man Ben wit
SIGNALS & TELECON CIVIL VORK LAND ACQ & CONP ROLLING STOCKS -SALVAGE VALUE	0 56338 2450 0 0	393538 144272 2000 407460 0	397850 127934 0 407480 0	0 0 210617 0	0 0 219817 0	0 0 219017 0	0 0 219017 0	0 0 245565 0	0 0 245585 0	0 0 245505 0	0 0 245565 0	0 0 245565 0	2251 0 -508431 0	0 0 142710 0	0 0 142710 0	157926 0 142710 0	0 0 142710 0	0 0 158500 0	0 0 156500 0	0 0 156500 0	0 0 158500 0	2251 0 158500 0	0 0 0 0	310294 0 0 0 0	0 0 0 0	0 0 0 0	
NEW CORRIDOR	0	0	0	0	0	0	0	1444816	3243891	4318122	5485036	2194270	155371	155371	155371	155371	155371	175548	175548	175548	175548	1321710	0	0	0	0	
ELECTRIFICATION SIGNALS & TELECON CIVIL WORK LAND ACQ & COHP ROLLING STOCKS -SALVAGE VALUE	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 1289776 155040 0 0	355665 798975 1872331 216920 0 0	590085 798975 1872331 165240 891492 0	574952 798975 2002198 0 2108911 0	230721 266325 403402 0 1293823 0	0 0 0 155371 0'	0 0 0 155371 0	0 0 155371 0	0 0 0 155371 0	0 0 0 155371 0	0 0 0 175548 0	0 0 0 175548 0	0 0 0 175548 0	0 0 0 175548 0	0 1146171 0 0 175548 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	
VITHOUT	0	0	0	380501	370791	370791	370791	370791	529350	528959	529194	601639	4061645	1138506	1161762	834026	1177007	849332	1414821	1486955	1999380	1486404	4103659	1138271	1177067	849332	
BUS Truck Airplahb -salvage value	0 0 0 0	0 0 0 0	0 0 0 0	72290 308212 0 0	39324 331467 0 0	39324 331467 0 0	39324 331467 0 0	39324 331467 0 0	54629 474720 0 0	54304 474565 0 0	54629 474565 0 0	126919 474720 0 0	967079 474565 2820000 0	126212 684794 327500 0	126212 708049 327500 0	125977 708049 0 0	141518 708049 327500 0	141283 708049 0 0	154469 932852 327500 0	226759 932697 327500 0	1006684 932697 0 0	226052 932852 327500 0	223462 932697 2947500 0	125977 684794 327500 0	141518 708049 327500 0	141283 708049 0 0	7(
HAINT & OPE COST DIFF	0 *******	0	0					-1103176			33222222		********	2022222		# <b>#</b> ########	-5591929	-5923489 	=======	-8029297 				-8357892 		=======	
FACILITY NAINT COST DIFF	0	0	0	-60555	-189118	-317682	-446245	-573990	-759349	-944602	-1129903	-1315263	-1408670	-1576096	-1743522	-1092208	-2063015	-2214045		-2014040		~	-3200032				
VITH	0	0	0	71376	78916	82450	87006	94355	100713	107071	113429	119787	517399	526191	534984	543777	552569	562446	572322	582198	592074	601950	601950	601950	801950	601950	
THE SECTION			0	71376	78916	82456	87996	94355  1786	100713	107071 1786	113429  1786	119787 1786	102505	105930	109355  1786	112779  1786	116204	120006	123808	127610	131412	135213	135213	135213	135213	135213	
ELECTRIC FAC. SIGNALS & TLELCON CIVIL WORK ROLLING STOCK	0 0 0	0 0 0	0 0 0	27635 12968 28987	27835 12968 34527	27635 12968 40067	27635 12968 45607	27635 12988 51985	27635 12968 58324	27635 12968 64682	27635 12968 71040	27635 12968 77398	27635 12968 60116	27635 12988 63541	27835 12908 66965	27635 12968 70390	27635 12968 73815	27635 12988 77617	27635 12968 81419	27635 12968 85220	27635 12968 89022	27635 12968 92824	27635 12968 92824	27635 12968 92824	27635 12988 92824	27635 12968 92824	2 1 9
NEY CORRIDOR	0	0	0	0	0	0	0	0	0	0	0	0	414893	420261	425629	430997	436365	442440	448514	454588	460662	486737	466737	486737	466737	466737	
ELECTRIC FAC. Signals & Tlelcon Civil Vork Rolling Stock	0 0 0 0	0 0 0 0	0 0 0	0 0 0	0 0 0	0 0 0 0	0 0 0	0 0 0	0 0 0	0 0 0 0	0 0 0 0	0 0 0	29841 83587 138637 162828	29841 83587 138637 168198	29841 83587 138637 173564	20841 83587 138637 178932	29841 83587 138637 184300	29841 83587 138637 190375	29841 83587 138637 196449	29841 83587 138037 202523	29841 83587 138637 208597	29841 83587 138637 214872	29841 83587 138637 214672	29841 83587 138637 214872	29841 83587 138637 214672	29841 83587 138037 214672	8 7 13
VITHOUT	0	0	0	131931	266035	400138	534241	668344	860062	1051673	1243332	1435050	1926069	2102288	2278508	2439365 	2615584	2776491	2986366	3196241	3390756	3600831	3809982	3809982	3809982	3809982	·
BUS TRUCK AIRPLANE	0 0 0	0 0 0	0 0 0	14643 117288 0	22609 243426 0	30574 369563 0	38540 495701 0	46506 621839 0	57571 802491 0	68590 983084 0	79856 1183877 0	90722 1344328 0	278652 1524921 122496	296252 1668227 137808	313853 1811534 153120	331406 1954840 153120	349006 2098146 168432	366607 2241452 168432	386831 2415791 183744	407055 2590130 199056	427231 2764489 199056	447455 2938808 214368	467154 3113147 229680	467154 3113147 229680	467154 3113147 229680	467154 3113147 229680	311
OPERATING COST DIFF	0	0	0	8545	-125911	-260366	-394794	-529188	-754841	-980294	-1205864	-1388311		-2841980		-3275733			-4012338			-4848366		-5149860	-5149860	-5149860	
VITI	0	0	0	214208	281860	349512	417192	484907	547868	610828	673789	779957	882173	952102	1022031	1091959	1161934	1231998	1303588	1375178		1518377		1590102	1590102	1590102	
THE SECTION	0	0	0	214208	281860	349512	417192	484907	547868	610828	673789	779957	678884	740881	802879	864876	926919	988980	1052210	1115441	1178671			1305212	1305212	•	
PSHL COST ELEC COST	0	0 0	0 0	4341 209867	7677 274183	11014 338498	14378 402814	17778 467129	21963 525905	26148 584681	30332 643456	34517 745440	20576 658308	22071 718810	23567 779312	25003 839813	26604 900315	28163 960817	29887 1022324	31610 1083830	33334 1145337	35075 1206843	36862 1268350	36862 1288350	36862 1268350	36862 1268350	
NEW CORRIDOR	0	0	0	0	0	0	0	0	0	0	0	0	203288	211220	219152	227083	235015	243018	251378	259738	268098	276458	284890	284890	284890	284890	
PSNL COST ELEC COST	0	0 0	0 0	0	0 0	0.	0 0	0	0	0 0	0 0	0 0	69282 134007	70469 140751	71857 147495	72844 154239	74032 160983	75291 187727	76460 174917	77630 182108	78800 189298	79970 196488	81211 203679	81211 203679	81211 203679	81211 203679	
WITHOUT	0	0	0	205664	407771	609879	811986	1014094	1302709	1591122	1879653	2168268	3470928	3794082		4367693	4690848	4941421	5315926	5690432	5992238	6366743	6739962	6739962	6739962	6739962	
PSNL COST	0	0	0	123254	243130	363006	482882	602758	773884	944883	1115959	1287085	1747864	1898184		2198548	2348868	2498989	2679883	2860776	3041393		3402326	3402326	3402328	3402328	
BUS Truck Airplane	0 0 0	0 0 0	0 0 0	23854 99400 0	36830 206300 0	49808 313200 0	62782 420100 0	75758 527000 0	93784 680100 0	111733 833150 0	129759 986200 0	147785 1139300 0	453923 1292350 1590	482595 1413800 1789	511268 1535250 1988	539860 1656700 1988	568531 1778150 2187	597202 1899600 2187	630147 2047350 2386	663092 2195100 2584	695959 2342850 2584	728904 2490600 2783	760094 2638350 2982	760994 2638350 2982	760994 2638350 2982	760994 2638350 2982	263
FUEL COST	0	0	0	82410	164641	246873	329104	411336	528825	646240	763694	881183	1723082	1895898	2068733	2189145	2341981	2442432	2636044	2829656	2950844		3337637	3337637	3337837	3337637	
BUS TRUCK AIRPLAKE	0 0 0	0 0 0	0 0 0	12034 70375 0	18581 146060 0	25127 221746 0	31674 297431 0	38220 373116 0	47314 481511 0	56370 589870 0	65464 698230 0	74558 808824 0	229008 914984 579072	243471 1000970 651456		272362 1172944 723840	286826 1258930 796224	301291 1344917 796224	317912 1449524 868608	1554131	351114 1658738 940992		383925 1867952 1085760	383925 1867952 1085760	383925 1867952 1085760		2 186
PAS TIHE SAVING BEHEFIT	0 *******	0	0	94851 =======	128098 =====	163235	200858	240093	295910	354878 ======	417715	484682 =======	2358986	2561199	2770509 ======	2991396	3219825	3460718	3734606 ======	4017732					5275341 =======		
CASUFLOV FOR EIRR RIRR X	-58788 36.08	-909109 36.08	-985092 36.08	307748 30.08	594301 36.08	892450 36.08	1192868 36.08	23679 30.08	-1150004 36.08	-1754953 36.08	-2447925 36.08	1350060 36.08	10768864 36.08			8540738 36.08	9690741 36.08	9901470 36.08	11243761 36.08	12101935 36.08	13332936 36.08	12482484 36.08	17473751 36.08	14294500 36.08			

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8 1838190 		-840426	-803681	-378020	-878987	-517284	-1082772		-1687332	-5933		-792837	-1177087	-849332		-776882	-2327035	-1486249	-7737	-1386329 ======	1565908	-76968 =======	-920103	-647848	-5981534
1 2439835	-350809	298081	298081	456007	298081	332048	332048	332048	332048		0	345434	0	0	•	157926	0	0	1148422	0	5587623	1076609	289015		-11175216
6 <b>245565</b>	-506180	142710	142710	300636	142710	156500	156500	156500	156500	158751	0	345434 35140	·	0	0 0	157926	0		2251	ب 0	0	934980	128286	145330	-2012064
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5 2194270	155371	155371	155371	155371	155371	175548	175548	175548	175548	1321719	o	. 0	o	0	0	0 0	0	0	1146171	0	5587623	141629	141629	141629	-9163152
2 230721	0	0	0	0	0	0	0	0	0	0 1146171	0	0	0	0	0	0	0	0	0	0	586048 697090	0	0	0	0
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8 -1315263	-1408670	~1578098	-1743522	-1895589	-2083015	-2214045	-2414044	-2814043	-2798682	-2998681	-3208032	-3208032	-3208032	-3208032	-3208032			-3208032	-3208032		-3208032	-3208032	-3208032	-3208032	-3208032
119787	517399	526191	534984	543777	552569	562446	572322	582198	592074	601950	601950	601950	801950	601950	801950	601950	601950	601950	801950	601950	601950	601950	801950	601950	601950
119787	102505	105930	109355	112779	116204	120008	123808	127610	131412	135213	135213	135213	135213	135213	135213	135213	135213	135213	135213	135213	135213	135213	135213	135213	135213
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77398	60116	63541	66965	70390	73815	77617	81419	85220	89022	92824	92824	92824	92824	92821	92824	92824	92824	92824	92824	92824	92824	92824	92824	92824	92824
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0 1435050	162828 1926089	168196 2102288	173564 2278506	178932 2439365	184300 2615584	190375 2776491	196449 2986366	202523 3198241	208597 3390756	214872 3600831	214672	214672 3809982	214672 3809982	214672 3809982	214672 3809982	214672 3809982	214672 3809982	214872 3809982	214672 3809982	214672 3809982	214672 3809982	214672 3809982	214672 3809982	214672 3809982	214672 3809982
90722	278652	296252	313853	331406	349006	366607	386831	407055	427231	447455	467154	467154	467154	467154	467154	467154	467154	487154	487154	467154	467154	487154	467154	467154	487154
1344328 0	1524921 122496	1668227 137808	1811534 153120	1954840 153120	2098146 168432	2241452 168432	2415791 183744	2590130 199058	2764469 199056	2938808 214368	3113147 229680	3113147 229680	3113147 229880	3113147 229680	3113147 229680	3113147 229680	3113147 229680	3113147 229680	3113147 229880	3113147 229880	3113147 229680	3113147 229680	3113147 229680	3113147 229680	3113147 229680
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779957	882173	952102	1022031	1091959	1161934	1231998	1303588	1375178	1448769	1518377		1590102			1590102		1590102			1590102	1590102				
	678884	740881	802879	864876	926919	988980	1052210	1115441	1178671	1241919	1305212	1305212	1305212	1305212	1305212				1305212	1305212	1305212	1305212	1305212	1305212	1305212
34517 745440	20576 658308	22071 718810	23567 779312	25083 839813	26604 900315	28163 960817	29887 1022324	31610 1083830	33334 1145337	35075 1206843	36862 1268350	36862 1268350	36862 1268350	36862 1268350	36862 1268350	36862 1268350	36862 1268350	36862 1268350	38862 1268350	36862 1268350	36862 1268350	36862 1268350	36862 1268350	36862 1268350	36862 1268350
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1287085	453923	1898184  482595	2048504	2198548	2348868	2498989 597202	2679883 630147	2860776	3041393 695959	3222287	3402326 780994	3402328	3402328	3402328 760994	3402326	3402326	3402328  760994	3402326	3402328 780994	3402326 760994	3402326 760994	3402326	3402326	3402326	3402326 760994
1139300 0	1292350 1590	1413800 1789	1535250 1988	1656700 1988	1778150 2187	1899600 2187	2047350 2386	2195100 2584	2342850 2584	2490600 2783	2638350 2982	2638350 2982	2638350 2982	2638350 2982	2638350 2982	2638350 2982	2638350 2982	2638350 2982	2038350 2982	2838350 2982	2638350 2982	2638350 2982	2638350 2982	2638350 2982	2638350 2982
881183	1723062	1895898	2068733	2169145	2341981	2442432	2636044	2829656	2950844	3144458	3337837	3337637	3337637	3337637	3337637	3337637	3337637	3337837	3337637	3337637	3337837	3337637	3337637	3337637	3337637
74558 806624	229006 914984 570072	243471 1000970	257936 1088957 727840	272302 1172944 727840	286826 1258930 706224	301291 1344917 708224	317912 1449524	334533 1554131	351114 1858738 940992	367735 1783345 1013376	383925 1867952 1085760	383925 1867952 1085760	383925 1867952 1085760	383925 1867952 1085760	383925 1867952 1085760	383925 1867952 1085760	383925 1867952	383925 1867952	383925 1887952 1085780	383925 1867952 1085760	383925 1867952 1085760	383925 1867952 1085760	383925 1867952 1985260	383925 1867952	383925 1867952
0	579072	651456	723840	723840	796224	796224	868608	940992	.* .					1000100	1000100	1000700	1085760	1085760	1005100	1003100		1003700	1085760	1085760	1085760
	2358986	2561199 ======			3219825	3460718	3734606					5143770		5406911		5688847 ======	5832948 ======	5983314	6139945 ======	6296576 =====		8622369		6973223	7148650
1350060	10768864	7819701	8472919	8540738	9690741	9901470	11243761	12101935	13332936 36.08	12482484	17473751	14294500	14810300	14614125	15000457	14202401	14610404	15003155	، سیسیانی و	100 10000	10051	1000000			
36.08	36.08	36.08	36.08	38.08		36.08	36.08	36.08	36.08	36.08	36.08	36.08	36.08	36.08	15092657 36.08	14823621 36.08	16517875 36.08	15827455 36.08	14505574 36.08	16040797 36.08	13251457 36.08	15057229 36.08	16075791 36.08	15978964 36.08	21468076 36.08

#### ( UNIT : 1000 RS )

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
OPERATING PROPIT	0	0	0	44992	274285	503537	732770	959865	1305965	1852066
OPERATING REVENUE			Q	329295	611929	894583	1177197	1459831	1861422	2283013
THE SECTION PASSENGER FREIGHT	0	0	0 0	134394 194901	207407 404523	280419 614144	353432 823765	428444 1033387	527902 1333520	629350 1633653
TOTAL	0	0	0	329295	611929	894563	1177197	1459831	1861422	2283013
HEV CORRIDOR SUPER EXPRESS LONG EXPRESS	0	0 0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	, <sup>.</sup> 0	0.	0	0	0
OPERATING EXPENSE	0	0	0	284303	337864	391026	444427	499988	555457	610947
THE SECTION	0	0	0	284303	337684	391026	444427	499988	555457	610947
VORKING COST NAINTENANCE COST PERSONNEL COST ELEC COST DEPRECIATION	0 0 0 0	0 0 0 0	0 0 0 0	193515 95907 6056 91551 90788	237799 102777 10700 124321 99885	282083 109647 15344 157092 108943	326407 116517 20028 189882 118020	371798 124401 24763 222832 128170	417136 132285 30588 254263 138320	462477 140169 38414 285894 148470
NEW CORRIDOR	0	0	0	0	0	0	0	0	0	0
VORKING COST MAINTENANCE COST PRESONREL COST ELEC COST DEPRECIATION	0 0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
INVESTWENT	69530	1351945	1338871	272325	272325	272325	272325	2000120	4449408	6427481
FOREIGN TOTAL Local Total	0 69530	149250 1202895	149850 1187021	0 272325	0 272325	0 272325	272325	0 2000120	393240 4056168	1098340 5329141
THE SECTION	69530	1351945	1336871	272325	272325	272325	272325	304500	304500	304500
FOREIGN TOTAL Local Total	0 69530	149250 1202695	149850 1187021	0 272325	0 272325	0 272325	0 272325	0 304500	0 304500	0 304500
ELECTRIFICATION	0	75888	75898	0	0	0	0	0	0	0
FOREIGN CURRENCY LOCAL CURRENCY	0 0	16280 59628	16280 59838	0 0	0	0 0	0	0 0	0	0
SIGHALS & TELECON	0	597897	603503	0	0	0	0	0	0	0
FOREIGN CURRENCY LOCAL CORRENCY	0	132990 464907	133590 469913	0	0 0	0 0	0 0	0 0	0 0	0
CIVIL VORK	67080	170910	152220	0	0	0	0	0	0	0
FOREIGN CURRENCY LOCAL CURRENCY	0 67080	0 170910	0 152220	0	0 0	0 0	0 0	0 0	0 0	0
LAND ACO & COMP	2450	2000	0	0	0	0	0	0	D	0
FOREIGN CURRENCY LOCAL CURRENCY	0 2450	0 2000	0	0	0	0	0	0	0	0
ROLLING STOCK	0	505250	505250	272325	272325	272325	272325	304500	304500	304500
FOREIGN CURRENCY LOCAL CURRENCY	0	0 505250	0 505250	0 272325	0 272325	0 272325	0 272325	0 304500	0 304500	0 304500
-SALVAGE VALUE INT. DURING CONST.	0 4734	0 91778	0 212239	0 0	0	0 0	0 0	0	0 0	0

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NEV CORRIDOR	0	0	0	0	0	0	0	1695620	4144906	8122981
FORBIGN TOTAL Local Total	0 Ø	0	0	0	0	0 0	0	0 1895820	393240 3751888	1098340 5024641
ELECTRIFICATION	0	0	0	0	0	0	0	0	414140	769240
FOREIGN CURRENCY Local currency	0 0	0 0	0	0	0 0	0 0	0	0	0 414140	79500 689640
STGRALS & TELECON	0	0	0	0	0	0	0	0	1279716	1279716
FOREIGN CURRENCY LOCAL CURRENCY	0	0 0	0	0 0	0	0	0 0	0 0	393240 886476	393240 886476
CIVIL VORK	0	0	0	0	•	0	0	1540580	2234130	2234130
FOREIGN CURRENCY LOCAL CURRENCY	0 0	0 0	0 0	0 0	0	0	0 0	0 1540580	0 2234130	0 2234130
LAND ACQ & CONP	0	0	0	0	0	0	0	155040	216920	165240
FOREIGN CURRENCY LOCAL CURRENCY	0 0	¢ 0	. 0	0 0	0	0 0	0	0 155040	0 216920	0 185240
ROLLING STOCK	0	0	0	0	0	0	0	0	0	1674655
FORBIGH CURRENCY LOCAL CURRENCY	0	0	0	0 0	0	0	0 0	Ū Q	0 0	625500 1049155
-SALVAGE VALUB INT, DURING CONST.	0	0 0	0	0 0	0 0	0	0	0 115456	0 428159	0 919685
FINANCE PROGRAM FINANCE TOTAL										
BORROVING	74264	1443723	1549110	0	0	0	0	1811076	4573065 0	7042565 0
REPAYNENT BALANCE I <i>NTEREST</i>	0 74264 4734	0 1517987 91778	0 3087097 212239	3067097 242897	3067097 242897	3087097 242897	3057097 242897	4878173 358353	9451238 871058	-
FINANCE IN FOREIGN CCY										
BORROVING	0	152393 0	157285 0	0	0	0	0	0	401521 0	1132745 0
REPAYNENT BALANCE Interest	ŏ	152393 3143	309678 7435	309678 8516	309678 8518	309678 8516	309678 8516	309678 8516	711199 16798	1843944 42921
FINANCE IN LOCAL CCY 1										
BORROVING REPAYNENT	74264	1291330 0	1391825 0	0	0	0	0	1811076 0	4171543 0	5909921 0
BALANCE INTEREST	74264 4734	1365594 88635	2757419 204804	2757419 234381	2757419 234381	2757419 234381	2757419 234381	4568496 349837	8740039 654258	14649960 1119661
FINANCE IN LOCAL CCY 2										
BORROWING REPAYNENT	0 9	0	0	0	0 0	0 0	0	0 0	0 0	0 0
BALANCE INTEREST	0	0	0 0	0 0	0	0 0	0 0	0 0	0 0	0 0
NET CASHFLOV	0	0	0	-379442	-141092	97258	335569	540838	896889 ========	1253140
CUN NET CASHFLOW	Ŷ	0	0	-379442	-520533	-423275	-87706	452932	1349821	2602961
CASH IN	74264	1443723	1549110	135780	374130	612480	850790	2899111	6017350	8843202
OPERATING PROFIT Depreciation Borroving	0 0 74264	0 0 1443723	0 0 1549110	44992 90788 0	274285 99865 0	503537 108943 0	732770 118020 0	959865 128170 1811076	1305965 138320 4573065	1652066 148470 7042666
CASH OUT	74264	1443723	1549110	515222	515222	515222	515222	2358473	5120462	7590063
INVESTMENT	69530	1351945	1336871 212239	272325	272325 0	272325 0	272325 0	2000120 115456	4449406 428159	8427481 919685
1VT AUDINC COVET	4734	91778 Ø	212239	0	. 0	0	0	0 242897	242897	242897
INT. DURING CONST. Repaynent Interest	0	ŏ	0	242897	242897	242897	242897	242031	242031	242031

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		1998	1999	2000	2001	2002	2003	2004	2005	2005	2007	
۰.												
	OPERATING PROFIT OPERATING REVENUE	1998166 	2327454 ======= 3086195	3522223 5979018	3882697 5555555 8418658	4243171 6858299	4603644 ====== 7297941	4964053 7737582	5321172 8177224	5766292 8706982	6211412 9236701	
	THE SECTION				*******		+					-
	PASSENGER FREIGHT	730818 1933786	\$32276 2233920	18196 2534053	42874 2772189	67553 3010325	92231 3248461	116909 3486598	141587 3724734	169202 4014448	198818 4304163	
	TOTAL	2664604	3056195	2552249	2815083	3077878	3340692	3803508	3866320	4183650	4500980	
	NEV CORRIDOR SUPER EXPRESS LONG EXPRESS	0	0	2996796 429971	3157029 448565	3317263 463158	3477497 479752	3637731 490345	3787864 . 512939	3885099 538213	4172235 563488	
	TOTAL	0	<u>×</u> 0	3426767	3603594	3780422	3957249	4134076	4310903	4523312	4735721	
	OPERATING EXPENSE	866438	738741	2456793	2535961	2615128	2694298	2773529	2856052	2940871	3025289	
	THE SECTION	666438	738741	584102	602378	640653	678928 519362	717268 551803	758670 584736	796646 618243	836622 851751	
	VORKING COST NAINTENANCE COST PERSONNEL COST	507817 148053 42239	569970 155938 48065	422232 134508 29222	454609 138754 31313	488985 143001 33404	147248 35495	151494 37651	156209 39830	180923 42250	185637 44670	
	ELEC COST DEPRECIATION	317525 158620	365968 168770	258502 141870	284541 147789	310580 153888	336619 159588	362658 185485	388697 171934	415070 178402	441444 184871	
	NEV CORRIBOR	0	0	1892690	1933583	1974478	2015368	2056261	2099382	2144025	2188667	
	VORKING COST NAINTENANCE COST	0	0	1127710 575599	1159254 582255	1190797 588912	1222341 595568 103296	1253885 802224 104958	1286406 809756 106722	1320449 617288 108361	1354491 824820 110000	
	PERSONNEL COST ELEC COST DEPRECIATION	0	0 0	98309 453802 764980	99971 477027 774329	101633 500252 783678	523477 793027	546702 802376	569927 812976	594799 823578	619671 834176	
		7909021	3125192	-434458	369620	369620	552475	369520	411740	411740	411740	
	INVESTMENT FOREIGN TOTAL	1098340	170880	600	0	 0	1210			 0	 0	
	LOCAL TOTAL	6810881 304500	2954312 304500	-435058 -827118	369620 176960	369820 178980	551265 359815	369620 178960	411740 194060	411740	411740	
	THE SECTION FOREIGN TOTAL	0	2×2==7=2 0	53823555 600	********* 0		1210			*********	DEDIREIS Ø	
	LOCAL TOTAL ELECTRIFICATION	304500	304500 0	-627718	176980	176980	358805	176960 0	194060 0	194060	194060 0	
	FOREIGK CURRENCY	0	0	0	••••••	0	0	0	0	0	0	
	LOCAL CURRENCY SIGNALS & TELECON	. 0	0	0 3336	0 0	0 0	0. 182855	0	0	· 0	0	
	FOREIGN CURRENCY	•••••••	0	600	0	0	1210	0		ò	0	
	LOCAL CURRENCY CIVIL VORK	0	0	2736 0	0	0	181645 0	0	0	0	0. 0	
	FOREIGN CURRENCY	0	0	0	0	 0	0	0	0 0	0	 0 0	
	LOCAL CURRENCY LAND ACO & COMP	0	0	0	0	0	0	0	0	0	v o	
	FOREIGN CURRENCY	0	0	0	•••••	0	0	0	0	0	0	
	LOCAL CURRENCY ROLLING STOCK	304500	0 304500	0 -830454	0 176980	0 176960	0 176980	0 176980	0 194060	0 194060	0 194060	
	FOREIGN CURRENCY	0	0	0	0 176960	0 176960	0 176960	0 176960	0 194080	0 194060	0 194060	
	LOCAL CURRENCY -SALVAGE VALUE	304500	304500 0	-630454 0	110800	o	0	0	0	0	• •	
	INT. DURING CONST.	• •	0	0	. 0	0 <sub></sub>	0	0	0	.0	0	
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FOREIGH TOTAL LOCAL TOTAL         1008340 6506181         170850 244812         182860         192860	0 21788 0 21788 0 0 0 0 0 0	192660 0 0 0 0 0 0 0 0 0 0 0 0 0	0     192660       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     192680       0     0       0     0       0     0	0 192660 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ig2660 19266 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 192660 0 0 0 0 0 0 0 0 0 0 0 0 0	0 192860 0 0 0 0 0 0 0 0 0 0 0 0 0	0 192680 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	170850 2549812 309630 289830 428572 131080 295492 480150 0 480150 0 1804340 0	1098340 6506181 751340 78600 671740 1279716 393240 886476 2389210 0 2389210 0 3184255 622500	FOREIGN TOTAL LOCAL TOTAL ELECTRIFICATION FOREIGN CURRENCY LOCAL CURRENCY SIGNALS & TELECOM FOREIGN CURRENCY LOCAL CURRENCY LOCAL CURRENCY LARD ACQ & CONP FOREIGN CURRENCY LOCAL CURRENCY LOCAL CURRENCY LOCAL CURRENCY ROLLING STOCK
ELECTR FICATION         751340         300630         0         0         0         0           FORE IGK CURRENCY         79600         33860         0 <td< td=""><td>0</td><td>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td><td>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td><td>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td><td>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td><td>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td><td>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td><td>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td><td>309630 39800 269830 426572 131080 295492 480150 0 480150 0 0 1604340 0 1804340 0</td><td>751340 79600 671740 1270716 393240 886476 2389210 0 2389210 0 3184255 622500</td><td>ELECTRIFICATION FOREIGN CURRENCY LUCAL CURRENCY SIGNALS &amp; TELECOM FOREIGN CURRENCY LOCAL CURRENCY LOCAL CURRENCY LOCAL CURRENCY LARD ACQ &amp; CONP FOREIGN CURRENCY LOCAL CURRENCY ROLLING STOCK</td></td<>	0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	309630 39800 269830 426572 131080 295492 480150 0 480150 0 0 1604340 0 1804340 0	751340 79600 671740 1270716 393240 886476 2389210 0 2389210 0 3184255 622500	ELECTRIFICATION FOREIGN CURRENCY LUCAL CURRENCY SIGNALS & TELECOM FOREIGN CURRENCY LOCAL CURRENCY LOCAL CURRENCY LOCAL CURRENCY LARD ACQ & CONP FOREIGN CURRENCY LOCAL CURRENCY ROLLING STOCK
FOREIGN CORRENCY         09800         38800         0 <td>0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     192680       0     0       0     0       0     0       0     0</td> <td>0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>0 0 0 0 0 0 0 192660 19268 0</td> <td>0 0 0 0 0 0 0 192660 1 192660 1 192660 1 0</td> <td>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>39800 269830 426572 131080 295492 480150 0 480150 0 1604340 0 1804340 0</td> <td>79800 671740 1279716 393240 886476 2389210 0 2389210 0 3184255 622500</td> <td>LOCAL CURRENCY SIGNALS &amp; TELECOM FOREIGN CURRENCY LOCAL CURRENCY CIVIL VORK FOREIGN CURRENCY LOCAL CURRENCY LARD ACG &amp; COMP FOREIGN CURRENCY LOCAL CURRENCY ROLLING STOCK</td>	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     192680       0     0       0     0       0     0       0     0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 192660 19268 0	0 0 0 0 0 0 0 192660 1 192660 1 192660 1 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	39800 269830 426572 131080 295492 480150 0 480150 0 1604340 0 1804340 0	79800 671740 1279716 393240 886476 2389210 0 2389210 0 3184255 622500	LOCAL CURRENCY SIGNALS & TELECOM FOREIGN CURRENCY LOCAL CURRENCY CIVIL VORK FOREIGN CURRENCY LOCAL CURRENCY LARD ACG & COMP FOREIGN CURRENCY LOCAL CURRENCY ROLLING STOCK
STGMALS & TELECOM         1279716         426572         0         0         0           PORETOR CURRENCY         333240         131080         0	0 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     192680       0     192650       0     0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 192660 19285 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	426572 131080 295492 480150 0 480150 0 1604340 0 1604340 0	1279716 393240 886476 2389210 0 2389210 0 3184255 625500	SIGNALS & TELECOM FOREIGN CURRENCY LOCAL CURRENCY CIVIL VORK FOREIGN CURRENCY LOCAL CURRENCY LAND ACQ & CONP FOREIGN CURRENCY LOCAL CURRENCY ROLLING STOCK
LOCAL CORRENCY         285476         255452         0         0         0         0           CIVIL VORK         2380210         450150         0 <td>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>0 0 0 0 0 0 0 0 0 192680 0 192680 0 192680 0 0 192680 0 0 192680 0 0 192680 0 0 192680 0 0 192680 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     192680       0     192680       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0</td> <td>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>0 0 0 192660 19266 0</td> <td>0 0 0 192660 1 192660 1 192660 1</td> <td>0 0 0 0 0 0 0 0 0 0 0 0 0 0 192860 0 0</td> <td>0 0 0 0 0 0 192680 192680 0</td> <td>295492 480150 0 480150 0 0 1604340 1604340 0 1604340</td> <td>886476 2389210 0 2389210 0 0 3184255 625500</td> <td>LOCAL CURRENCY CIVIL VORK FOREIGN CURRENCY Local Currency Land Acg &amp; Conp Foreign Currency Local Currency Rolling Stock</td>	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 192680 0 192680 0 192680 0 0 192680 0 0 192680 0 0 192680 0 0 192680 0 0 192680 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     192680       0     192680       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0       0     0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 192660 19266 0	0 0 0 192660 1 192660 1 192660 1	0 0 0 0 0 0 0 0 0 0 0 0 0 0 192860 0 0	0 0 0 0 0 0 192680 192680 0	295492 480150 0 480150 0 0 1604340 1604340 0 1604340	886476 2389210 0 2389210 0 0 3184255 625500	LOCAL CURRENCY CIVIL VORK FOREIGN CURRENCY Local Currency Land Acg & Conp Foreign Currency Local Currency Rolling Stock
CIVIL VORK         2389210         480150         0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	 0 0 0 192680 192680 0 192680 0 192680 0 0 192680 0 0 192680 0 0 192680 0 0 192680 0 0 192680 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			0 0 192660 19265 19266 19265	0 0 0 192660 192660 1 192680 1 0	0 0 0 0 0 0 0 0 192860 192660 0	0 0 0 192880 192860 0	0 480150 0 0 1804340 1804340 0	0 2389210 0 0 3184255 625500	CIVIL VORK FOREIGN CURRENCY LOCAL CURRENCY LAND ACG & COMP Foreign Currency Local Currency Rolling Stock
LOCAL CURRENCY         2389210         450150         0 <td>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>0 0 0 192680 0 192880 0 9 0 15484 30514528</td> <td>0     0       0     0       0     0       0     0       0     0       0     192680       0     192680       0     192680       0     0       0     0</td> <td>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>0 0 192660 19268 192660 19288 0</td> <td>0 0 192660 1 192680 1 192680 1</td> <td>0 0 0 192860 192850</td> <td>0 0 0 192680 192660 0</td> <td>480150 0 0 1604340 1804340 0 1804340</td> <td>2389210 0 0 3184255 625500</td> <td>LOCAL CURRENCY Land Acq &amp; Conp Foreign Currency Local Currency Rolling Stock</td>	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 192680 0 192880 0 9 0 15484 30514528	0     0       0     0       0     0       0     0       0     0       0     192680       0     192680       0     192680       0     0       0     0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 192660 19268 192660 19288 0	0 0 192660 1 192680 1 192680 1	0 0 0 192860 192850	0 0 0 192680 192660 0	480150 0 0 1604340 1804340 0 1804340	2389210 0 0 3184255 625500	LOCAL CURRENCY Land Acq & Conp Foreign Currency Local Currency Rolling Stock
FOREIGN CURRENCY         0	0 1660 21768 0 1860 21768 0 0 0 0 0 0 0 0 0 0 0 0 0	0 192680 0 192850 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	) 0 0 192680 0 192650 0 192650 0 0 0 0 9 0	 	0 0 192660 19268 192660 19268 0	0 0 192660 1 192660 1 192660 1 0	0 0 192860 192660 0	0 0 192550 192660 0	0 0 1604340 1604340 0	0 0 3184255 625500	FORBIGN CURRENCY LOCAL CURRENCY Rolling Stock
LOCAL CURRENCY         0	0 880 21768 0 850 21768 0 0	0 192680 192650 0 0 0 192650 0 0 192650	0 0 192680 0 192680 0 192680 0 0 0 0 0 0	0 192680 0 192650 0 0 0 0 0 0 0 0 0 0 0 0 0	0 192660 19268 0 192660 19268 0	0 192660 1 0 192660 1 0	0 192880 192880 192880	0 192880 0 192680 0	0 1604340 0 1604340 0	0 3184255 625500	LOCAL CURRENCY Rolling Stock
FORE IGN CURRENCY         625500 2553755         0 <th0< th=""> <th1< td=""><td>0 850 21768 0 9</td><td>0 192850 0 0 15484 30514528</td><td>0 192850 0 6 9 9</td><td>0 192650 0 0 0 0</td><td>0 192660 19286 0</td><td>0 192680 1 0</td><td>0 192680 0</td><td>0 192660 0</td><td>0 1604340 0</td><td>625500</td><td></td></th1<></th0<>	0 850 21768 0 9	0 192850 0 0 15484 30514528	0 192850 0 6 9 9	0 192650 0 0 0 0	0 192660 19286 0	0 192680 1 0	0 192680 0	0 192660 0	0 1604340 0	625500	
LOCAL CURRENCY         2538755         1604340         192660         <	0 0 0	192850 0 0 15484 30514528	) 192650 ) 0 ) 9	) 192650 ) 0 ) 9	192660 19285 0	192660 1 0	192680 0	192660 0	1604340 0		FOREIGN CURRENCY
INT.         DURING CONST.         1588919         2088428         0         0         0         0           FINANCE PROGRAM         FINANCE TOTAL         BORROVING         9193440         4889120         0	0	0 15484 30514528	> 0	> 0							
FINANCE TOTAL           FINANCE TOTAL           BORROWING         0193440         4889120         0 <t< td=""><td>•</td><td>15484 30514528</td><td>) 0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	•	15484 30514528	) 0								
B02R0VING         0193440         4880120         0	•	15484 30514528	) 0						:		FINANCE TOTAL
FINANCE IN FORBIGN CCY           BORROWING         1184551         250259         0	528 3049904	2410014	2 30514528	15484 30514528	15484 1548 10530012 3051452	15484 30545498 305	15484 30560980	0 30578464	0 30576484	0 25887344	BORROVING REPAYKENT BALANCE
BORROWING         1164551         250259         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         15484 <th15484< th="">         154844         154844</th15484<>											
BORROWING         80288889         4638861         0	819 318133		1 15484 3 3196819	15484 3196819	15484 1548 3212303 319681	15484 3227786 32	15484 3243270	0 3258754	0 3258754	0 3008495	BORROVING Repayxent Balance
REPAYNENT         0         175708         27317709         2731770											FINANCE IN LOCAL CCY 1
BORRGVING 0 0 0 0 0 REPAYNENT 0 0 0 0 0 0 BALANCE 0 0 0 0 0 0		Ō	0 27317709	0 27317709	0 27317709 2731770	0 27317709 273	0 27317709	0 27317709	0 27317709	0 22878849	REPAYNENT Balance
REPAYNENT 0 0 0 0 0 0 BALANCE 0 0 0 0 0 0											
	0 0 0	0	0 0	0	0	0	0	0	0 0	0 0	REPAYHENT Balance
		3136766									NET CASHFLOW
		18720611				_					CUN NET CASHFLOV
		967841	967841	967841	952594 96784	937346 9	922098	906851	168770	158620	DEPRECIATION
	841 98491	2795128					2796408				CASH OUT
IXVESTKENT 7909021 3125192 -434458 369620 369620 552475 36 INT. DURING CONST. 1588919 2088428 0 0 0 0 Repayment 0 0 15484 15484 15484 1	841 98491 0 128 283682	369820	) (	) 0 15484	0 15484 1548	0 15484	0 15484	~434458 0 0	3125192 2068428 0	7909021 1588919 0	INT. DURING CONST. REPAYNENT
INTEREST 242897 242897 2411621 2411302 2410876 2410450 241 CF FOR FIRE -5752234 -828967 4863532 4435175 4810897 5003783 556 FIRE \$ 18.00	841 98491 0 128 283682 1820 41174 0 484 1548	15484			PATA400 70167	2410010 24				-5752234	

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2000         2010         2011         2012         2011         2014         2014         2016         2016           GPERATING FRONTI GPER											
DOPERATING PROFIT         DESG 100         TOS 100 <thtos 100<="" th="">         TOS 100         TOS 100</thtos>											
DOPERATING PROFIT         DESG 100         TOS 100 <thtos 100<="" th="">         TOS 100         TOS 100</thtos>											
DOPERATING PROFIT         DESG 100         TOS 100 <thtos 100<="" th="">         TOS 100         TOS 100</thtos>											
OPERATURE EXPENSE         CONSTR         CONSTR <thconstr< th="">         &lt;</thconstr<>		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
OPERATURE LEVENS         OPERATURE LEVENS<	OFFATING DENSIT	8858532	7101828	7383462	7363462	7363462	7363462	7363462	7363462	7363462	
THE SECTION PARIANT         224433         250040         270064		12522222	10298178	25552222	02277332 0	22322228	*******	22042352	********	********	10613508
PRECINT         4532877         483301         5173306 <th< td=""><td>THE SECTION</td><td></td><td></td><td></td><td>070344</td><td>- 19 A</td><td></td><td>070884</td><td>270RAA</td><td></td><td></td></th<>	THE SECTION				070344	- 19 A		070884	270RAA		
TOTAL         4218310         5135840         5452070		4593877	4883591				5173306				5173306
SUPER EXPRESS         4353370         454505         4446050         446000         4540000         454000         454000         454000         <	TOTAL.			5452970	5452970	5452970	5452970	5452970	5452970	5452970	5452970
Long Excess         444129         5180538         52076         520748         520438 <th< td=""><td>SUPER EXPRESS</td><td></td><td></td><td></td><td>4546505</td><td>4548505</td><td></td><td></td><td></td><td></td><td></td></th<>	SUPER EXPRESS				4546505	4548505					
IDR.         CONCLUS 0         SECOND							*				
THE SECTION         27558         918550         945481         945						1			· · · ·	3250048	
VOELING COST MAINTERNANCE COST IT70352         TATOT3 170352         TATOT3 170352         TATOT3 170352         TATOT3 170352         TATOT3 747073         TATOT3 747073<	· · · · ·						945481			845481	845481
PERCENTRY         47055         45053         52043	VORKING COST	685258	718791	747673	747873		747673		747873	747873	747873
DEFRECTATION         IGIGO         IG7805         IG7805 <thig7805< th=""> <thig7805< th=""> <thig780< td=""><td>PERSONNEL COST</td><td>47089</td><td>49535</td><td>52043</td><td>52043</td><td>52043</td><td>52043</td><td>52043</td><td>52043</td><td>52043</td><td>52043</td></thig780<></thig7805<></thig7805<>	PERSONNEL COST	47089	49535	52043	52043	52043	52043	52043	52043	52043	52043
NEW DIVELOG         Construction         Construction </td <td>DEPRECIATION</td> <td></td> <td></td> <td></td> <td>197808</td> <td>197808</td> <td>197808</td> <td>197808</td> <td>197808</td> <td>197808</td> <td>197808</td>	DEPRECIATION				197808	197808	197808	197808	197808	197808	197808
Interview         Cost         S32832         S38834         S38376         S5376         S5376         S5376         S53776         S55376         S55376 <td>NEW CORRIDOR</td> <td></td>	NEW CORRIDOR										
LIEDONCL BELEC CORT DEPRELATION         ÉGIÉSE 661287 661287         ÉGIÉZE7 661287 651287         ÉGIÉZE7 651287         ÉGIÉZE7 651287         ÉGIÉZE7 855376         ÉGIÉZE7 8	NAINTENANCE COST	632352	639884	639884	839884	839884	639884	639884	639884	039884	639884
DELECTION         COMP	ELEC COST	844543	669415	694287	694287	694287	694287	594287	894287	894287	894287
INVESTIGAT         ATTAC         LEBGET         INVESTIGAT	DEFRECIATION	0111.0									
Instrum         411740         1074221         0         415606         0         0         181645         0         0           THE SECTION         194060         197398         0         608436         0         0         0         182855         0         0           FOREIGN TOTAL         0         600         0         19230         0         0         0         1210         0         0         0         12200         0         0         1210         0         0         0         1210         0         0         0         1210         0         0         0         0         12230         0         0         0         1210         0	· · ·	22225222	*=======	******	22223222	18192120	\$30223 <b>2</b> 33	-12112530	11412121	32222253	22223322
THE SECTION         THEORY         0         600         19233         0         0         1210         0         0         0         0         0         0         0         19233         0         0         181845         0         0         0         0         0         0         181845         0											
FOREIGN TOTAL LOCAL TOTAL         0         600         0         192330         0         0         0         1210         0         0         0           LOCAL TOTAL         194050         186796         0         4156066         0	THE SECTION								******		********
FOREIGN CURRENCY         0         0         0         32520         0		0						•			
FUREIGN CURRENCY         0         0         0         32520         0	ELECTRIFICATION		0	Ó	76115	0	0	0	0	0	0
SIGNAL STREECT         0         3333         0         532321         0         0         182655         0         0           FOREIGN CURRENCY         0         600         0         160310         0         0         1210         0         0           LOCAL CURRENCY         0         2736         0         372011         0         0         0         181645         0         0           CIVIL VORK         0 <td< td=""><td>FOREIGN CURRENCY</td><td>0</td><td></td><td></td><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td></td<>	FOREIGN CURRENCY	0						-			
FOREIGN CURRENCY         0         600         0         160310         0         0         1210         0         0         0         0         0         1210         0         0         0         0         1210         0         0         0         0         1210         0         0         0         0         0         1210         0						. 0		0	182855	0	• •
LOWAL CORRENCY         0	FOREIGN CURRENCY	-			160310						
FOREIGN CURRENCY         0		•						-			
LOCAL CURRENCY         0						<b>_</b>	0				
FOREIGN CURRENCY         0	LOCAL CURRENCY	0	0	0	0	U	v	v	•	•	•
FOREIGN CURRENCY         0											*******
FOREIGN CURRENCY         0								Ó	0		. 0
FOREIGN COARCIN         194060         194060         0 <td>ROLLING STOCK</td> <td>194060</td> <td>194060</td> <td>~~~~~</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	ROLLING STOCK	194060	194060	~~~~~							
-SALTROE TALOB											
				-							
	INT. DUKING CONST.	v	v	·	•	-					
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NEW CORRIDOR	217680						0 =======			0 ********
FORBIGN TOTAL Local Total	0 217880	544300 1477825	0 0	0	0	0	0 0	0 0	0	0 0
ELECTRIFICATION	0	0	0	0	0	0	Ó	0	0	0
FOREIGN CURRENCY Local Currency	0 0	0	0	0	0	0 0	0 0	0 0	0	0 0
SIGNALS & TELECON	0	1804245	0	0	0	0	0	0	0	0
FOREIGN CURRENCY LOCAL CURRENCY	0	544300 1259945	0 0	0	0 0	0 0	0	0 0	0 0	0 0
CIVIL VORK	0	0	0	0	0	0	0	0	0	Ó
FOREIGN CURRENCY LOCAL CURRENCY	0	0	0	0	0	0 Q	0	0	0 0	0
LAND ACQ & CORP	0	ð	ò	0	0	0	0	0	0	0
FOREIGN CURRENCY LOCAL CUBRENCY	0	0 0	0 0	0	0	0 0	0 0	0 0	0 0	0 0
ROLLING STOCK	217680	217680	. 0	0	0	0	0	0	0	0
FOREIGN CURRENCY Local Currency	0 217680	0 217880	0	0 0	0	0 0	0	0	0 Q	0
-SALVAGE VALUE INT. DURING CONST.	0	0	0	0	0 0	0 0	0 0	0	0 0	0
FINANCE PROGRAM FINANCE TOTAL										
BORROVING REPAYMENT BALANCE INTEREST	0 15484 30452593 2408321	0 15484 30437109 2407895	0 162938 30274171 2404428	0 162938 30111233 2399947	0 162938 29948296 2395467	0 182938 29785358 2390936	0 182938 29622420 2386505	0 162938 29459482 2382024	0 162938 29296545 2377543	0 162938 29133607 2373063
FINANCE IN FOREIGN CCY										
BORROVING Repayment Balance Interest	0 15484 3134883 86318	0 15484 3119399 85890	0 162938 2955461 82423	0 162938 2793524 77942	0 162938 2630588 73451	0 162938 2487648 68981	0 162938 2304711 64500	0 162938 2141773 60019	0 162938 1978835 55538	0 162938 1815897 51057
FINANCE IN LOCAL CCY 1										
BORROWING REPAYMENT BALANCE INTEREST	0 0 27317709 2322005	0 0 27317709 2322005	0 0 27317709 2322005	0 0 27317709 2322005	0 0 27317709 2322005	0 0 27317709 2322005	0 0 27317709 2322005	0 0 27317709 2322005	0 0 27317709 2322005	0 0 27317709 2322005
FINANCE IN LOCAL CCY 2										
BORROVING REPAYNENT BALANCE INTEREST	0 0 0 0	0 0 0	0 0 0 0	0 0 0	0 0 0 0	0 0 0 0	0 0 0	0 0 0	0 0 0 0	0 0 0 0
NET CASHFLOV	4857103	3512111	5849281	5245326		5862723		5688830		5880848
CUN NET CASHFLOW	35373338	38885446	44734727	49980053	55838295	61701018	67568222	73257052	79133217	85013864
CASH IN	7592848	8154811	8416647	8418847			8416647			
OPERATING PROFIT DEPRECIATION BORROVING	6656532 1036116 0	7101628 1053185 0	7383462 1053185 0	7363462	7363462 1053185 0	7363462 1053185 0	7383462	7363462	7363462 1053185 0	7363462
CASH OUT	2835545	4842700	2567368		2558404	2553924	2549443	2727817	2540481	2538000
INVESTMENT	411740	2219321		608436	0	0	0	182855	0	
INT. DURING CONST. Repayment Interest	0 15484 2408321	0 15484 2407895	0 162938 2404428	162938	0 162938 2395467	0 162938 2390988	0 162938 2386505	0 162938 2382024	0 162938 2377543	182938
CF FOR FIRR FIRR X	7280908 18.00	5935490 18.00	8418647 18.00		8416647 18,00	8416847 18.00		8233792 18.00		

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	2018	2019	2020	2021	2022	2023	2024
OPERATING PROFIT	7383482	7363482	7383482	7383482	7363482	7363462	7363462
OPERATING REVENUE	10613508	10813508	10813508	10613508	10813508	10613508	10813508
THE SECTION PASSENGER FREIGHT	279564 5173306	279864 5173306	279664 5173308	279884 5173308	279664 5173308	279684 5173300	279664 5173306
TOTAL	5452970	5452970	5452970	5452970	5452970	5452970	5452970
NEV CORRIDOR SUPER EXPRESS LONG EXPRESS	4548505 814034	4548505 614034	4546505 614034	4548505 614034	4548505 614034	4548505 614034	4546505 614034
TOTAL	5100538	5160538	5160538	5180538	5160538	5160538	5160538
OPERATING EXPENSE	3250048	3250046	3250048	3250046	3250046	3250048	3250046
THE SECTION	945481	945481	945481	945481	945481	945481	845481
VORXING COST NAINTENANCE COST PERSONNEL COST ELEC COST DEPRECIATION	747873 175088 52043 520584 197808	747873 175086 52043 520584 197808	747873 175068 52043 520564 197868	747873 175068 52043 520584 197808	747673 175066 52043 520564 197808	747673 175065 52043 520564 197808	747873 175068 52043 520564 197808
NEW CORRIDOR	2304585	2304565	2304565	2304585	2304585	2304565	2304565
VORKING COST NAINTENANCE COST PERSONNEL COST ELEC COST DEPRECIATION	1449189 639884 115018 694287 855376	1449189 639884 115018 694287 855378	1449189 639884 115018 694287 855378	1449189 839884 115018 894287 855378	1449189 639884 115018 694287 855378	1449189 639884 115018 894287 855376	1449189 639884 115018 694287 855376
INVESTMENT	1807581	. 0	8595120	1334995	334895	354625	334695
FOREIGN TOTAL LOCAL TOTAL	544900 1262881	0 0	1894000 6701120	0 1334995	0 334695	0 354325	334695
THE SECTION	3338	0 	0	1159375	159075	179005	159075
FOREIGN TOTAL LOCAL TOTAL	600 2735	0 0	0	0 1159375	0 159075	0 179005	159075
 ELECTRIFICATION	0	0	0	0	.0	. 0	
FOREIGN CURRENCY Local Currency	0	0	0 0	0	0	0 0	. (
SIGNALS & TELECON	3336	0	0	0	0	0	
FOREIGN CURRENCY LOCAL CURRENCY	600 2738	0 8	0	, 0 Q	0 G	· 0	
CIVIL VORK	0	0	0	0	0	18930	
FOREIGN CURRENCY Local currency	0	0	0	0	0	0 19930	t C
LAND ACQ & COMP	0	0	0	Q	0	0	(
FORBIGN CURRENCY LOCAL CURRENCY	0	0	0	0	0	- 0 0	(
ROLLING STOCK	0	0	0	1159375	159075	159075	15907
FOREIGN CURRENCY LOCAL CORRENCY	0 0	0	0	0 1159375	0 159075	0 159075	( 15907;
-SALVAGE VALUE INT. DURING CONST.	0	0	0	Û	0 0	0 0	2808575 (

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	NEW CORRIDOR	1804245	0	8595120	175620	175520	175620	175820
	FOREIGN YOTAL Local Total	544300 1259945		1894000 8701120	0 175620	0 175620	0 175620	0 175620
	ELECTRIFICATION	0	0	887750	0	0	0	0
	FOREIGN CURRENCY Local Currency	. 7 O 0	0 0	199000 688750	0	0 0	0 0	0 0
	SIGNALS & TELECON	1804245	0	1231400	0	0	0	0
	FOREIGN CURRENCY LOCAL CURRENCY	544300 1259945	0	444000 787400	0	0 0	0 0	0
	CIVIL YORK	0	0	0	0	0	0	0
	FOREIGN CURRENCY LOCAL CURRENCY	0	0 0	0 0	0 0	0	0	0 0
	LAND ACQ & CONP	0	0	0	0	0	.0	0
	FOREIGN CURRENCY Local Currency	0	0 0	0 0	0	0 0	0 0	0
:	ROLLING STOCK	0	0	6475970	175620	175820	175620	175820
	POREIGN CURRENCY Local Currency	0	0 0	1251000 5224970	0 175620	0 175620	0 175620	0 175620
	-SALVAGE VALUE INT. DURING CONST.	0	0	0	0 0	0 0	0	13063155 0
	FINANCE PROGRAM							
	BORROVING REPAYNENT BALANCE INTEREST	0 162938 28970689 2388582	0 162938 28807732 2364101			0 147454 28349886 2351404	28202432	
	FINANCE IN FOREIGH CCY							
	BORROVING REPAYNENT BALANCE INTEREST	0 162938 1652960 46577	0 162938 1490022 42096	0 162938 1327084 37615	0 147454 1179831 33454	0 147454 1032177 29399	0 147454 884723 25344	0 147454 737269 21289
	PINANCE IN LOCAL CCY 1							
	BORROVING REPAYNENT BALANCE INTEREST	0 0 27317709 2322005	0 0 27317709 2322905	0 0 27317709 2322005	0 0 27317709 2322005	0 0 27317709 2322005		0 0 27317709 2322005
	FINANCE IN LOCAL CCY 2							
	BORROVING REPAYNENT BALANCE Interest	0 0 0 0	0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0	0 0 0 0
	NET CASHFLOW	4077548	5889608	-2791031	4578739	5583094	5567219	21480934
	CUN NET CASHFLOV	89091410	94981017	92279988	98858725	102441819	108009037	129459971
	CASH IN	8416647	8416647	8416647		8416647	8416847	
	OPERATING PROPIT Depreciation Borroving	7363462 1053185 0	7363462 1053185 0	7363462 1053185 0	7363462 1053185 0	7363462 1053185 0	7363462 1053185 0	7363482 1053185 0
	CASH OUT	4339101		11117678	3837908	2833553		-13044287
	INVESTHERT	1807581	0	8595120	1334995	334695	354825	-15535035
	INT. DURING CONST. REPAYMENT INTEREST	0 162938 2368582	0 162938 2384101	0 162938 2359620	0 147454 2355459	0 147454 2351404	147454	0 147454 2343294
	CF FOR FIRR	6609066	8416647	-178473	7081652	8081952	8082022	23951681

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## 8-7 Increments of Railways Personnel by Kinds of Jobs

(Unit: persons)

Case (	A	)
--------	---	---

Year			· · · · · · · · · · · · · · · · · · ·
Kind of job	1995	2000	2.024
Driver	88	268	268
Conductor	373	823	823
Station staff	114	364	364
Maintenance staff	374	570	570
Head office staff			
Total	949	2,025	2,025

Case (B)

Year			· .
Kind of job	2005	2010	2024
Driver	144	174	174
Conductor	477	572	572
Station staff	176	210	210
Maintenance staff	3,127	3,267	3,267
Head office staff	196	211	211
Total	4,120	4,434	4,434

Case (C)

· · ·	1	T	T
Year			
Kind of job	2000	2010	2024
Driver	250	518	518
Conductor	474	931	931
Station staff	540	736	736
Maintenance staff	3,434	3,915	3,915
Head office staff	181	211	
Total	4,879	6,311	6,311

### 8-8 Economic Price of Fuel and Tire

	Market Price	Economic price
Diesel oil	Rs 3.5/liter	Rs 2.27/liter
Engine oil	Rs 17/liter	Rs 11.56/liter
Air-craft fuel	Rs 6.03/liter	Rs 4.63/liter
Tire (bus)	Rs 4,300/unit	Rs 2,925/unit
Tire (truck)	Rs 4,850/unit	Rs 3,299/unit

Note: Excise duty - Rs. 1,000/K. liter for diesel oil and air-craft fuel, 40% for engine oil and tire.

Average sales tax - 7%

#### 9-1 Determination of Guidelines for the Study

#### 1. Objective

Two projects are to be studied for improvement of railway transport between Delhi and Kanpur, that is upgrading the existing Section and constructing a New high-speed Corridor. In addition, there is a possibility of two staged construction of the latter, because it passes through the big city of Agra. Therefore, as a preliminary step of the Study, it is necessary to select a optimum combination of the two projects through estimating their rough economy.

#### 2. Assumption

- (1) The alternative plans shown in Table 1 are chosen for various combination of investment phase, the maximum speed, and fares. A comparison is to be made for the sample years of 1990, 1995, 2000 and 2015.
- (2) If the estimated railway demand exceeds its transport capacity even after implementing improvements, the railway shall continue transport operation within the limit of its capacity.
- (3) Induced traffic, which may be incurred by an increased train speed is not taken into account.

Project	Upgrading the existing Section Delhi - Kanpur	Delhi			ting a undla)			a Ka	nnur
Alter-Maximum speed	160  km/h		km/h		km/h		km/h	250	km/h
native Fare	Current level		Case		Case	Case			
plan		1	2	1	2	1	2	1	2
I	0								
II-1	0	0							
11-2	0		0	_					
11-3	0			0					
II-4	0				0				
III-1	0					0			
III-2	0						0		
111-3	0							0	
111-4	0							1	0

## Table 1 Alternative Plans

Case 1: 25% increase Case 2: 50% increase

Phase II Phase I Phase III Delhi Delhi Delhi C Tundla Tundla Tundla Agra Agra Agra Kanpur Kanpur Kanpur Bombay Bombay Bombay Calcutta Calcutta Calcutta

Legend Existing Section Existing Section (max. 160 km/h)

#### 3. Selection Principle

The transport volume transferred from road and air to rail are calculated for each alternative plan by each sample year. An optimum alternative plan and its implementing year is set up by calculating cost difference in the Generalized Cost (AE) between each alternative plan and without the project case based on the transferred transport volume.

Difference of the Generalized Cost ( $\Delta E$ ) is given by the following formula.

 $\Delta E = W\Delta T + \Delta C$ 

- where: W : Passenger time value
  - $\Delta T$ : Passenger time saving due to implementing the alternative plan
  - $\Delta C$ : Total cost saving (capital cost and operation cost) due to implementing the alternative plan

4. Assumption and Calculation Method for Estimating the Generalized Cost

- 4-1 Assumption
- (1) Capital cost
  - 1) The capital cost for Without the Project case is the investment which would be required to carry the traffic volume, transferred to the railway in case of With the Project, by other transport modes, that is, the investment in buses and trucks for road transport and in airplanes for air transport.
  - 2) The capital cost for With the Project case is the investment in railway facilities and rolling stock which is required to carry the traffic volume, transferred from bus, truck and airplane to the railway.
  - 3) The capital cost for calculating the Generalized Cost is given by dividing the total capital cost by the number of years of useful life.

(Note: Land cost is excluded.)

#### (2) Operation cost

The operation cost is the sum of maintenance cost, fuel cost and personnel expenses required for carrying the transferred traffic volume, and is calculated on an annual basis for each sample year.

(3) Estimation of the passengers time value

Because there is no statistic data available for the income level of passengers of public transportation facilities, the average passenger income is assumed at the same level as earnings of workers employed in manufacturing industries, with reference to general statistical materials, fare level of the I.R. and information from relevant institutions.

- 4-2 Calculation Method
- (1) Railway
  - 1) Capital cost

The yearly capital cost is calculated by dividing the investment for each assets calculated in Chapter 4 (4-6) and Chapter 5 (5-7) by their useful lives. As for useful lives, the JR standard value are used.

2) Maintenance cost

The yearly maintenance cost (incl. replacement cost) is calculated by multiplying the investment cost by maintenance, and replacement rates. The JR standard value is used for the above two rates (see Table 2).

3) Electric power cost

The electric power cost is calculated as follows:

Annual electric = Annual transport ton-km power cost x Power consumption rate per ton-km x Unit price of electric power

Power consumption rate:	(Unit: kwh/1,000 ton-kml)	
Super express	36.9	
Long express	18.8	
Express	18.8	•
Local	25.7	
Freight	10.0	

Note: The value of the S. Exp. is based on the JR data and those of L. Exp., Exp., Local and Freight trains on the data of IR.

Unit price of electric power: Rs.1.004/kwh

Note: Based on the IR data

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	Assets	Maintenance	Replacement	Useful
Items	description	rate	rate	life (year)
Civil	Roadbed	0.0004		57
work	Road bridge	0.0027		50
	Platform	0.0041		32
	Overbridge	0.0051		32
	Station building	0.0067.		45
	Building	0.0057		45
	(workshop depot etc.)			
	Track	0.006669	0.04446	25
Signalling	Level crossing	0.0292		12
&	facilities			
telecommu-	Signalling facilities	0.0210		20
nication	Telecommunication	0.0312		9
	facilities			
	Signalling cable	0.0011114	0.0317571	35
	Telecommunication cable	0.0038108	0.0317571	35
	Track circuit	0.0020475	0.0585	19
Electrifi-	Substation facilities	0.0008		20
cation &	Substation building	0.0057		45
power supply	Overhead equipment	0.000741	0.0247	45
	Power distribution line	0.0055575	0.03705	30
Rolling	Electric locomotive	0.0407		30
stock	EMU	0.035		20
	Coach	0.02178		30
	Wagon	0.0147		30
	Machinery at workshop	0.05		20
	Machinery at depot	0.05		20

Table 2 Maintenance & Replacement Rate and Useful Life of Assets

#### Source: JR standard

### 4) Personnel expense

The annual personnel expense for each job is calculated by multiplying the number of personnel added in the project by the average salary. Average Salary of the Railway Employee for Each Job (Rs./month)

Driver	2,125
Conductor	1,975
Station staff	2,125
Maintenance staff	2,125
Head office staff	2,338

Note: Estimated from IR data

The added number of personnel for each job is estimated based on the performances of IR and the Shinkansen in Japan.

Table 5 shows the estimated number of added personnel when the existing Section is upgraded and the New Corridor is operated in the year 2000 between Delhi and Kanpur via Agra (with max. 250 km/h with fare 25% up).

(2) Bus, truck, and airplane

1) Capital cost

The capital cost in Without the Project case is calculated by calculating the number of trucks, buses, and airplanes which would be required for carrying the traffic volume transferred to the railway in each With the Project case, and dividing it by their useful lives.

Required number of vehicles (truck, bus, airplane)

- ≈ Annual transferred traffic volume (person-km or ton-km)
  - Average annual transport volume per vehicle person-km or ton-km

(Note: Number of vehicles is rounded off)

Average annual transport volume per vehicle:

 Bus
 3,570,000 person-km

 Truck
 456,000 ton-km

 Airplane (B737)
 204,170,870 person-km

Table 6 shows the number of vehicles to be added to the individual traffic modes in case that the two projects of upgrading the Section and the New Corridor construction (Delhi - Agra - Kanpur max. 250 km/h, fare 25% up) are not implemented in 2000.

The following data for bus, truck, and airplane is based on references provided by the Road and Surface Transport Department, the Ministry of Civil Aviation/Indian Airlines and Rites as well as on the analysis report from the Operational Statistics of DTC (Delhi Transport Corporation) 1986 and the Annual Report 1984-85 of Indian Airlines and other information from pertinent institutions.

Bus:

Capacity	60 persons
Average occupancy ratio	84%
Useful life	8 years
Traveling distance	70,000 km/year
Price	Rs.325,000/unit

Truck:

Loading capacity	10 tons
Average load factor	76%
Useful life	10 years
Traveling distance	60,000 km/year
Price	Rs.214,000/unit

Airplane (B737):

Capacity	130 persons
Average load factor	70.4%
Useful life	10 years
Traveling distance	2,231,000 km/year
Price	Rs.327,500,000/unit

2) Operation cost

The following data concerning the average maintenance and fuel cost per vehicle-km of bus, truck and airplane (B737) and the

na 1940 - Martin Andrea - Camana an Angra (Angra an Angra an Angra an Angra an Angra an Angra an Angra an Angr	Bus	Truck	Airplane
Maintenance cost	Rs.0.64/km	Rs.1.12/km	Rs.5.04/km
Fuel cost	Rs.0.906/km	Rs.0.959/km	Rs.39.22/km
Personnel expense per year	Rs.111,000/unit	50,000/unit	306,000/unit

annual personnel expense per unit is also based on the source described above.

Table 7 shows the difference in annual cost (cost saving benefit) calculated as above between With the Project and Without the Project cases.

#### (3) Benefit of passenger time saving

1) Evaluation of passenger time value

The assumption for calculation is as described in 4-1.

The passenger time value is calculated as follows:

Per capita average annual earning of a worker (earnings less than Rs.1,000 - per month) in manufacturing industries is Rs.7,470 - in 1982.

(Source: Indian Labour Year Book 1985)

The average annual earnings in 1987 per passenger is estimated to be Rs.12,000 (Rs.1,000/month) by adjusting the abovementioned value with the growth rate of the consumer price index as well as in consideration of other statistic data on earnings. (Source: Economic Survey 1986-1987) Based on this, the passenger time value is given below.

Passenger time value = Monthly earnings per passenger/ Average monthly working time

x Non-working time adjustment factor

Monthly earnings per passenger: Rs.1,000 Average monthly working time : 182 hours

Note: Normal working hours of industrial workers are 8 hours a day for 273 days in a year. (Source: Statistical Survey)

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Non-working time adjustment factor: 0.75

Note: Assuming the activity time per day at 12 hours, the time value of non-working hours is assumed to be one fourth of that of working hours.

Accordingly, the time value of passengers is Rs.4.12.

Assuming that the time value goes up in proportion to the growth of per capita GDP, the passenger time value in sample years is given as follows:

Year	Passenger time value	Growth rate GDP per capita
1987	Rs.4.12	
1990	Rs.4.50	2.96%
1995	Rs.5.28	3.24%
2000	Rs.6.19	3.24%
2015	Rs.9.06	2.57%

- Note: a) The Growth Rate per Capita up to the year 2000 is taken from the 7th Five Year Plan and that after 2000 for the year 2015 is calculated from the estimated population and GDP growth rate of 4%.
  - b) Sources of the statistic data concerning earnings used are as follows:
    - . Earnings of mine workers were Rs.760.3/month in 1984 and is estimated to be Rs.942/month in 1987 by adjustment with the consumer price index. (Source: Pocketbook of Labour Statistics, 1986)
    - . Per capita emoluments of public sector employees were Rs.26.069 (Rs.2.172/month) in 1986. (Source: Economic Survey 1986 - 87)
    - . Average annual cost per employee of the IR is Rs.16.883 (Rs.1.407/month). (Source: Annual Report of Accounts 1985 - 86 IR)

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2) Calculation of passenger time saving benefit.

The benefit of passenger time saving is given by the following equation.

Passenger time saving benefit

= Passenger time value (W) x Saving in passenger time ( $\Delta T$ )

The saving in passenger time, that is the reduction in transport time due to transfer from other transport modes to railway, is calculated based on the estimated traffic demand.

The passenger time saving benefit is calculated as shown below assuming the Section is upgraded and a New Corridor is operated in the year 2000 between Delhi and Kanpur via Agra (with max. 250 km/h and fare 25% up).

Rs.6.19 x 406,695 thousand person-hour = 2,517,442 thousand Rupees

5. Optimum Alternative Plan

5-1 Limit Year of the Transport Capacity

The estimated railway transport capacity is expected to be fully occupied at the following years as described in Chapter 4 (4-2) and Chapter 5 (5-3).

- (1) With upgrading the Section, the transport capacity will be fully occupied in 2000.
- (2) In the case where the New Corridor is constructed between Delhi and Agra, the existing line between Tundla and Kanpur reaches its maximum capacity in 2000.

Therefore, no increase in train operation can be expected after this time in the New Corridor as well.

(3) If the New Corridor is constructed between Delhi and Kanpur via Agra, it can generally handle the railway traffic demand up to 2015.

However, the existing line between Delhi and Tundla is supposed to nearly reach its limit in 2000.

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- 5-2 Comparison of the Generalized Cost Difference ( $\Delta E$ )
- (1) Table 3 shows the comparison in ∆E for each sample year among alternative plans, based on the traffic volume transferred to the railway and in consideration of the transport capacity of the corresponding section.

To make easy the above comparison, Table 4 shows various indices in percentage figures, with those for upgrading-the-Section case (Case I) setting at 100.

The breakdown of the cost saving benefit and of the time saving benefit in each alternative plan is shown in Table 7 and 8, respectively.

Table 9 shows the comparison in  $\Delta E$  and in the traffic volume transferred from other traffic modes to the railway for each sample year.

(2) Comparing the alternative plans for each sample years,  $\Delta E$  of the III case is greater than that of the II case after 2000.

In the III case, in the plan of maximum speed 250 km/h and fares up of 25%,  $\Delta E$  becomes the maximum due to increased time saving benefit attributed to the largest transferred traffic volume.

The effect of high speed operation is most significant in the plan where the entire New Corridor is constructed and it also becomes greater for later years. This is due to an increase in the total transport volume and growth of time value.

5-3 Selection of an Optimum Alternative Plan

The following plan is considered to be the optimum as a result of the comparison of  $\Delta E$  for each alternative plan by each sample year.

(1) In 1990

Operating the upgraded existing Section between Delhi and Kanpur

(2) In 2000

In addition to the above, operating the New Corridor between Delhi and Kanpur via Agra The construction phase or schedule of the New Corridor at around 1995 should be studied based on more detailed economic and financial analysis.

Especially, a sensitivity analysis is required for assessment of the fare level in terms of the financial analysis.

Table 3 Comparison of the Generalized Cost Difference (AE)

(Unit: million Rs)

	Total AE	7,636	7,681	7,667	7,769	7,665	10,610	9,335	11,233	10,066
2015	Cost saving	6,566	6,143	6,228	6,071	6,142	6,071	5,926	5,948	5,850
	Time saving	1,070	1,538	1,439	1,698	1,523	4,539	3,409	5,285	4,216
	Total ∆E	7,297	7,194	7,211	7,231	7,183	7,615	7,249	8,316	7,508
2000	Cost saving	6,566	6,143	6,228	6,071	6,142	5,684	5,723	5,799	5,668
	Time saving	731	1,051	983	1,160	1,041	1,931	1,526	2,517	I,840
	Total AE	4,249	3,918	3,937	3,937	3,911	4,004	3,822	4,456	3,879
1995	Cost saving	3,865	3,372	3,432	3,325	3,373	2,913	2,960	3,000	2,859
	Time saving	384	546	505	612	538	1,091	862	1,456	1,020
	Total AE	1,800	1,373	1,379	1,339	1,338	1,351	1,043	1,311	1,082
1990	Cost saving	1,647	1,163	1,191	1,093	1,133	668	675	572	607
	Time saving	153	210	i88	246	205	683	368	739	475
Year	Benefit Flan	Upgrading the existing section	New corridor DLI-AG 200 km/h 25% up	New corridor DLI-AG 200 km/h 50% up	New corridor DLI-AG 250 km/h 25% up	New corridor DLI-AG 250 km/h 50% up	New corridor DLI-CNB 200 km/h 25% up	New corridor DLI-CNB 200 km/h 50% up	New corridor DLI-CNB 250 km/h 25% up	New corridor DLI-CNB 250 km/h 50% up
	Case	Ħ		+ +	<b></b>	L				L

Note: DLI: DELHI, AG: AGRA, CNB: KANPUR 200 km/h 25% up: Maximum speed 200 km/h Fare 25% up

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Table 4 Comparison of the Generalized Cost Difference (AE)in Percentage Figures

(Unit: %)

•

1990	Time Cost Total saving saving $\Delta E$	8 92 100	12 64 76	11 66 77	13 61 74	11 63 74	corridor DLI-CNB 38 37 75 km/h 25% up	corridor DLI-CNB 20 38 58 km/h 50% up	corridor DLI-CNB 41 32 73 km/h 25% up	New corridor DLI-CNB 26 34 60 250 km/h 50% up
1995	Tíme Cost saving saving	16 6	13 79	12 81	15 78	13 79	26 68	20 70	34 71	24 67
	Total g AE	100	92	6	б б	92	94	06	105	16
	Time saving	10	14	14	16	14	26	21	35	25
2000	Cost T saving	06	84	85	83	84	78	78	79	78
	Total Time AE saving	100 14	98 20	99 19	99 22	98 20	104 59	99 44	114 69	103 55
2015	Cost saving	86	80	81	80	80	80	78	78	11
	Total AE	100	100	100	102	100	139	122	147	132

Note: Total AE of Case I for each sample year is set at 100 percent.

Table 5 Additional Personnel by Job (With the Plan III-3)

	(Unit:	person)
Year	2000	
Job		
Driver	460	
Conductor	880	
Station staff	210	
Maintenance staff	6,800	
Head office staff	420	

Table 6 Number of Vehicles to be Acquired for Each Traffic Mode (Without the Plan III-3)

Year	2000
Traffic mode	
Bus	6,558 units
Truck	35,130 units
Airplane	l unit

Table 7 Cost Difference due to Transferred Traffic

(Unit: million Rs)

A Strategy & A strategy and the strategy of th

				·						(Unit: million Ra)				
	Transport mode	Re	ilway		Bus	1	tuck	AI	Airplane Cost difference nvest- Operation Invest- Operation		difference	Cost difference		
Year	Cost	Invest-	Operation	invest-	Operation	Invest-	Operation	Invest-	Operation	Invest-	Operation	Total		
	Plan	ment	feos	#ent	cost	ment	cost	ment	cost	ment	coat			
	Upgrading the	116	321	33	177	204	1,670			121	1,526	1,647		
	existing Section													
	New Corridor OLI-AG											-		
	200 km/h 25% up	423	540	41	219	204	1,670			Δ178	1,341	1,163		
	50% up	404	517	37	201	204	1,670			Δ163	1,354	1,191		
1990	250 km;h 25% up	470	604	46	247	204	1,670			Δ220	1,313	1,093		
	50% up	432	560	39	212	204	1,670			Δ189	1,322	1,133		
	New Corridor DLI-CN8	1												
	200 km/h 25% up	821	918	83	450	204	1,670			Δ534 	1,202	669		
	50% up	769	820	61	329	204	1,670		·	4504	1,179	675		
	250 km/h 25% up	921	1,070	108	581	204	1,670			<u>Δ609</u>	1,181	572		
	50% up	824	906	12	391	204	1,670			Δ548	1,155	607		
	Upgrading the	1	1			1	1		t I					
	existing Section	145	615	70	379	456	3,720		<u>_</u>	381	3,484	3,865		
	New Corridor DLI-AG									1				
	200 km/h 25% up	495	884	90	485	456	3,720	·		51	3,321	3,372		
	50% vp	455	832	85	459	456	3,720	<u> </u>	· .	85	3,347	3,432		
1995	250 km/h 25% up	531	940	97	523	456	3,720			22	3,303	3,325		
	50% up	487	879	68	475	456	3,720	}·		57	3,316	3,373		
	New Corridor DLI-CNB				-					4700	2 04)	2 01 7		
	200 km/h 25% up	912	1,297	149	798	456	3,720	l		6308 6254	3,221	2,913		
	50% up	832	1,163	122	657 975	456	3,720	33	99	Δ341	3,214 3,341	2,960		
	250 km/h 25% up 50% up	1,011 904	1,453	133	716	456	3,720			۵315	3,174	2,859		
			1,202											
	Upgrading the	201	854	114	616	752	6,139		]	655	5,901	6,566		
	existing Section	ļ	ļ											
	New Corridor DLI-AG								]			}		
	200 km/h 25% up	560	1,133	148	797	752	6,139	<u> </u>	<u> </u>	340	5,803	6,143		
	59% vp	498	1,069	143	763	752	6,139	ļ	<b> </b>	395	5,833	6,228		
2000	250 km/h 25% up	614	1,209	157	846	752	6,139			295	5,776	6,071		
	50% up	552	1,126	145	784	752	6,139			345	5,797	6,142		
	New Corridor DLI-CN8 200 km/h 25% up	1,023	1,612	223	1,205	752	6,139	1		448	5,732	5,684		
	200 ka/n 204 op 50% op	914	1,612	164	992	752	6,139		L	22	5,701	5,723		
	250 ka/h 25% up	1,126	1,802	266	1,438	752	6,139	33	99	Δ75	5,874	5,799		
	50% up	984	1,545	204	1,102	752	6,139		<b> </b>	Δ28	5,696	5,668		
,		{	{		[				<u> </u>			ļ		
	Upgrading the	201	854	114	616	752	6,139		]	665	5,901	6,566		
	existing Section		<b> </b>		<b> </b> -		{							
	New Corridor DLI-AG	560	1,133	148	797	752	6,139			340	5,803	6,143		
	200 ks/h 25% up 50% up	498	1,155	140	763	752	6,139		<b> </b>	395	5,833	6,228		
2015	250 km/h 25% up	614	1,087	141	846	752	6,139			295	5,776	6,071		
1017	250 km/n 254 0p 50% up	552	1,126	145	784	752	6,139			345	5,797	6,142		
	New Corridor DLI-CN8	+												
	200 ks/h 25% up	1,211	2,035	359	1,935	752	6,139	33	99	667	6,138	6,071		
	50% up	1,039	1,721	281	1,514	752	6,139			۵6	5,932	5,926		
	258 km/h 25% up	1,521	2,198	382	2,062	752	6,139	33	99	Δ154	6,102	5,948		
	50% up	1,163	1,923	320	1,725	752	6,139			Δ91	5,941	5,850		
		1		L	L		L	L	L	L	Ļ	l		

Table 8 Transferred Traffic Volume and Time Saving Benefit

	te Time .ue asving	Ra/hour benefit Mil. Ra	9.06 1.070	9.06 1,538	9.06 1,479	9.06 I,698	9.06 1,523	9-06 4,539	9.06 5,409	9.06 5,285	9.06 4,216
5	Time Yi value	Total Ra/	[								
2015	olume I. Perse	-	10,039	13,008	12,447	118,211	12,795	31, 633	24,687	33, 794	28,138
	Itansferred volume to reilway Mil. Person	Airplane	13	2	5	45	28	113	33	218	\$3
	Itens to re	Bus	10,027	12,976	12,425	13,774	12,765	31,518	24,654	33,576	28,089
	Time seving	benefit Hil. Ra	731	1,051	983	1,160	1,041	1,931	1,526	2,517	1,640
	Time value	Ra/hour	6.19	6.19	6.19	6, 19	6.19	6.19	6.19	6.19	6.19
2000	ae Person	-km Total	10, 039	13,008	12, 447	13,611	12,795	19,699	16,171	23,563	17,970
	Transferred volume to reilway Mil. Person	Airpland	r	32	n	2	28	72	22	152	и
	Transfe to rei	80 80 80	10,027	12,976	12,425	13,774	12,765	19,627	16,149	23,411	17,939
	Fime saving	benefit Mil. Ra	384	\$45	\$05	612	538	1,091	862	1,456	1,020
	Time value	Rs/hour	5.28	5.28	5.28	5.28	5.28	5,28	5.28	5.28	5.28
1995	Person	Totel Totel	6,184	7,922	7,493	8,536	7,752	13,040	10, 705	15,976	11,680
	Transferred volume to railway Mil. Person	Airplane		61	1	23	4	47	14	101	20
	Trensfe to rail	Bug	6,177	7,905	7,480	8,513	7,735	12,993	10,691	15, 873	11,660
	Time seving	benefit Mil. Rs	153	210	188	246	205	683	368	65.1	54.9
	Time value	Re/hour	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
1990	Person	-km Total	2,881	3,577	3,274	4,033	3,467	7,348	5,369	9,519	6, 379
	Iransferred volume lime to railway Mil. Person value	Airplane Total Re/hour	. <b>n</b>	<u>م</u>	ve	11	<b>00</b>	27	-	Ţ9 .	II
	Iransfe to rail	808 1	2,878	3,568	3,268	4,022	3,459	7,321	5,362	9,458	6,368
Year	Transferred volume Transferred volume Benefit to railway Mil. Pe		Improvement of existing Section section	New Corridor DLI-AG. 200 km/h 25% up	New Corridor OLI-AG. 200 km/h 50% up	New Corridor DLL-AG 250 km/h 25% up	New Corridor DLI-AG. 250 km/h 50% up	New Corridor DLI-CNB 200 km/h 25% up	New Corridor DL1-CNB 200 km/h 50% up	New Corridor DLI-CNB 250 km/h 25% up	New Corridor OLI-CNB 250 bm/h 502 un
2		Plan	H		t	4		<u> </u>			

Table 9 Transferred Volume and Generalized Cost Difference (AE)

(Unit: million person-km)

2015	B A Δ€ R Rn B A ΔΕ	010,027 012 7,297 10,039 010,027 012 7,636		976 532 7,194 9,753 3,255 212,976 232 7,681	425 422 7,211 9,948 2,499 412,425 422 7,667	774 437 7,231 9,850 3,961 413,774 437 7,769	12,765 428 7,183 9,859 2,934 412,765 428 7,665			Δ19,627 Δ72 7,615 4,791 26,852 Δ31,518 Δ115 10,610	Δ16,149 Δ22 7,249 5,526 19,161 Δ24,654 Δ33 9,335	411 2152 8,316 4,380 29,414 233,576 2218 11,233	5,260 12,710 417,939 431 7,508 5,260 22,878 428,089 449 10,066
2000	<u>م</u> ع			9,753 3,255 612,976	9,948 2,499 Δ12,425	9,850 3,961 A13,774	9,859 2,934 412			4,781 14,918 A19	5,526 10,645 416	380 19,133 A23	260 12,710 417
	A DE	Δ7 4,249 10,039		419 3,918 9,	A13 3,937 9,	A25 3,937 9,	A17 3,911 9,			Δ47 4,004 4,	Å14 3,822 5,	4,456	Δ20 3,879 5,
1995	B	Δ6,177		2,485 47,903	1,908 Δ7,480	3,024 48,513	2,239 Δ7,735			Δ12,993	8,126 410,691	644 A15,873 A	9,702 411,660
	S.	1 6,184		1, 373 5, 437 2,4	5,585	5,512	5,513			1,653 11,387	2,579	1,332	1,978
	Α ΔΕ	43 1,800		49 1,373	Δ6 1,379	ALL 1,339	48 1,338			Δ27 1,351	27 1,043	14,644 A15,873 A105 4,456 4,380 19,183 A23,411 A152 8,316 4,580 29,414 A33,576 A218	A11 1,082
1990	8	A2, 878		1,827 43,568	1,403 Δ3,268	2,223 44,022 411	1,647 45,459			8, 373 A7, 321 A27	5,975 45,362	57 . A9, 45B	7,134 46,368 411
	6 	2,881		1,750 1,62	1,871 1,40	1,610 2,22	1,820 1,64			A1,025 8,37	A606 5,97	1,248 10,74	£1,7 237 A
Year	Transfered traffic and $\Delta E$	Upgrading the 2 existing Section	New corridor DLI-AG	200 km/h 25% up 1	50% up	250 km/h 25% up ]	50% up	New corridor	DL I-CNB	200 km/h 25% up 41	50% up		50% up
	Plan	H4			11						III		

Note: R : Existing Section

Rn: New Corridor

Bus : B

A: Airplane

ΔE: Unit: million Rs









