CHAPTER 4 PROSPECT OF SOCIO-ECONOMIC AND FINANCIAL FRAMEWORK

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4.1 Prospect of Population

4.1.1 General

The population in Pakistan grew at an annual rate of 3.06% between 1972 Census and 1981 Census and is estimated to grow at an annual rate of approximately 3.1% after 1981 Census.

The prospect of population was carried out considering some data and their future prospect such as birth rate, death rate, distribution by age group, sex ratio, migrant ratio by province and by urban and rural areas, etc. These details are described in Chapter 1 of 'Socio-economic/Financial Framework' in Part II.

Table 4.1.1 shows the summarized result of projected population, and major characteristics which are described briefly as follows:

4.1.2 Prospect by National Level

The population in Pakistan is prospected to grow at an annual rate of 3.1% for the period of 1987/88 to 1992/93 and 3.0% for the period of 1992/93 to 1997/98 and 2.6% for the period of 1997/98 to 2005/06.

4.1.3 Prospect by Regional Level

The projection of provincial level was carried out by dividing projected population of the national level to each province. For the breakdown, the following points are considered.

1) Emigration based on social factor of population will continue in the rural area of Punjab and NWFP.

2) Ratio of emigration from the rural area of Sind and Baluchistan will be less than those of Punjab and NWFP.

3) Excess population in the rural area, who have lost way to go abroad as emigrants, will come and stay mostly in the urban areas. This factor will work more intensively in the period up to 1992/93.

4) Rate of population increase in Baluchistan will decline in the projected period, but it will be relatively high when compared with the other three provinces.

5) Around 1992/93 and afterwards, the impact from net emigration will gradually weaken, and its influence will bring out a decline of pressure on population increase in the urban area. However, out-flow of rural population will continue.

Table 4.1.1 Projection of Population by Province and by Urban/Rural

	Population (in thousand)						Annual Growth Rate (%)			
	1981 Census	1985/86	1987/88	1992/93	1997/98	2005/06	1981 to 1987/88	1987/88 to 1992/93	1992/93 to 1997/98	1997/98 to 2005/06
Pakistan Total	84,253.6	97,670	13,852	120,955	139,975	172,485	3.1	3.1	3.0	2.6
Urban	23,841.5	29,608	32,205	39,579	48,051	63,912	4.6	4.2	4.0	3.6
Rural	60,412.1	68,062	71,647	81,376	91,924	108,573	2.6	2.6	2.5	2.1
Punjab	47,632.7	54,315	57,332	65,944	75,537	91,880	2.8	2.8	2.8	2.5
Urban	13,256.0	16,421	17,743	21,664	26,138	34,477	4.4	4.1	3.8	3.5
Rural	34,376.7	37,894	39,588	44,280	49,399	57,403	2.1	2.2	2.2	1.9
Sind	19,028.7	22,468	24,040	28,493	33,377	41,744	3.5	3.5	3.2	2.8
Urban	8,243.0	10,211	11,172	13,774	16,712	22,226	4.6	4.3	4.2	3.6
Rural	10,785.6	12,257	12,868	14,719	16,665	19,518	2.7	2.7	2.5	2.0
N.W.F.P	13,259.8	14,988	15,760	18,019	20,517	24,657	2.6	2.7	2.6	2.3
Urban	1,665.7	2,066	2,260	2,784	3,437	4,652	4.6	4.3	4.3	3.9
Rural	11,594.2	12,922	13,500	15,235	27,080	20,005	2.3	2.4	2.3	2.0
Baluchistan	4,332.4	5,899	6,720	8,499	10,544	14,204	6.8	4.8	4.4	3.8
Urban	676.8	910	1,030	1,357	1,764	2,557	6.4	5.7	5.4	4.8
Rural	3,655.6	4,989	5,690	7,142	8,780	11,647	6.8	4.7	4.2	3.6

Note: 1) Population except 1981 census is ones on Jan. 1, of each year
2) Punjab includes Islamabad, and NWFP includes FATA.

Source: JICA Study Team

The result of provincial level is shown also in Table 4.1.1 above.

The projection by district level is carried out by dividing projected population of provincial-wise to each district. The indicators for dividing are relative population growth rates of each district within the provinces, etc. These results are tabulated in detail in Part II of the report as mentioned earlier.

4.2 Prospect of Economic Framework

4.2.1 General

(1) Basic Year

Since the basic year for the Study is the fiscal year of 1985/86, all projections are carried out with the basis of the data in 1985/86.

(2) Valuation of Prices

All prices are valued at 1985/86 constant prices. As all official data on the national accounts are valued at 1959/60 constant prices, therefore, all official figures are converted to the figures at 1985/86 constant prices by the Study Team.

(3) Target Years

Projected years are 1992/93, 1997/98 and 2005/06. All figures up to 1987/88 are decided under consideration of the government target for 1987/88, performance in the recent years and other various information.

(4) Methodology

1) National Economy

The projection of the national economy is carried out directly using various trends, coefficients and variables. The projection is approached from three sides, namely production side, expenditure side and balance of payments side. After those approach, the results from three approaches are co-ordinated under various considerations, and are brought to a specific figure. That is, consistency is maintained among the three sides, and mutual checks are carried out step by step. The detail methodology is described in Section 2.2 of Chapter 2, "Projection of National Economy" in Part II.

2) Province-wise Economy

Gross regional product (GRP) by province is projected by dividing GDP at factor cost in each year by using various indicators. GRPs by province are projected from only the production side due to the limitation of data availability.

The projection is carried out by major commodity and/or commodity group.

The detail methodology, adopted definition and equation, etc. are described in Section 3.2 of Chapter 3, "Projection of Regional Economy" in Part II.

4.2.2 Results and Findings of the National Economy

Results of the projection are summarized in Tables 4.2.1 and 4.2.2. Major findings are as follows:

(1) Projection up to 2005/06

1) Growth Rate

After a growth of 6.6% per annum in the two years of 1985/86 to 1987/88, the growth rate of GDP at factor cost is projected by 6.4% per annum from 1988/89 to 1992/93, by 6.0% per annum for 1993/94 to 1997/98, and by 5.7% from 1998/99 to 2005/06. The growth rates will decline gradually in all sectors.

In agriculture, they will decline from 4.0% in 1988/89 to 1992/93 to 3.5% in 1998/99 to 2005/06, and in manufacturing 8.1% in 1988/89 to 1992/93 to 7.5% in 1998/99 to 2005/06. In transport, storage and communication, they will be 7.1% for 1988/89 to 1992/93, and 6.6% for 1998/99 to 2005/06.

The growth rate of GNP at market prices is projected by 5.9% per annum in 1988/89 to 1992/93, by 5.8% per annum in 1993/94 to 1997/98, and by 5.6% per annum in 1998/99 to 2005/06. The difference with GDP at factor cost is mainly due to the decline of net factor income from abroad.

Gross domestic fixed capital formation is projected to realize a higher growth of 7.5% per annum for 1988/89 to 1992/93, 7.1% for 1993/94 to 1997/98, and 6.7% for 1998/99 to 2005/06.

Exports of goods and non-factor services is also projected another higher growth and their annual growth rates will be 9.8% for 1988/89 to 1992/93, 8.5% for 1993/94 to 1997/98, and 6.7% for 1998/99 to 2005/06, while imports of goods and non-factor services will grow at rates of respectively 7.6%, 6.5% and 5.5% for the same periods.

2) Scale of National Economy

As a result of economic growth above mentioned, the scale of national economy will grow from 575 billion Rupees in 1985/86 to 648 billion Rupees in 1987/88, 864 billion Rupees in 1992/93, and 1,767 billion Rupees in 2005/06 at 1985/86 prices.

Per capita GNP at market prices will grow from 5,885 Rupees in 1985/86 to 7,145 Rupees in 1992/93, 8,170 Rupees in 1997/98, and 10,247 Rupees in 2005/06 at 1985/86 prices.

3) Change of Economic Structure

The economic structure changes in accordance with the economic growth.

Table 4.2.1 Projection of GDP and GNP at 1985-86 Constant Prices

	Value at 1985-86 Constant Prices (in Rs. million)					Annual Growth Rates (%)			Distribution Share (%)			
	1985-86	1987-88	1992-93	1997-98	2005-06	1988-89 to 1992-93	1993-94 to 1997-98	1998-99 to 2005-06	1987-88	1992-93	1997-98	2005-06
1. Agriculture	118,670	130,714	158,913	191,822	253,561	4.0	3.8	3.5	23.7	21.2	19.1	16.1
2. Mining & quarrying	11,448	13,321	21,454	31,523	52,170	10.0	8.0	6.5	2.4	2.9	3.1	3.3
3. Manufacturing	83,670	97,121	144,934	207,909	345,607	8.3	7.5	6.6	17.6	19.3	20.7	22.0
4. Construction	30,421	36,387	51,274	71,245	120,594	7.1	6.8	6.8	6.6	6.8	7.1	7.7
5. Electricity and gas distribution	11,136	13,226	19,523	28,686	51.161	8.1	8.0	7.5	2.4	2.6	2.9	3.3
6. Transport, storage & communication	39,429	44,855	63,206	87,005	145,078	7.1	6.6	6.6	8.1	8.4	8.6	9.2
7. Wholesale and retail trade	81,045	92,796	129,544	176,655	283,693	6.9	6.4	6.1	16.8	17.2	17.6	18.1
8. Banking and insurance	14,855	16,272	23,036	31,710	52,087	7.2	6.6	6.4	3.0	3.1	3.2	3.3
9. Ownership of dwellings	13,623	14,620	17,617	1,025	27,901	3.8	3.6	3.6	2.7	2.3	2.1	1.8
10. Public administration & defence	42,053	48,240	64,556	84,372	127,534	6.0	5.5	5.3	8.8	8.6	8.4	8.1
11. Services	38,860	43,414	57,280	74,509	111,772	5.7	5.4	5.2	7.9	7.6	7.4	7.1
Gross domestic product at factor cost	485,210	550,966	751,337	1,006,461	1,571,158	6.4	6.0	5.7	100.0	100.0	100.0	100.0
12. Net indirect taxes	54,327	66,116	90,160	120,775	188,539	6.4	6.0	5.7				
13. Net factor income from from abroad	35,250	30,606	22,667	16,146	7,714	(-)5.2	(-)6.6	(-)8.8				
Gross national product at market prices	574,787	647,658	864,164	1,143,652	1,767,411	5.9	5.8	5.6				

Source: JICA Study Team

Table 4.2.2 Projection of Expenditure on GNP at Market Prices of 1985-86

	Value at 1985-86 Constant Prices (in Rs. million)					Annual Growth Rates (%)			Distribution Share (%)			
	1985-86	1987-88	1992-93	1997-98	2005-06	1988-89 to 1992-93	1993-94 to 1997-98	1998-99 to 2005-06	1987-88	1992-93	1997-98	2005-06
Consumption expenditure	504,369	542,462	722,138	941,266	1,414,189	5.9	5.4	5.2	83.8	83.6	82.3	80.0
(of which: balancing item)	0	(-)10,621	(-) 5,780	(-) 1,312	(-)12,008	(5.6)	(5.3)	(5.3)	(85.4)	(84.2)	(82.4)	(80.7)
Gross domestic capital formation	81,319	102,069	146,736	206,626	347,697	7.5	7.1	6.7	15.8	17.0	18.1	19.7
Change in stocks	9,000	9,504	13,148	17,613	27,495	6.7	6.0	5.7	1.5	1.5	1.5	1.6
Exports of goods and non-factor services	63,075	84,811	135,288	203,040	341,109	9.8	8.5	6.7	13.1	15.7	17.8	19.3
(Less) Imports of goods and non-factor services	118,226	121,764	175,813	241,309	370,793	7.6	6.5	5.5	18.8	20.3	21.1	21.0
Net factor income from abroad	35,250	30,606	22,667	16,416	7,714	(-)5.2	(-)6.6	(-)8.8	4.7	2.6	1.4	0.4
Expenditure on gross national product at market prices	574,787	647,688	864,164	1,143,652	1,767,411	5.9	5.8	5.6	100.0	100.0	100.0	100.0

Source: JICA Study Team

In the production side, the share of agriculture will decline from 24.5% of GDP at factor cost in 1985/86 to 21.2% in 1992/93 and 16.1% in 2005/06, while that of manufacturing will rise from 17.2% in 1985/86 to 19.3% in 1992/93 and 22.0% in 2005/06.

In the expenditure side, the share of gross domestic fixed capital formation will rise 19.7% in 2005/06 from 14.1% in 1985/86 and 15.8% in 1987/88. The share of exports will rise from 11.0% of GNP at market prices in 1985/86 to 15.7% in 1992/93 and 17.8% in 1985/86 to 19.3% in 2005/06, while the share of imports will stay approximately at a level of 20 to 21% through all project years.

(2) Characteristics in the Seventh Five Year Plan Period

1) Growth Rate

The annual growth rate of GDP at factor cost is projected by 6.4% through the Seventh Five Year Plan period. This growth is expected to be achieved under a strained balance of payments position.

Agriculture sector will grow at a rate of 4.0%. This is 0.4% below to the performance from 1982/83 to 1986/87 but approximately at the same rate from 1997/98 to 1985/86. By sub-sector, the growth rates are at 3.3% for major crops, 4.1% for minor crops, 5.0% for livestock, 4.5% for fishing, and 2.0% for forestry.

Mining and quarrying will grow at a rate of 10.0%. This is due to a higher growth in natural gas.

Manufacturing will grow at a rate of 8.3%. Relative higher growth is expected for woods and papers (including publishing), chemicals (including oil refineries) and machinery and equipment in the large-scale manufacturing. In the small-scale manufacturing, relative higher growth is expected for foods, woods and furniture.

Electricity and gas distribution services will also continue higher growth.

Growth rate of transport, storage and communication will show a decline from the Sixth Five Year Plan period, but its rate will surpass the average of the national economy.

2) Economic Structure

The share of agriculture to GDP at factor cost will decline, while the share of manufacturing will increase. The shares of mining and quarrying, construction, electricity and gas distribution, transport, storage and communication, and wholesale and retail trade will also increase in the Seventh Five Year Plan period, while the shares of ownership of dwellings, public administration and defence, and other services will decline.

(3) Restraint Factor for Economic Growth

1) Balance of Payments

Within the whole frame of the projection, balance of payments functions as the biggest restraint factor for economic growth through all the periods. It means, if balance of payments is projected to an unfavourable situation, the projected economic growth rate would decline to a certain extent. Therefore, balance of payments is the crucial factor as well as being the biggest bottleneck for economic growth through all project periods in this projection.

2) Other Minor Problems

A problem may be for gross domestic fixed capital formation. It is needed that a more mobilized domestic and foreign fund is directed to investment through all project periods.

Another problem may be in agriculture. The past trend of agricultural production indicates to realize the projected growth for agricultural production, however, when yield per acre, productivity of livestock, growth of areas sown, etc. are considered by commodity group concretely, some groups need much effort to secure the projection.

4.2.3 Results and Findings on the Provincial Economy

Results of the projection are summarized in Table 4.2.3, 4.2.4 and 4.2.5. Major findings are as follows:

(1) Scale of Provisional Economy

The relative share of provincial economy will change within limited ranges. The shares of Punjab will decline from 53.5% in 1985/86 to 51.3% for 1992/93 and 48.9% for 2005/06, and the shares of NWFP will gradually decline from 11.2% in 1985/86 to 11.1% for 1992/93 and 11.0% for 2005/06, while that of Sind and Baluchistan will rise from 30.2% and 5.1% in 1985/86 to 32.0% and 5.6% for 1992/93 and 33.9% and 6.1% for 2005/06 respectively. Those changes reflect difference of growth rates of population and also GRP by province.

(2) Comparison on Economic Structure of Provinces

The economic structure of each province will change with the same direction. A remarkable characteristic of economic structure by province is in those shares of manufacturing. In Sind, its share (27.8%) was larger than the share of agriculture (16.0%) in 1985/86, and the former will rise of 32.1% and the later will decline to 10.2% in 2005/06. In Pujab, the share of manufacturing

Table 4.2.3 Percentage Distribution of GRP by Province

		Punjab			Sind			NWFP			Balchistan		
		1985-86	1992-93	2005-06	1985-86	1992-93	2005-06	1985-86	1992-93	2005-06	1985-86	1992-93	2005-06
1.	Agriculture	61.5	59.6	57.5	19.8	20.7	21.3	12.1	12.5	13.3	6.7	7.2	7.9
2.	Mining & quarrying	31.4	24.8	20.6	30.6	38.3	44.0	2.1	1.9	1.7	35.9	34.9	33.6
3.	Manufacturing	44.5	43.4	42.8	48.7	49.8	49.6	5.7	5.5	6.0	1.1	1.2	1.7
4.	Construction	60.1	58.9	57.5	18.2	18.6	19.2	17.2	17.3	17.2	4.5	5.2	6.2
5.	Electricity and gas distribution	41.4	40.4	39.7	34.9	34.5	35.5	22.0	22.2	21.5	1.7	2.9	3.3
6.	Transport, storage & communication	47.2	45.3	43.2	35.5	36.8	38.2	11.1	11.0	10.8	6.2	6.9	7.8
7.	Wholesale and retail trade	52.7	51.0	49.2	30.2	31.6	33.0	12.1	11.9	11.6	5.0	5.5	6.2
8.	Banking and insurance	47.7	47.8	48.0	43.2	43.3	43.5	6.6	6.5	6.3	2.5	2.4	2.2
9.	Ownership of dwellings	55.7	54.5	53.0	34.7	35.5	36.5	6.9	6.9	6.9	2.7	3.1	3.7
10.	Public administration & defence	59.2	58.0	56.6	23.3	23.9	24.6	14.1	14.2	14.1	3.4	4.0	4.7
11.	Services	56.9	55.6	54.2	25.8	26.3	26.8	13.2	13.2	13.1	4.1	4.9	5.9
	Gross regional product at factor cost	53.5	51.3	48.9	30.2	32.0	33.9	11.2	11.1	11.0	5.1	5.6	6.1
	(in Rs. million)	259,724	385,714	768,718	146,594	240,445	532,972	54,170	83,248	173,288	24,722	41,930	96,180

Note: The sum of each provinces may not equal 100.0 for rounding off.

Source: JICA Study Team

Table 4.2.4 Growth Rate of GRP by Economic Activity

(% per annum)

	Punjab				Sind				NWFP				Balchistan			
	1986-87 to 1987-88	1988-89 to 1992-93	1993-94 to 1997-98	1998-99 to 2005-06	1986-87 to 1987-88	1988-89 to 1992-93	1993-94 to 1997-98	1998-99 to 2005-06	1986-87 to 1987-88	1988-89 to 1992-93	1993-94 to 1997-98	1998-99 to 2005-06	1986-87 to 1987-88	1988-89 to 1992-93	1993-94 to 1997-98	1998-99 to 2005-06
1. Agriculture	4.3	3.6	3.4	3.3	6.1	4.4	4.2	3.7	5.7	4.5	4.4	3.9	5.7	5.2	5.0	4.1
2. Mining & quarrying	5.3	6.0	4.7	6.1	13.6	12.7	9.4	7.5	2.4	9.9	6.4	5.9	5.3	10.5	8.7	5.6
3. Manufacturing	7.0	8.1	7.4	6.4	8.5	8.5	7.3	6.5	7.1	7.3	9.1	6.6	8.9	11.9	11.1	8.5
4. Construction	9.4	6.7	6.6	6.6	9.0	7.6	7.1	7.0	9.4	7.2	6.8	6.7	9.4	10.4	8.3	8.1
5. Electricity and gas distribution	9.0	7.6	7.8	7.4	9.0	7.9	8.3	7.7	9.0	8.2	7.7	7.3	8.8	20.9	9.2	8.4
6. Transport, storage & communication	6.3	6.4	6.1	6.3	7.1	7.7	6.9	6.9	6.7	6.8	6.6	6.4	6.5	9.5	7.9	7.3
7. Wholesale and retail trade	6.5	6.4	6.1	5.8	7.7	7.5	6.9	6.5	6.8	6.6	6.4	5.8	8.8	8.5	7.6	6.9
8. Banking and insurance	4.7	7.2	6.7	6.4	4.7	7.3	6.6	6.5	4.6	6.9	6.3	6.2	4.7	6.3	5.7	5.8
9. Ownership of dwellings	3.6	3.3	3.4	3.4	3.6	4.3	3.9	3.8	3.6	3.8	3.6	3.5	3.6	7.0	5.0	4.8
10. Public administration & defence	7.1	5.6	5.3	5.1	7.1	6.5	5.8	5.5	7.1	6.1	5.5	5.2	7.1	9.3	7.0	6.5
11. Services	5.7	5.2	5.1	5.0	5.7	6.1	5.7	5.3	5.7	5.7	5.34	5.1	5.7	9.5	7.1	6.6
Gross regional product at factor cost	6.0	5.7	5.5	5.4	7.4	7.3	6.5	6.2	6.7	6.2	6.1	5.6	6.6	8.3	7.3	6.2

Source: JICA Study Team

Table 4.2.5 Percentage Distribution of GRP by Economic Activity

		Punjab			Sind			NWFP			Balchistan		
		1985-86	1992-93	2005-06	1985-86	1992-93	2005-06	1985-86	1992-93	2005-06	1985-86	1992-93	2005-06
1.	Agriculture	28.1	24.6	19.1	16.0	13.7	10.2	26.4	23.9	19.4	32.0	27.2	20.9
2.	Mining & quarrying	1.4	1.4	1.4	2.4	3.4	4.3	0.5	0.5	0.5	16.6	17.9	18.3
3.	Manufacturing	14.3	16.3	19.2	27.8	30.0	32.1	8.8	9.6	11.9	3.7	4.2	6.0
4.	Construction	7.0	7.8	9.0	3.8	4.0	4.3	9.7	10.6	12.0	5.5	6.4	7.7
5.	Electricity and gas distribution	1.8	2.0	2.6	2.7	2.8	3.4	4.5	5.2	6.4	0.7	1.3	1.7
6.	Transport, storage & communication	7.2	7.4	8.1	9.5	9.7	10.4	8.1	8.3	9.1	9.9	10.4	11.7
7.	Wholesale and retail trade	16.5	17.1	18.1	16.7	17.0	17.6	18.1	18.4	19.0	16.3	17.1	18.4
8.	Banking and insurance	2.7	2.9	3.3	4.4	4.2	4.3	1.8	1.8	1.9	1.5	1.3	1.2
9.	Ownership of dwellings	2.9	2.5	1.9	3.2	2.6	1.9	1.7	1.5	1.1	1.5	1.3	1.1
10.	Public administration & defence	9.6	9.7	9.4	6.7	6.4	5.9	10.9	11.0	10.4	5.8	6.1	6.2
11.	Services	8.5	8.3	7.9	6.8	6.3	5.6	9.5	9.1	8.4	6.4	6.7	6.9
	Gross regional product at factor cost	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: The sum of each economic activities may not equal 100.0 for rounding off.

Source: JICA Study Team

was 14.3% in 1985/86, and it will rise to 19.2% and will exceed the share of agriculture in 2005/06. In contrast, the shares of manufacturing in NWFP and Baluchistan will be below those of agriculture even in 2005/06.

Minor characteristics are in electricity and gas distribution, and banking and insurance. In NWFP, the share of electricity and gas distribution will continue to relative large share like 4.5% in 1985/86 and 6.4% in 2005/06. In Sind, the share of banking and insurance will continue to a relative large share through all the project periods compared with the other provinces.

4.3 Prospect of Financial Framework

4.3.1 General

It is observed that more shares of the domestic saving is directed to finance the domestic investment (gross domestic fixed capital formation) in the course of the projected years, when the projected national accounts are rearranged to express the national investment-saving balance. This feature is shown in Table 4.3.1. The details are explained in Chapter 4, "Financial Framework for Investment", in Part II.

4.3.2 Financing for Investment in the Transport Sector

Both public and private sectors are acting in transport sector, and are investing to the transport sector.

The public sector is playing, a critical role in the investment in the transport sector, because almost all investments for infrastructure of transportation are implemented by the public sector. In the approach from the national accounts, it is impossible to estimate the investment for roads, which seems to be included in the general government accounts. Estimated under such limitations, the share of public transport sector is approximately 6.3% of the total investment in the five years of 1982-83 to 1986-87, and approximately 10.3% of the total public sector investment in the same period (*the investment for transport sector here is* defined by figures excluding the Post Office and T&T Department, therefore, a few investments for storage and communication are included).

The private sector is investing in the transport sector through purchasing transport equipment such as auto vehicles, other non-mechanized transport equipment and vessels for shipping.

The investment by private transport sector is a level of slightly over 4% of the total gross domestic capital formation in the average of the recent five years, and is on a level of slightly over 10% of the total private investment in the same period.

The investment in private transport sector is implemented with the market mechanism like the demand-supply position, therefore, its financing is also implemented with the market mechanism within the total framework of financing mentioned above, while financing of public transport sector are carried out by foreign and domestic sources.

Table 4.3.1 Financing for Domestic Investment

(Rs. million at 1985-86 constant prices)

1.	1985-86		(%)
	Financing from domestic saving	4,843	(5.4)
	Depreciations	30,325	(33.6)
	Saving abroad by residents	35,250	(39.0)
	Saving abroad by non-residents	19,901	(22.0)
		90,319	(100.0)
2.	1987-88		
	Financing from domestic saving	29,464	(26.4)
	Depreciations	34,535	(31.0)
	Saving abroad by residents	30,606	(27.4)
	Saving abroad by non-residents	6,347	(5.7)
	Balancing item	10,621	(9.5)
		111,573	(100.0)
3.	1992-93		
	Financing from domestic saving	65,816	(41.1)
	Depreciations	47,763	(29.9)
	Saving abroad by residents	22,667	(14.2)
	Saving abroad by non-residents	17,858	(11.2)
	Balancing items	5,780	(3.6)
		159,884	(100.0)
4.	1997-98		
	Financing from domestic saving	119,934	(53.5)
	Depreciations	64,724	(28.9)
	Saving abroad by residents	16,416	(7.3)
	Saving abroad by non-residents	21,853	(9.7)
	Balancing item	1,312	(0.6)
		224,239	(100.0)
5.	2005-06		
	Financing from domestic saving	231,197	(61.6)
	Depreciations	102,303	(27.3)
	Saving abroad by residents	7,714	(2.1)
	Saving abroad by non-residents	21,970	(5.8)
	Balancing item	12,008	3.2)
		375,192	(100.0)

Note: Savings abroad by residents corresponds to net factor income from abroad. Savings abroad by non-residents is import of foreign capital, and corresponds to net imports of goods and non-factor services minus net factor income from abroad.

Source: JICA Study Team

4.3.3 Financing of Transport Sector in Annual Development Programmes

The analysis of investment and its financing using annual development programmes has weak points that ADPs include some current subsidies such as fertilizer subsidies and some other current expenditures like expenditure for research institutes and they exclude a part of capital expenditures self-financed by autonomous bodies.

On the other hand, ADPs have an important advantageous factor which are the development plan themselves and express development policies by the Government. Especially, they occupy an important position on investment analysis and on financing for infrastructure on transport. The consolidated development expenditure of Federal and Provincial Governments has a ratio of approximately 6.5% of GNP at market prices in the average of the recent five years, and its ratio has a moderately declining trend in the long-term period under an increasing trend of the total expenditures. This is due to an increase of current expenditure by the public sector.

The ratio of transport and communication to the total ADP expenditure is 19.2% for the Fifth Five Year Plan period and 15.5% (including the budget base for 1987/88) for the Sixth Five Year Plan period.

The ratio of rural development, in which investments to local roads is included, to the total ADP expenditure is 1.9% and 3.1% for both plan periods. (See Table 4.3.2)

Therefore, the ratio of transport and communication sector in the total ADP has not increased in recent years. This is due to the distribution shares of power and water for infrastructure, fuel and minerals for industrial bases, and physical planning and housing, education and health for social affairs bases increased in the Sixth Five Year Plan period compared to the Fifth Five Year Plan period.

That is, the financing for expenditures on transport and communication sector is in the competition with investments to other sectors such as other infrastructure, industrial bases and social affairs bases.

The investment by self-financing of the semi-public sector like PIA and KPT is excluded from the figures mentioned above, and the figures include investments by the communication sector.

The figures excluding communication sector are shown in Tabe 4.3.3. If the ADP development expenditure at real terms is calculated by using deflator of gross domestic fixed capital formation, the growth rate at constant prices between 1984/85 and 1986/87 will be nearly zero.

Table 4.3.2 Composition of Transport and Communication in Expenditures under ADP, 1972-73 to 1985-86

(%)

Year	Transport & Communication	Works Programme Rural Development
1972-73	16.1	3.0
1973-74	19.8	2.3
1974-75	20.0	1.2
1975-76	19.8	1.4
1976-77	19.6	1.1
1977-78	18.4	0.7
1978-79	19.6	1.0
1979-80	17.7	0.8
1980-81	19.1	1.8
1981-82	20.1	2.6
1982-83	19.7	3.5
1983-84	17.2	3.3
1984-85	16.3	3.1
1985-86	17.0	2.3
1986-87(R)	13.2	3.3
1987-88(P)	11.8	3.7

Source: Economic survey 1986-87 up to 1985-86 and Annual Plan 1987-88 for 1986-87 and 1987-88.

Table 4.3.3 Financial Allocation for Transport Sector

(Rs. million)

	1983/84	1984/85	1985/86	1986/87	1987/88
Federal	2,379	2,652	3,058	3,454(R)	3,339(B)
Provincial	908	883	1,071	979(B)	N.A.
Semi-public	1,807	3,826	3,356	3,432(B)	N.A.

Note: (R) is revised, (B) is budgetary allocation.

Source: Detailed Annual Plan 1986/87 and Annual Plan 1987/88

4.3.4 Projection on Investment and its Financing in the Transport Sector

The projection is carried out on the national accounts basis for the private sector, and at ADP basis for the public sector.

At first, the investment scale is projected by private and public sectors in the Seventh Five Year Plan period.

Gross domestic capital formation of the national economy is projected to be invested by approximately 638.0 thousand million Rupees at 1985/86 constant prices in the Seventh Five Year Plan period as against approximately 422.6 thousand million Rupees at 1985/86 constant price in the Sixth Five Year Plan period. That is, the total value of gross domestic fixed capital formation in the Seventh Five Year Plan period will be approximately 1.5 times the Sixth Five Year Plan.

The investment of private transport sector is growing at approximately the same rate with the total investment. Therefore, it will be invested by 25 to 26 thousand million Rupees at 1985/86 constant prices in the Seventh Five Year Plan period.

The investment of public transport sector will be largely influenced by the economic policies of the Government, so that its projection is possible only under certain presumptions. Moreover, it would be projected to be divided into two categories of semi-public sector enterprises and departmental organization.

A key factor for the projection is improvement of self-financing capacity in semi-public sector enterprises. If it is realized for, the investment in semi-public sector enterprises could increase by nearly 1.5 times of the Sixth Five Year Plan period, that is, by approximately 23 thousand million Rupees at 1985/86 constant prices in ADP basis, as against approximately 16 thousand million Rupees at 1985/86 constant prices in the Sixth Five Year Plan period. In case of the present financing situation, the investments will stay at approximately 22 thousand million Rupees, which corresponds to the economic growth rate, at 1985/86 constant prices.

The investment of departmental transport sector is estimated by approximately 20 thousand million Rupees at 1985/86 constant prices in ADP basis of the Sixth Five Year Plan period. If the present investment environment continues up to the end of the Seventh Five Year Plan, the total investment value will increase by approximately 25 thousand million Rupees (apart from the rural road) at 1985/86 constant prices in the Seventh Five Year Plan period. In the case of improved situation the total amount will increase to approximately 27 thousand million Rupees in the period.

The presumption of projection up to 2005/06 is as follows:

1) Private sector: The investment will increase in proportion to the total gross domestic fixed capital formation.

2) Semi Public enterprises: If the financing capacity continue at the present situation in the future, the investment will stay on the low side in the projection. If the financing capacity increases to approximately the same level with the private sector, investments could grow at approximately the same growth rate with the private sector and could increase up to the value of the high side.

3) Departmental organizations: The financing will be restricted by the government revenue and other factors like competition with the other sectors such as electricity and water. The investments will increase in proportion to, in principle, economic growth rate, and when the financial availability of this sub-sector is promoted by any means, it will increase to the higher case.

4) Investments to rural road is excluded from the projection.

As the result, the total investment value at 1985/86 constant prices is projected for the period between 1988/89 and 2005/06 as in Table 4.3.4.

Table 4.3.4 Projection of the Total Investment Value in Transport Sector between 1988/89 and 2005/06

(Rs. billion at 1985/86 constant prices)

	Private Sector	Public Sector			Grand Total
		Semi Public Enterprise	Departmental Organization	Total	
Seventh Five Year Plan Period	25 - 26	22 - 23	25 - 27	47 - 50	72 - 76
Eighth Five Year Plan Period	36 - 37	29 - 33	34 - 38	63 - 71	99 - 108
Nineth Five Year Plan Period and afterward	89 - 90	68 - 82	79 - 89	147 - 171	236 - 261
Total (1988 to 2006)	150 - 153	119 - 138	138 - 154	257 - 292	407 - 445

Note: National account basis for private sector, and ADP basis for public sector

Source: JICA Study Team

CHAPTER 5 SUMMARY OF THE MASTER PLAN

CHAPTER 5 SUMMARY OF THE MASTER PLAN

5.1 Basic Directions of the Plan

5.1.1 General

The Master Plan aims at formulating a desirable feature of the transportation system in the year 2005/06 and proposing the necessary projects/investment plans for the future. The Master Plan indicates a basic direction as the long-term planning target, when the Five Year Plan will be examined as an actual implementation programme. In this Master Plan, the base year is '1985/86' and the year 2005/06, after 20 years, is set as the target year.

Since there was a Master Plan conducted by previous JICA Study Team in 1983, this Master Plan is established by reviewing/updating the previous one, taking into consideration the changes of the five years after 1983. The basic policies/strategies in the previous Master Plan are summarized as follows, and the essential idea for long-term planning is succeeded also in this plan.

1) Modal distribution of traffic should be made based on the functions and the relative costs by each mode.

2) Integrated development of various transport modes should be proposed by considering cost minimizing approach.

3) Investment on transport for opening-up of backward areas and isolated areas should be given a certain priority in the plan for national unity.

4) Existing facilities should be fully utilized by eliminating bottlenecks.

5) Investment by private funds should be introduced because of restrictions of public funding resources.

6) Railways should be strengthened more on the long-haul freight lines by utilizing more of existing railway systems, and so on.

Major items of review/update are:

1) Economic growth, performance and prospects in the future.
2) Financial availability.
3) Traffic demand in accordance with the prospected economic framework.
4) Desirable transport modal split between railway and road.
5) Development performance during the Sixth Five Year Plan.

6) Capacity and capability of the existing transport facilities in each sub-sector.

7) Necessary projects to be implemented for the year 2005/06 as a long-term plan.

8) Estimation of the investment cost and assessment of the financial availability.

5.1.2 Demand Forecast and Modal Split

The transport demand for 2005/06 is forecasted in accordance with the procedure described in Part II of the report and the results are also explained in detail.

(1) Macroscopic Transport Demand

The summary of the forecasted volume of the traffic demand as a planning target is tabulated as in Table 5.1.1.

(2) Modal Split

The detailed study on the intermodal relation between railway and road transport is carried out in Chapter 4, 'Traffic Demand Analysis' of Part II.

The analyses are made by passenger class/commodity types mainly from the economical viewpoint. The basic ideas applied for the desirable modal split are as follows:

Passengers

1) For those who travel more than 500 kms along the trunk lines of PR, an increasing share of railway as distance lengthened was assumed. A logistic curve was applied to approximate this tendency.

2) For those who travel less than 500 kms, or more than 500 kms but not along the trunk lines of PR, the present share of railway was assumed to be maintained even in the future.

Commodity

1) By comparing the economic transport cost by road and railway, the economic break-even distance can be calculated at 489 kms. This implies that railway is economically preferable for transporting goods over 489 kms and that road transport is economically desirable for shorter distances.

Table 5.1.1 Macroscopic Demands Forecasted

Domestic Land Traffic (Railway and Road)

Year	Passenger		Freight	
	Million Pass-Kms	(Index)	Million Ton-Kms	(Index)
1985/86	114,031	(100)	35,158	(100)
1992/93	162,204	(142)	47,998	(137)
1997/98	200,655	(176)	58,760	(167)
2005/06	270,847	(238)	78,905	(224)

Air Traffic

Year	International				Domestic			
	Passenger		Cargo		Passenger		Cargo	
	Thou-sand	(Index)	Thousand Ton	(Index)	Million Pass-Kms	(Index)	Million Ton-Kms	(Index)
1985/86	3,120	(100)	115	(100)	1,794	(100)	24.1	(100)
1992/93	3,481	(112)	173	(150)	2,813	(157)	36.4	(151)
1997/98	4,020	(129)	222	(193)	3,845	(214)	48.9	(203)
2005/06	5,204	(167)	320	(278)	6,158	(343)	76.7	(318)

Port Traffic (International)

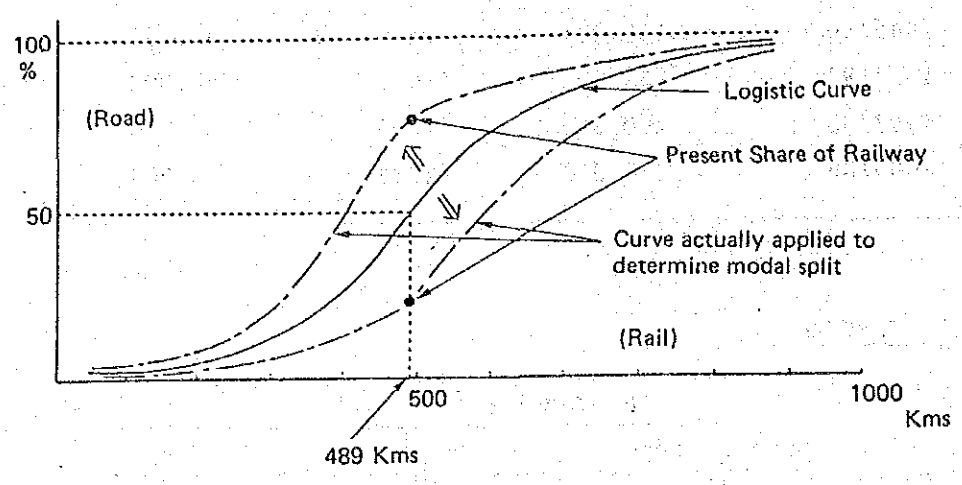
Year	Passenger 1/		Commodity	
	Thousand	(Index)	Thousand Tons	(Index)
1985/86	14.5	(100)	20,007	(100)
1992/93	15.0	(103)	25,522	(128)
1997/98	15.0	(103)	31,730	(159)
2005/06	15.0	(103)	45,462	(227)

Note: 1/ Excluding Pilgrims

Source: JICA Study Team

2) Due, however, to the difference by commodity in the mode preference resulting from unknown or intangible factors, the break-even distance calculated above is considered to be inappropriate for direct application. Therefore, a smoothing method schematically illustrated in Fig. 5.1.1 has been adopted, assuming the difference in mode preference resulting from the nature of the commodity items reflected already in the present modal split.

Fig. 5.1.1 Smoothing of the Modal Split between Road and Rail



As the result of the above-mentioned applies to the future land traffic demand, the desirable modal split between road and railway is determined as a strategic case for the year 2005/06.

(3) Trip Distribution

The traffic demands both by road and railway, simultaneously with modal split analyses, are estimated in the forms of OD tables by passenger and commodity based on the updated 1985/86 OD tables.

As for domestic air transport, OD trip distribution analysis also conducted in consideration of the proposed airport projects.

These results of traffic demand forecast are the essential data for facility planning by each sub-sector.

Table 5.1.2 Modal Split of Land Traffic by Road and Railway, 2005/06

	Passenger (million pass-kms)		Commodity (million ton-kms)	
	1985/86	2005/06	1985/86	2005/06
Road	97,374 (85)	243,349 (90)	26,859 (76)	46,390 (59)
Railway	16,657 (15)	27,498 (10)	8,299 (24)	32,515 (41)
Total	114,031 (100)	270,847 (100)	35,158 (100)	78,905 (100)

5.1.3 Policy and Strategies by Each Sub-sector

The concept/policy for the Master Plan by each mode which is described in Part III, is summarized as follows:

(1) Railway

In order to realize the advantageous features in mass-transport such as safety, promptitude, punctuality and economy, the following policies should be adopted.

a) to fully utilize the existing line capacity with necessary supplemental measures.

b) to establish freight collection bases, and to arrange direct train operation between these bases.

c) to encourage container transport and speed-up of freight trains.

d) to improve service frequency of passenger trains, and operate high-speed passenger trains.

e) to reduce detaining time at station/yards.

f) to introduce information services for passengers and consignors.

Moreover, the following measures are necessary to cope with the above mentioned policies:

a) Reinforce line capacity.

b) Improve speed and tractive force.

c) Establish freight collection bases, and prepare and improve direct connecting trains between the bases.

d) Utilize container transport and speed improvement of freight trains.

e) Improve service frequency of passenger trains, and operation of high-speed passenger trains.

f) Reduce waiting time at stations.

g) Improve information service to passengers and consignors.

h) Modernize dispatch system.

(2) Road

Based on the assessment of existing conditions and desirable future traffic pattern, objectives of the road transport sector development and recommended strategies are proposed as follows:

Objectives

a) Provision of adequate road access to all major centers of the country to ensure national integrity and the role of each center acting as a hub for the development of surrounding rural areas.

b) Reduction in the road transport cost where transport demand is substantial and operating conditions are poor.

c) Healthy growth of private sector operations.

d) Establishment of better performance monitoring system in order to achieve higher managerial efficiency in operation and planning.

e) Improvement of road traffic safety.

Strategies

a) Road improvement plan due to capacity and structural deficiencies in the primary highway network consists of all the National Highways and part of provincial highways which carry substantial long-distance through-traffic should be given priority.

   This indicates that construction programmes of dual carriageway for the National Highway N-5, part of the trunk road network should be given high priority.

b) Widening of the existing one-lane, two-way roads in the trunk road network located in high potential zones should be given priority.

c) All of the selected widening projects should be combined with rehabilitation programme including vertical and horizontal realignment.

d) Reconstruction of narrow and damaged bridges located within the trunk road network should be given priority so that the running speed of through-traffic can be kept in the same condition as on the approaching sections.

e) In order to operate the primary and secondary highways more functionally, provision of bypass, frontage roads along the said highways in town areas for slow moving traffic, and maximum utilization of existing canal roads should be given priority.

f) Establishment of systematic data collection, and evaluation system for infrastructure, and development of road research programmes for traffic safety measures.

g) Allocation of development fund to a fewer number of selected high priority projects to improve the efficiency of implementation

h) Development of maintenance system.

i) Development of toll road system and private sector operation.

j) Development of international trunk road network system.

Objectives

a) Provision of adequate road access to all major centers of the country to ensure national integrity and the role of each center acting as a hub for the development of surrounding rural areas.

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c) Healthy growth of private sector operations.

d) Establishment of better performance monitoring system in order to achieve higher managerial efficiency in operation and planning.

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h) Development of maintenance system.

i) Development of toll road system and private sector operation.

j) Development of international trunk road network system.

Table 5.1.3 Planning Policy on Inter-City Road Transport to be Incorporated in the Master Plan

Policy Oriented	Objective	Recommendation
SAFETY		
1. Improvement of Highway Safety	• Reduction of Road Accidents and Improvement of Accident Recording	• Education Programme through Mass Media. • Establishment of Driving Instructor Training School at Federal Level under 4th Highway Project • Installation of Kilometer Stones All along Road Network of 18,600 km • Expansion of Highway Patrol on National Highways all along N-5 and N-65.
QUALITY CONTROL		
2. Mixed Approach (Inter-City passenger road transport would continue to be shared by Public and Private Sectors).	• To create a sense of competition among transporters.	• Target share of Public and Private Sector in Inter-City transport will be 10% and 90% for Intercity Bus Operations in terms of Passenger-Km[1/].
3. Revision of Bus Fare Structure	• Inducement of Private Sector Investment and Enhancement of profitability on Semi-Public Bus Corp.	• Fare Structure to be Determined on VOC including Depreciation and Interest.
4. Strengthening of Semi-public Bus Corporations. (For Inter-City Bus Services)	• To cope with the political needs and Basic Human Needs for local people on unprofitable routes. • To maintain punctual bus operation in accordance with a time table. • To create comfortable and profitable bus services. • To improve operational efficiency	• All Capital investment in Semi-public Bus Corporations to be financed by Provincial and Federal Governments as Grant-in-Aid in the ratio of 50:50 respectively. • Semi-public Bus Corporations will be required to introduce air-conditioned bus on profitable inter provincial and regional bus routes. • Induction of management techniques and maintenance facilities
5. Maintenance of NLC Existing Fleet Size	• To maintain the National Asset • To maintain smooth cargo flow of essential commodities	• 175 unit of truck trailers will be required annualy to maintain existing fleet size (50% of vehicles were induced before 1980)
VEHICLE CONTROL		
6. Revision of axle load limit	• To reduce total transport cost.	• Legal axle load limit of 6 ton will be revised to 13 tons for single and 20 tons for Tandem Axles.
	• To encourage large size trucks for inter-city operation.	• Target share of large size truck in Inter-city transport will be 50% by the year 2005 in terms of Ton-Km.
7. Revision of Vehicle Registration System on the basis of Axle Loads	• To find Actual Impact on Pavement Design and to Revise Taxation System on Vehicles	• Formulation of study team in NTRC
8. Incentive for Large Size Buses	• To Minimize Transport Cost and to Cater for the Allocated Passenger Traffic	• Encouragement of Induction of Large Size 52 Seater Buses for Intercity Operations
INSTITUTIONAL ARRANGEMENT		
9. Healthy Growth of Private Transport Industry both for Passenger and Freight	• Inducement of Private Sector investment in Transport Industry.	• Institutional arrangement on:- - Credit Facilities - Insurance - Mechanic Training.
FUTURE REQUIREMENT		
10. Improvement of Private Sector Operation of Bus and Terminal	• To understand the requirement of sub-sector.	• A detailed study is required for Private Sector Bus Operation including Air-conditioned Mini Bus, General and Company Bus Stands Operations.
11. Establishment of National Environmental Quality Standards	• To conduct Environments Impact Assessment on Road Transport Projects	• To be Formulated

1/ Target share between public and private sector in inter-city bus operation proposed by the Report of Sub-Working Group for the 7th Five Year Plan are 16% and 84% respectively.

Note: The Pakistan Government already exempted the import tax of large size buses.

In order to secure the safe and rapid transport, the Master Plan for the air transport sector is proposed based on the following basic concepts:

a) Development of the facilities in major airports and improvement of existing airports in order to expand the capacity of air transport.

b) Development of the air navigation systems in order to improve air traffic safety.

c) Development of feeder service airports in order to upgrade the rural areas.

d) Expansion of the route network and increment of the traffic capacity of airlines.

5.2 Major Project Components by Each Sub-sector

As the Master Plan for the year 2005/06, various projects are proposed/recommended based on the planning policies and strategies and the summary from Part III of the report which is as follows:

5.2.1 Railway

The major projects are summarized in relation to the basic strategies mentioned before.

Table 5.2.1 Proposed Project Components for Railway Development

Objective	Project
Reinforcement of Line Capacity	• Automatic block signalling • Electric/Relay interlocking • Tokenless block signalling and colour light signals • Track doubling
Tractive Force Improvement	• Electrification
Improvement of Freight Terminal	• Freight terminal • Improvement of arrival and departure lines at stations/yards
Improvement of Dry Ports	• Container yards • Container handling equipment • Bonded warehouses and offices • Access roads
Information System	• Seat reservation system • Freight information system • Centralized Traffic Control System • Communication Networks
Improvement of Transport Fundamentals	• Track renewal • Replacement/Acquisition of Rolling Stock • Improvement of workshops

Table 5.2.2 List of Proposed Projects for Railway Development

Projects	Section
• Automatic Block Signalling & Electric/Relay Interlocking	• Karachi-Rawalpindi • Rohri-Quetta
• Tokenless Block Signalling & Colour Light Signals	• Khanewal-Faisalabad • Sangrahill-Wazirbad • Chakjhumra-Sargodha • Saragodha-Lala Musa • Attock City-Kundian • Kundaian-Shersah • Rawalpindi-Peshawar
• Track Doublng	• Lohdran-Shersah • Multan-Khanewal • Khanewal-Raiwind
• Electrification	• Lala Musa-Rawalpindi • Lahore-Lala Musa • Samasata-Khanewal • Sibi-Quetta • Kiamari-Samasata
• Improvement of Freight Terminals	
• Information System (Communication Networks)	• Karachi-Rawalpindi
• Centralized Traffic Control System	• Karachi-Rawalpindi
• Track Renewal	
Primary A Sections	• Tando Adam-Khanpur, etc. Rail 473 kms Sleeper 482 kms
Primary B Sections	• Shorkot-Wazirabad, etc. Rail 1,215 kms Sleeper 1,244 kms
Secondary Sections	• Shorekot Cantt.-Qila Shaikhupura, etc. Rail 1,069 kms Sleeper 772 kms
• Replacement/Acquisition of Rolling Stock	
• Electric Locomotive	385
• Diesel Electirc Locomotive	71
• Passenger Coaches	1,570
• Freight Wagons	45,800
• Reconditioning Diesel Electric Locomotive	
• Imporovement of Moghalpura Workshop	
• Locomotive Factory	
• Others	

Source: JICA Study Team

5.2.2 Road

The physical target of highway improvement is summarized as in Table 5.2.2 with the desirable planning level.

It shows about 40 percent of total 18,300 kms network needs some construction, widening and rehabilitation works because of capacity deficiency up to 2005/06.

Table 5.2.3 Physical Target of Highway Improvement, 2005/06

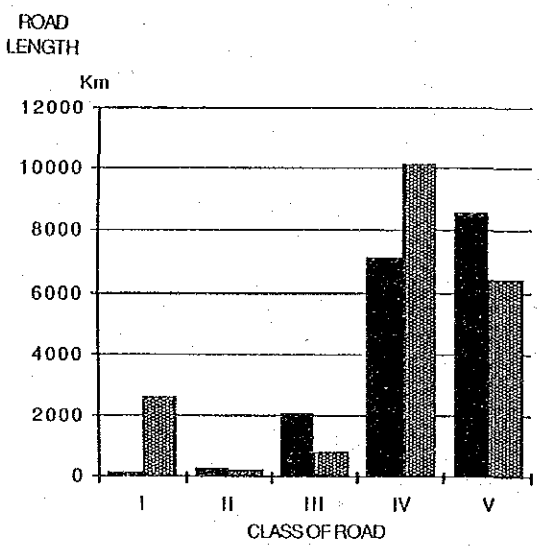
Group-1:	Construction due to capacity deficiency		
	Dual carriageway:	National Highway	1,700 Kms
		Provincial Highway	800 Kms
	Widening and Rehabilitation:	National Highway	1,200 Kms
		Provincial Highway	3,000 Kms
Group-2:	Rehabilitation due to structural deficiency		
	Overlay and Rehabilitation:	National Highway	2,900 Kms
		Provincial Highway	8,700 Kms

Note: Desirable planning level, level of service: C

Source: JICA Study Team

After the implementation of these construction and rehabilitation works, the trunk road network will consist of the following categories of highway classification.

Fig. 5.2.1 Future Expected Highway Composition, 2005/06

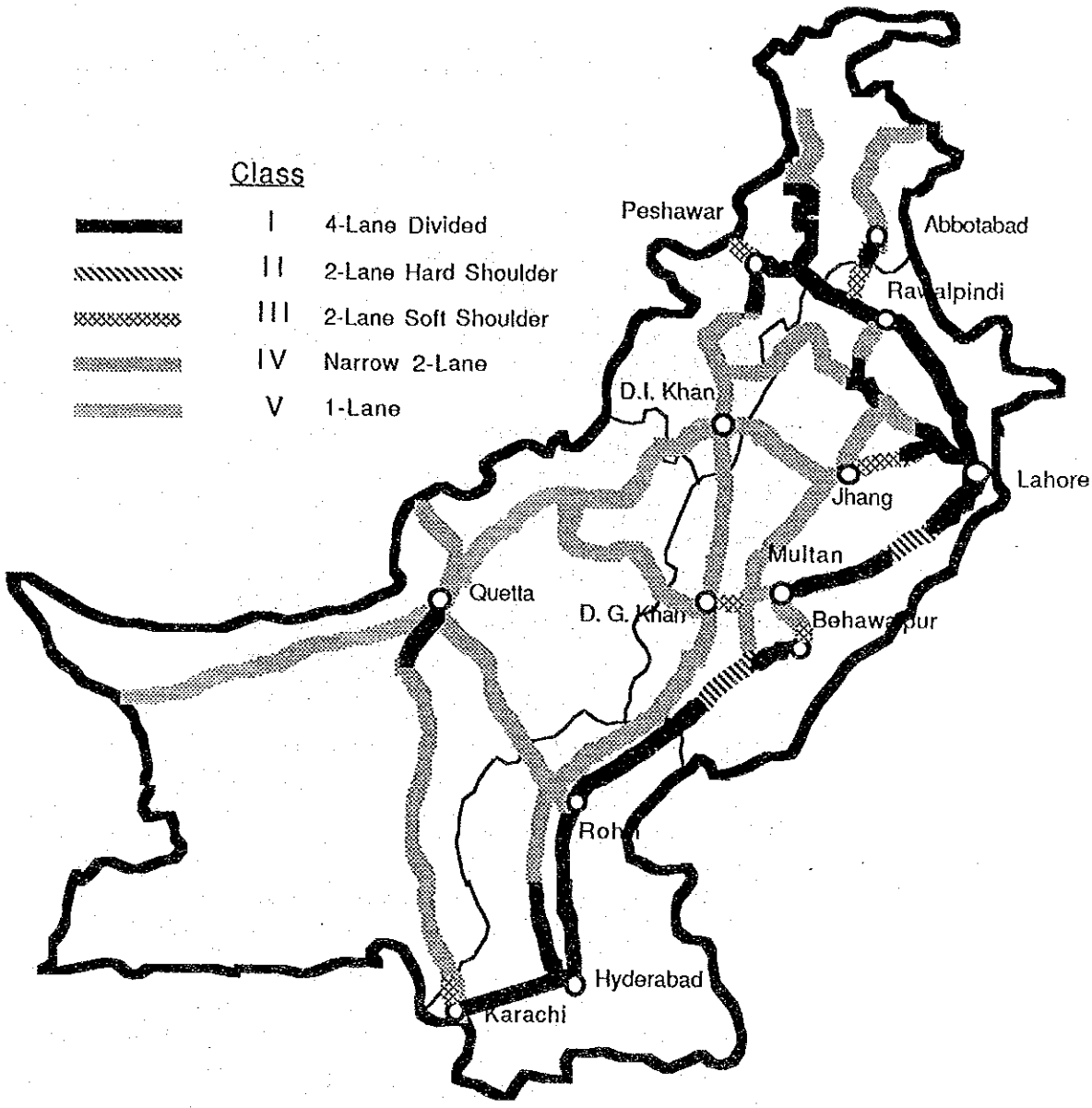


(Km)

Class of Road	Existing 1985/86	Target 2005/06
I	157 (1)	2635 (14)
II	310 (2)	233 (1)
III	2070 (11)	807 (5)
IV	7175 (39)	10182 (56)
V	8572 (47)	6446 (24)
Total	18284 (100)	18284 (100)

Source: JICA Study Team

Fig. 5.2.2 Desirable Class of the Primary Highway Network (2005/06)



5.2.3 Road Transport

Candidate projects in road transport sub-sector are tabulated as in Table 5.2.3, with necessary number of the vehicle fleet in private sector.

Table 5.2.4 Candidate Projects of Road Transport for the Master Plan Period

Candidate Project	Quantity
I Public Sector	
1. Highway Safety	
• Establishment of Driving Instructor Training School at Federal Level under the 4th Highway project	• One Unit at Islamabad
• Expansion of Highway Patrol on N-5 and N-65 of 1,900 km excluding Section between Peshawar and Attock.	• 1,900 km/50 km = 38 stations
• Installation of Kilometer Stones on the Road Network of 18,600 km	• 18,270 km
2. Vehicle Fleet	
• Strengthening of Semi-Public Bus in inter-city services	• Ordinary Bus: 11,256 unit
(Share between Public and Private will be 10% and 90%.)	• Other Investment (20% of Bus Cost)
• Maintenance of Existing NLC Fleet size as National Asset	• Truck Trailer: 3,150 unit • Other Investments (10% of vehicle cost)
3. Required Study	
• Detailed Study for Private Sector Bus Industry	• Full Study
II Private Sector (for reference)	
1. Motor Vehicle Fleet	
• Required Investment Cost on Vehicles for Intercity Operations	• Passenger Vehicle Buses 101 (thousand) Mini Buses 13 Wagon 109 Pickup 112 Car 518 Jeep 53 Motorcycle 292 Total 1,199 • Freight Vehicle Conventional Truck 108 (thousand) Truck Trailer 36 144

Source: JICA Study Team

5.2.4 Ports

For ports development, the construction project of berthing facilities is most important both in Karachi Port and Qasim Port to cope with the increasing demand.

Some other facility improvement and feasibility studies are also proposed for the Master Plan.

Table 5.2.5 List of Port Projects, Master Plan

Name of Project (No. of Berths)
1. Karachi Port
• Container Terminal (6)
• Feasibility Study of Container Terminal
• Container Cargo Handling Equipment*
• New Oil Berths (1)
• Harbour Craft and Cargo Handling Equipment
• Roads and Warehouses
• Jinnah Bridge
2. Qasim Port
• Oil Terminal (1)
• Container Terminals (2)*
• Harbour Crafts and Cargo Handling Equipment
• Dredger
3. Others
• Gwadar Mini-port
• Feasibility Study on I.W.T.

Note: * by private sector

Source: JICA Study Team

5.2.5 Shipping

The required number of total Pakistani merchant fleet is estimated as 52 vessels in 2005/06 in order to obtain the target of the share.

36 vessels out of the total are necessary to be newly-built/purchased or replaced in consideration of the age of existing fleet.

Table 5.2.6 Required Vessels in 2005/06

		Existing		2005/06
· Liner service	Multi	28		14
	Container**	0		19*
· Bulkers (ore & coal)		0		10*
Bulker (phosphate)			(+1)	1
· Crude oil tankers		1	(+1)	3*
· Edible oil tankers		0	(+1)	1+1*
· Ferry boats (passengers)		3		3*
Total		32	(+3)	52

Note: (+1) means the acquisition expected in 1987.

* newly-built/purchased

** 1,200 TEU: 10 vessels
1,800 TEU: 9 vessels

5.2.6 Airport/Aviation

Major projects for airport/aviation development are composed of the following groups of facility improvement projects:

1) Extension/New construction of terminal facilities in response to increasing demand
2) Improvement of runways and taxiways
3) Improvement of facilities to up-grade the airport
4) Construction of airports for feed servides
5) Improvement of air navigation systems
6) On-going projects
7) Purchase plan of aircrafts for replacement
8) Others

The outline of candidate projects is shown in the list of projects, Table 5.2.7.

Table 5.2.7 Projects for Airport/Aviation Development, 2005/06

Project Name	Outline
A. Airport	
1. Karachi Airport Project	- Extension of subrunway and taxiway - Construction of new terminal facilities
2. Islamabad Airport Project	- Extension of existing Terminal facilities - Construction of airport at new site.
3. Lahore Airport Project	- Construction of terminal facilities
4. Improvement of Existing Facilities	- Improvement and expansion of runway, taxiway, and terminal facilities at other airports
5. Alternate Airport Projects	- Construction of taxiway and terminal facilities
6. Feeder Airport Projects	- Construction of feeder service airports
7. Aeronautical Communication and Control System	- Installation of radars at Lahore, Islamabad and Quetta. Remote facilities and upgrade of AFTN network
8. ARSR/SSR En Route Radar Network	- 3 sets of ARSR/SSR
9. Air Navigation System	- ILS Cat-II, DVOR/DME, RWL for main runway, ILS Cat-I, ALS Cat-I, VASIS, RWL for subrunway, etc.
10. Air Navigation System for Islamabad Airport	- ILS Cat-II, DVOR/DME, NDB, Lighting Cat-II etc.
11. Air Navigation system for Lahore Airport	- ILS Cat-II Lighting Cat-II, RVR, TWL, etc.
12. Air Navigation system for Other Airports	- Development of air navigation system in minor airports
13. Air Navigation system for Feeder Airports	- Development of air navigation system in feeder airports.
14. Other On-going Projects	
B. Aviation	
1. Purchase of Aircraft	- B747 Class : 15 - Wide Body Class : 22 - Narrow Body Class : 11 - F27 Class : 24 - DHC-6 Class : 9
2. Hangar, Workshop and Equipment	

Source: JICA Study Team

5.3 Investment Cost

5.3.1 Necessary Cost for the Master Plan

The total investment costs required from each transport sub-sector are summed up in 290.3 Rupees, and they are summarized as follows:

Table 5.3.1 Summary of the Investment Cost, Master Plan

Sub-sector	Rs. Billion	(%)
Railways	76.7	(26.4)
Ground Facilities	24.3	
Rolling Stock	43.4	
Others	9.0	
Roads	92.2	(31.8)
Construction	37.8	
Rehabilitation	17.5	
Others (outside the Study)	36.9	
Road Transport	10.7	(3.6)
Highway Safety	0.3	
Vehicle Fleet	10.4	
Research	0.03	
Ports	9.3	(3.2)
Karachi Port	6.7	
Qasim Port	2.2	
Others (include IWT study)	0.5	
Shipping	13.0	(4.5)
Container Vessels	8.5	
Other Vessels	4.5	
Airport	7.7	(2.7)
Major Airports	4.4	
Other Airports	1.1	
Navigation Systems and Others	2.1	
Aviation	80.6	(27.8)
Aircrafts	70.3	
Other Equipments	10.3	
Total	290.3	(100)

Source: JICA Study Team

5.3.2 Assessment of the Investment Scale

The results of the projection of financial capability in transport sector 1988/89 to 2005/06, after the Seventh Five Year Plan periods, indicates the total value of 407 to 445 billion Rupees.

This figure includes financing from both private sector and public sector, and 257 to 292 billion Rupees are expected from the public sector.

The total amount itself, therefore, is of adequate scale, although aviation sub-sector requires a relatively heavy share.

CHAPTER 6 PROPOSAL FOR THE SEVENTH FIVE YEAR PLAN

CHAPTER 6 PROPOSAL FOR THE SEVENTH FIVE YEAR PLAN

6.1 Basic Policies

Since the Five Year Plan is the implementation programme to realize various transport projects in the direction of the Master Plan, it should be formulated based on the existing conditions and the performance of the existing Plan.

The progress of the transport sector development in the Sixth Five Year Plan is not satisfied enough as analyzed in Chapter 3, and various problem areas and bottlenecks are found. Accordingly it is too difficult to directly achieve the ideal target in the Master Plan; e.g. the drastic shift of freight traffic from road transport to railways, even though it is economically reasonable.

The basic policies for the Seventh Five Year Plan are modified from the targets of the Master Plan, taking into consideration the present status, budget availability, construction capacity, and so on. (Please refer to General Flow-chart of Formulating of the Seventh Five Year Plan, Fig. 6.1.1)

6.1.1 Modal Split between Road and Railways

When the same manner of the modal split as in the Master Plan is applied for the demand forecast of commodity transport in 1992/93, the target for the railways is beyond realistic level. Therefore, the following approach has been taken:

- The railway target of demand in 2005/06 will remain unchanged.
- Up to 1987/88, which is the first year of the 7th FYP, the demand for railways will follow Case I, the Do-Nothing Case.
- The break-even distance will be improved gradually from the present level to 500 kms in 2005/06, and in 1992/93 it will be somewhere between the two.
- Between the period 1987/88 through 2005/06, a constant growth rate will continue.

Based on this approach, the 1992/93 demand for railways has been calculated at 12.3 billion ton-kms. This is larger than the 1985/86 actual figure (8.3 billion ton-kms) by 48%.

In the actual planning process, this modification was made based on the discussions with the related Government agencies of Pakistan. Aside from the realisticness of the future targets, this modification has brought a financial benefit of about Rs. 3.3 billion, because the total required investment cost of Rs. 49.3 billion for railways and roads in the ideal modal share case has been reduced to Rs. 46.0 billion in the newly modified case.

Fig. 6.1.1. General Flow-chart of Formulating the Seventh Five Year Plan

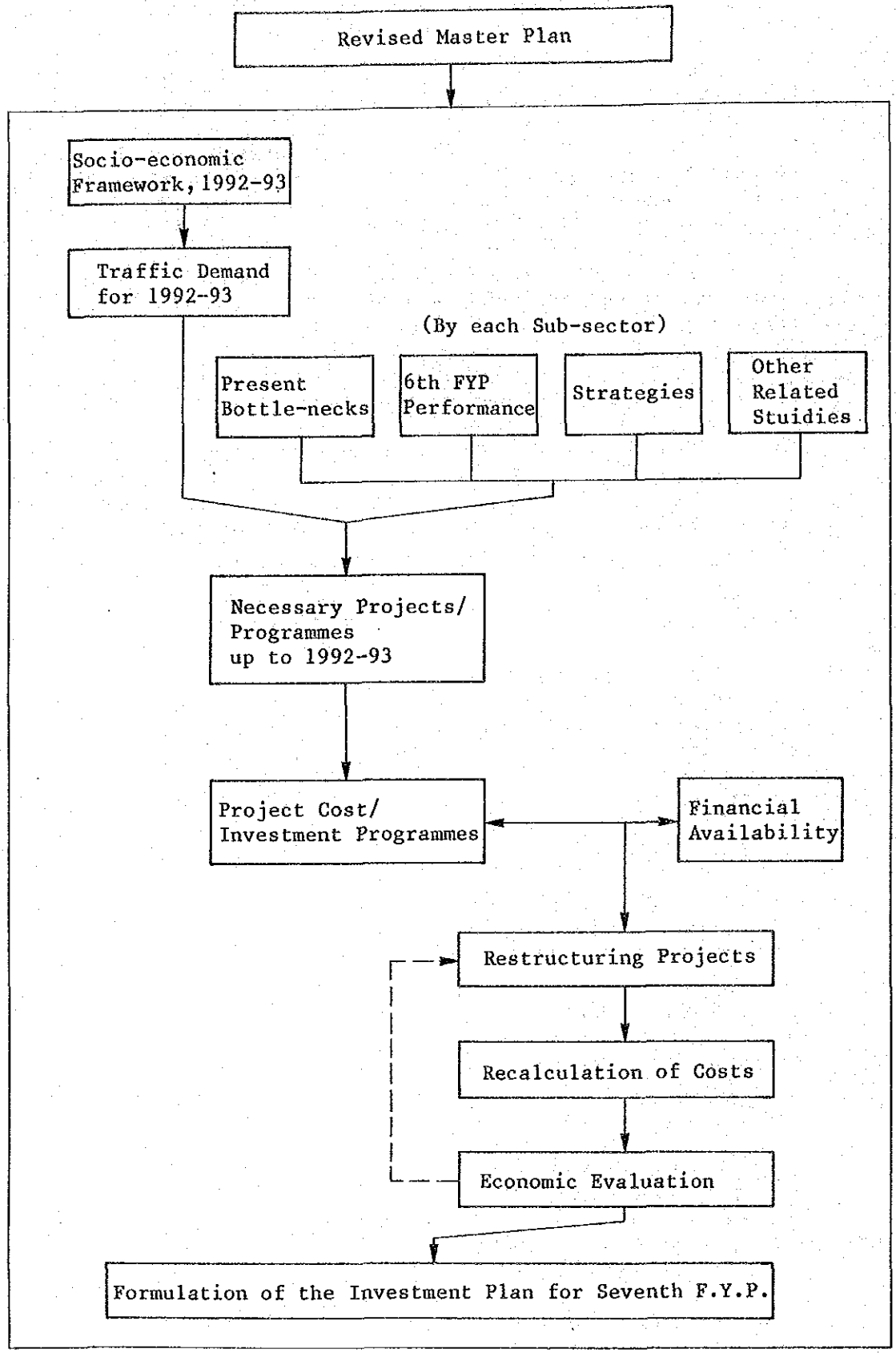


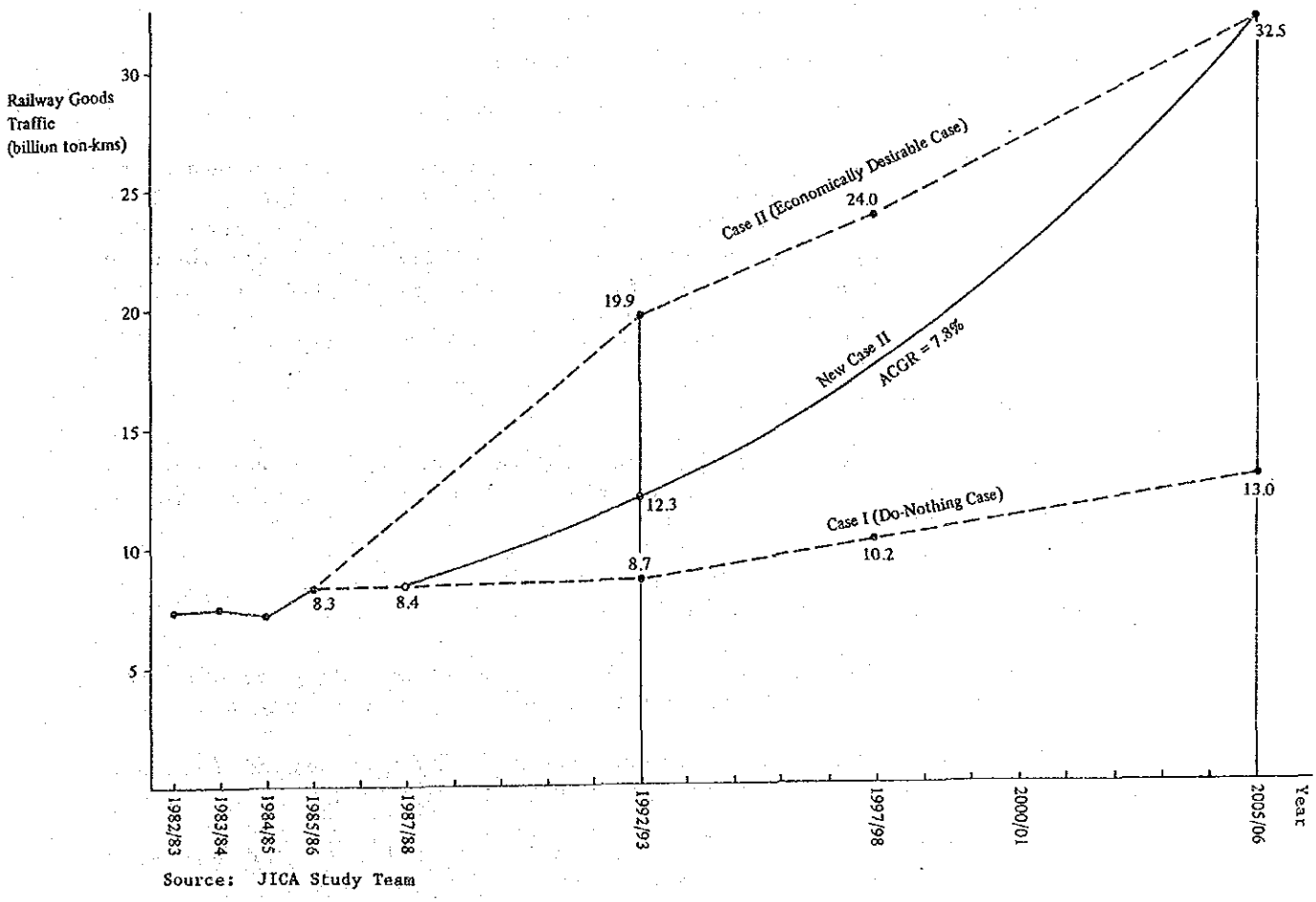
Table 6.1.1 Traffic Demand by Road and Railway, in 1992/93

	Passengers (million pass-kms)		Commodity (million ton-kms)	
	1985/86	1992/93	1985/86	1992/93
Road	97,374 (85)	142,020 (88)	26,859 (76)	35,682 (74)
Railway	16,657 (15)	20,184 (12)	8,299 (24)	12,316 (26)
Total	114,031 (100)	162,204 (100)	35,158 (100)	47,998 (100)

Note: Figures in parentheses show the model share

Source: JICA Study Team

Fig. 6.1.2 Modification of 1992/93 Goods Traffic Demand for Railway



Source: JICA Study Team

6.1.2 Strategies in Railway Planning

For the project formation for the Seventh Five Year Plan, the following were considered;

1) Adaptation of the fundamental strategies were the same as that in the Master Plan
2) Completion of on-going projects.
3) Resolving of bottle-necks in accordance with the exigencies.
4) Harmony with the draft plans drawn up by the relevant organizations.

Priority ranking for each candidate projects planned in the Master Plan was carried out in the light of the objectives as follows:

1) Improvement of the train-operation systems in the trunk lines
2) Expansion of container transport
3) Expansion of highspeed freight trains
4) Expansion of highspeed passenger trains
5) Provision of information for customers
6) Improvement of basic transport facilities.

As a result of this ranking, 22 projects, out of 70 projects are listed up as high priority 'Rank A'. The Seventh Five Year Plan is mainly composed of these high priority projects after due consideration of project programming. Details are described in Chapter 3 and Appendix 4 of Railway Planning in Part III of the report.

6.1.3 Development Strategies for Roads

The development strategy for road improvement plan in the Seventh Plan is diagramed as shown in Fig. 6.1.3 and summarized in 10 items as follows:

6.1.4 Basic Policies/Strategies in Port Planning

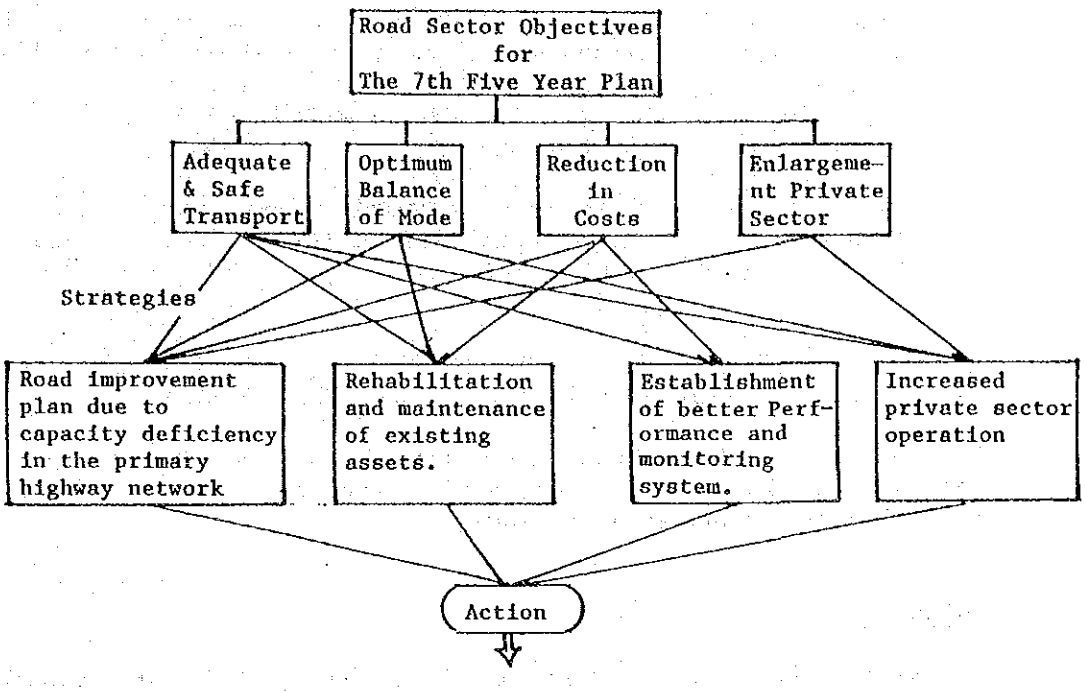
In formulating the Seventh Five Year Plan of the Port Sector, the following basic policies/strategies are considered essential:

1) Port facilities and equipment required by the demand forecast in harmony with the schedule of the Master Plan;

2) Efficient utilization of the existing facilities and quipment at the Ports of Karachi and Qasim;

3) Difference of the roles to be played by each port. That is, principally, Port Karachi shall mainly deal with general cargo and traditional bulk cargoes. On the other hand, Port Qasim

Fig. 6.1.3 Development Strategies for Roads



1) Allocation of development funds to a fewer number of selected high priority projects to improve the efficiency of implementation.

2) Project selection should be made on the basis of the strategic traffic demand forecast.

3) Emphasis should be placed on the completion of ongoing projects (Major project to be funded beyond the 6th Plan).

4) The National Highway N-5 should be substantially improved keeping in view the traffic requirements in various sections which include 4th Highway Project and Nowshera - Cablat and Rawalpindi - Karian Sections.

5) Widening of existing one-lane, two way roads in the trunk road network located in high potential zones should be given priority. This indicated that National Highway N-55 (Indus Highway on the west bank of River Indus) and N-25 should be given priority.

6) All selected widening and overlay projects should be combined with rehabilitation programmes including vertical and horizontal realignment together with improvement of drainage structures.

7) Effort shall be made to introduce highway development programmes funded by the private sector.

8) Development of a modern road construction industry in the country and for transfer of technology, and effort should be made to develop modern road design skills.

9) Establishment of modernized road maintenance operation by systematic data collection and evaluation systems.

10) Development of road research programme and road furnishings for road traffic safety.

shall mainly handle bulk cargo and cargoes associated with the local industries. However, exceptional assignment of some cargoes such as oil and container cargoes could take place beyond these guidelines as far as item 2) above is satisfied.

4) On-going projects are to be promoted unless a specific hindrance is anticipated; and

5) Participation of the private sector in cargo handling is to be encouraged, if it is acceptable from the national economic and other public points of view.

6.1.5 Basic Policies/Strategies in Airport/Aviation Planning

On the basis of the Master Plan concept mentioned before, policies and strategies for the successful execution of the Seventh Five Year Plan are proposed as follows;

Policies

1) Major airports of Karachi, Islamabad and Lahore should be developed in accordance with the change of traffic demand, while the existing facilities will be made the best use until the maximum capacity.

2) Other airports should be improved corresponding to the traffic demand.

   Alternate airport for Karachi should be developed.

3) Air navigation systems which are indispensable to the safety and efficiency of the air transport should be improved without any delay.

4) Expansion of air routes and increment of the traffic should be promoted according to the increasing demand.

Strategies

1) Major Airports

   a) Extension of secondary runway at Karachi airport.

   b) Expansion of terminal facilities at Islamabad airport.

   c) Construction of new terminal facilities at Karachi and Lahore airports.

2) Other Airports

   a) Improvement and expansion of facilities at other airports

   b) Runway extension and strengthening for jet operation at Chitral, Gilgit and Turbat airports.

c) Development of Hyderabad airport as an alternate airport for Karachi.

3) Air Navigation Systems

a) Installation of PSR and SSR at Lahore, Islamabad and Quetta airports, and SSR at Rahim Yar Khan and Turbat airports.

b) Provision of message switching system at Karachi for AFTN.

4) Airlines

a) Introduction of new aircraft.

b) Purchase of the equipment and facilities.

6.2 Candidate Projects and Cost

The candidate projects selected for the Seventh Five Year Plan period are proposed as shown in the following tables.

Table 6.2.1 List of Railway Projects for Seventh Five Year Plan

No.	Projects	Estimated Cost (Rs. million)		Remarks
1.	Track Renewal	6,570		
	"Primary A Sections"		1,390	
	"Primary B Sections"		3,090	
	"Secondary Sections"		2,090	
2.	Track Doubling	260		
	Multan - Khanewal		200	
	Khanewal-Raiwind		60	Partical provision
3.	Automatic Block Signalling	260		
	Karachi - Rawalpindi		260	Exclude existing Section
4.	Electric/Relay Interlocking	440		
	Karachi - Rawalpindi		440	Exclude existing Section
5.	Tokenless Block Signalling & Colour Light Signal	120		
	Khanewal - Faisalabad		50	
	Chakjhumra - Sargodha		30	
	Taxila - Peshawar		40	
6.	Information System & Communication Network	1,100		
	Seat Reservation System		400	
	Freight Information System		400	
	Communication Network (Karachi - Rawalpindi)		300	
7.	Electrification	90		
	Samasata - Khanewal		90	Partial provision
8.	Locomotive Factory	1,520		On-going project
9.	Purchase of Electric Locomotive	490		
10.	Purchase of Diesel Electric Locomotive	1,530		
11.	Re-condition of Diesel Electric Locomotive	1,750		
12.	Replacement of Coaches	280		
13.	Purchase of Wagon	2,370		
14.	Misc. and Minor Projects 1/	1,680		
	Total:	18,460		

Note: 1/ considered as 10% of the total cost of other projects.

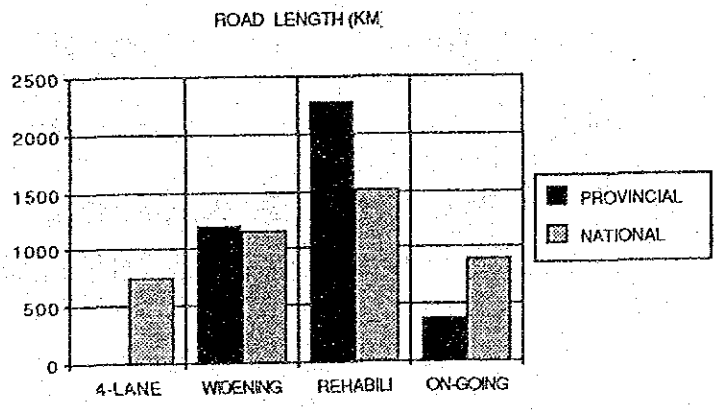
Source: JICA Study Team

Table 6.2.2 Summary of Road Projects for Seventh Five Year Plan

Groupe	Category	Highway Class Existing	Highway Class Proposed	Length (km)	Cost (Rs. million)
Construction due to Capacity Deficiencies					
	A. Dual Carriageway (4-Lane Highway)	II	I	150	812
		III	I	487	4,036
		IV	I	123	738
		Sub Total		760	5,586
	B. Widening and Rehabilitation	IV	II	314	1,258
		V	II	90	426
		V	II	46	193
		V	IV	1,930	6,042
		Sub Total		2,380	7,919
Rehabilitatin due to Structrual Deficiencies					
	C. Overlay and Rehabilitation	III	III	1,234	3,505
		IV	IV	1,543	3,703
		V	V	1,012	1,564
		Sub Total		3,789	8,772
		Total	New Scheme	6,929	22,277
Others					
	On-Going Scheme			1,291	1,991
	Total	(Study Network)		8,220	24,268
	Outside the Study				4,282
	Grand Total				28,550

Note: List of Selected project bylinks are shown in Part III-A, Road Planning, Table 3.4. 2

Source: JICA Study Team



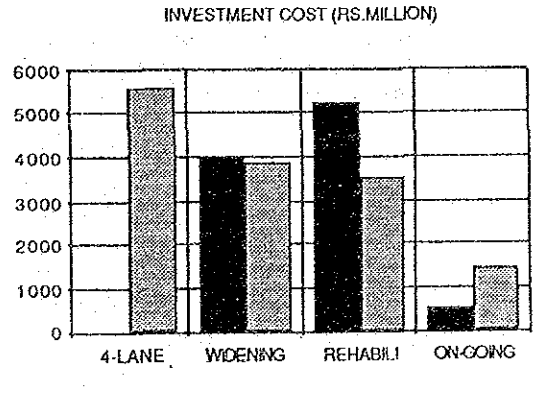


Table 6.2.3 List of Road Transport Projects for the Seventh Five Year Plan

Candidate Project	Quantity	Cost (Rs. million)
I Public Sector		
1. Highway Safety		
• Establishment of Driving Instructor Training School at Federal Level under the 4th Highway Project	• One Unit at Islamabad	32
• Expansion of Highway Patrol on N-5 from Attock Bridge to Jhelum Bridge of 198 km under the 4th Highway Project	• 4 Sectors	24
• Installation of Kilometer Stones all along N-5 of 1,728 km under the 4th Highway Project	• 1,728 km	1
	Subtotal	(57)
2. Motor Vehicle Fleet		
• Strengthening of Semi-public Bus Corporations for Inter-city Services	• Ordinary Bus 2,790 unit	1,507
(Share by public will be 10%)	• Other Investment (20% of Vehicle Cost)	301
	Subtotal	(1,808)
• Maintenance of Existing NLC Fleet Size as National Asset	• Truck Trailer 875 unit	788
	• Other Investments (10% of Vehicle Cost)	78
	Subtotal	(866)
3. Required Study		
• Detailed Study for Private Sector Bus Industry	• Full Study	30
	Public Sector Total	2,761
II Private Sector (for reference)		
1. Motor Vehicle Fleet		
• Required Investment Cost for vehicles for Inter-city Operations	• Passenger Vehicle 242,495 unit	66,273 1/
	• Freight Vehicle 47,154 unit	25,613 1/
	Private Sector Total	(91,886)
	(Total Investment Cost	94,647)

Note: 1/ Including 10% of additional cost

Source: JICA Study Team

Table 6.2.4 List of Port Projects for the Seventh Five Year Plan

Name of Project (No. of Berths)	Project Cost (Rs. million)	
1. Karachi Port		
• Container Terminal (2)	1,702	
• Feasibility Study for Construction of Container Terminal	16	
• Container Cargo Handling EQuipment	-1/	(by private sector)
• New Oil Berth (1)	230	
• Harbour Craft and Cargo Handling Equipment	458	
• Roads and Warehouses	250	
• Jinnah Bridge (Phase II)	150 2/	(Partial provision)
Subtotal	2,806	
2. Qasim Port		
• Container Terminal (2)	-	(by private sector)
• Oil Berth (1)	216	
• Dredger	646	
• Harbour Craft and Cargo Handling Equipments	124	
Subtotal	986	
3. Others		
• Gwadar Mini-port	500	
• Feasibility Study on I.W.T.	18	
Subtotal	518	
Grand Total	4,310	

Note: 1/ Rs. 5 million for one 40 ton crawler crane

2/ Rs. 100 million out of total 250 is succeeded to the Eighth Five Year Plan

Source: JICA Study Team

Table 6.2.5 List of Shipping Project for the Seventh Five Year Plan

1. Container Vessels (Rs. million)

	1988/89	1989/90	1990/91	1991/92	1992/93
Pakistan/Europe Line	r	n	n		n
Price of a Vessel	320	320	320		320
Price of Containers		96	96		96
Total Investment			1,568		
Pakistan/Far East Line	r	n	r	n	r	n
Price of a Vessel	320	320	320	320	320	320
Price of Containers		96		96		96
Total Investment			2,208			
Total			3,776			

2. Other Vessels (Rs. million)

	1988/89	1989/90	1990/91	1991/92	1992/93
Bulk Carrier	N	N	N		N
Price of a Vessel	213	213	213		213
Total Investment			852		
Crude Oil Tanker					N
Price of a Vessel					427
Total Investment			427		
High Speed Passenger & Vehicle Ferry					R
Price of a Vessel					267
Total Investment			267		
Total			1,546		

3. Grand Total (1988/89 - 1992/93) 5,322

Note: r: Replace of vessels (1,200 TEU)
n: Newly-building of vessels (1,200 TEU)
R: Replace of Vessels
N: New-building of Vessels

Source: JICA Study Team

Table 6.2.6 List of Airport/Aviation Projects for the Seventh Five Year Plan

Airport Project

Project Name	Outline	Cost (Rs. million)
• Karachi Airport	• Extension of secondary runway • Construction of New terminal facilities	139 1,742
• Islamabad Airport	• Expansion of terminal facilities	50
• Lahore airport	• Construction of new terminal facilities	363
• Other Airports Peshawar A/P, D.I. Khan A/P, Chitral A/P, Faisalabad A/P and Other 20 A/P		288
• Alternate Airport of Karachi	• Construction of new taxiways and terminal facilities	79
• Aeronautical Communication and Control System	• Installation of radar systems at Lahore, Islamabad and Quetta • Remotely controlled VHF A/G communication facilities, and upgrade of AFTN network	531
• Air Navigation Systems for Karachi Airport	• ILS Cat.II, DVOR/DME, VOR, RWL and RVR for main runway. ILS Cat.I, ALS Cat.I, VASIS, RWL for secondary runway, etc.	73
• Air Navigation System for Lahore Airports	• ILS Cat.II, Lighting Cat.II	62
• Air Navigation System for other Airports	• Development of air navigation systems for other airports	74
• Other On-going Projects		238
Total (Airport)		3,639

Aviation Project

Item	Outline		Cost (Rs. million)
• Purchase of new Aircraft	3 - Wide Body Class 1 - Narrow Body Class 2 - F27 Class	2,100 500 380	2,980
• Replacement of Aircraft	2 - F27 Class		380
• Hangar			430
• Workshop and Equipment			300
Total (Aviation)			4,090

Source: JICA Study Team

6.3 Investment Plan

6.3.1 Necessary Investment Cost for the Seventh Five Year Plan

Total necessary investment costs for the Seventh Five Year Plan is estimated as Rs. 67,232 million, as a result of summing up each amount required by sub-sector.

The summary of investment cost is shown in Table 6.3.1.

Table 6.3.1 Summary of the Investment Costs in Transport Sector, for 1988/89 to 1992/93

	Rs. million	Composition (%)
Railway	18,460	(27.5)
Ground Facilities	8,840	
Rolling Stock	6,420	
Others	3,200	
Roads	28,550	(42.5)
Construction	13,505	
Rehabilitation	8,772	
Others	6,273	
Road Transport 1/	2,761	(4.1)
Highway Safety	57	
Vehicle Fleet	2,674	
Research	30	
Ports	4,310	(6.4)
Karachi Port	2,806	
Qasim Port	986	
Others	518	
Shipping	5,322	(7.9)
Container Vessels	3,776	
Others Vessels	1,546	
Airports	3,639	(5.4)
Major Airports	2,294	
Others Airports	367	
Navigation Systems & Others	978	
Aviation	4,090	(6.1)
Aircrafts	3,360	
Other Equipment	730	
Total	67,232	(100)

Note: 1/ Public Sector only

Source: JICA Study Team

6.3.2 Assessment of Investment Scale

(1) Comparison with the Previous Plans

The required scale of investment for the Seventh Five Year Plan is Rs. 67 billion, and this is 1.44 times that of the Sixth Plan (nominal). It is very reasonable, judging from the comparison between the Sixth and the Fifth Plan.

Regarding the composition by sub-sector, the proportion depands on the policy of the plan, modal share target, and performance of the previous plan. It is observed that the share of investment has shifted from Port & Shipping and Air transport sectors in the Fifth Plan to Road & Road Transport sectors in the Sixth Plan. While, in the proposed Seventh Plan, Railway sector occupy a cirtain share as well as Road & Road Transport sectors.

Tabe 6.3.2 Comparison of Investment in the Five Year Plans (1)

(Rs. million)

Sub-sector	Seventh Five Year Plan (Proposed)	C_1	Sixth Five Year Plan	C_2	Fifth Five Year Plan
Railways	18,460	1.8	10,000	1.8	5,566
Roads and Road Transport	31,311	1.3	23,420	2.0	11,816
Port and Shipping	9,632	1.5	6,437	0.9	7,115
Air Transport	7,729	1.2	6,720	1.0	6,659
Total	67,232	1.4	46,577	1.5	31,156

Note: C_1: Seventh/Sixth
C_2: Sixth/Fifth

Comparison of Investment in the Five Year Plans (2)

(%)

Sub-sector	Seventh Five Year Plan (Proposed)	Sixth Five Year Plan	Fifth Five Year Plan
Railways	27.5	21.5	17.9
Road and Road Transport	46.6	50.3	37.9
Port and Shipping	14.3	13.8	22.8
Air Transport	11.5	14.4	21.4
Total	100	100	100

(2) Comparison of the Financial Framework

The study team projected the investment value for the Seventh Five Year Plan period as Rs. 72 to 76 billion in total, Public sector can Private sector.

Since Rs. 47 to 50 billion is that of the Public sector, all the proposed project cost exceeds by Rs. 17 to 20 billion from the amount of Public sector. Therefore, the availability of allocation of the investment by the Private sector should be considered during the period. For instance, there are some possibilities in Road and Road TRansport, Shipping, and Aviation sectors; and these are already discussed in Part III.

6.4 Policy Options

Besides the various projects of facility improvement, effective supplemental measures are considered and introduced as policy options.

They are spelled out based on the state-of-the-art as applicable to Pakistan from the following viewpoints:

- Optimum allocation of traffic between various modes of transport
- Financing of investment plan
- Recovery of costs
- Maintenance practices/policies for infrastructure
- Manpower training
- Institutional requirement of research and development
- Role of private sector.

6.4.1 Suggestion on the Restructure of Railway/Road Transport Fare System

A modal split which requires a conversion of long-distance passengers and goods from roads to railways to a large extent has been proposed in order for the total inland transport system to ensure a high economic liability. Due, however, to the long-term stagnancy of the traffic demand for the railway coupled with the PR's financial and managerial inability, this proposal might be deemed to be unrealistic unless several countermeasures to stimulate the demand for the railway are established.

The possible countermeasures, of course, include upgrading the levels of service of railway by improving the railway facilities as proposed. Another possible alternative is to restructure the current fare/system to lead the present modal split to the proposal.

The current passenger fare and goods freight have some inadequacies as follows:

- For passenger transport, the fare of road does not vary if the distance lengthens, while railway adopts a diminishing rate. This may be one of the reasons why railway carries relatively more long-distance passengers than roads. However, this incentive is yet insufficient to shift more long-distance passengers from roads to railways.

- For goods transport, both roads and railways adopt a freight rate diminishing according to the distance. The decreasing gradient is steeper in railways than in roads. Again, however, this incentive for long-distance railway goods is not enough to attain the ideal modal split.

To change the current fare/freight structure, there are many alternatives. Considering however, the conditions that this modification should not aggravate the financial situation of PR and that the road user charges are over charged at present and should not be further raised, the possible alternative will be a combination of the following two countermeasures:

i) Restructure the railway fare/freight system in such a manner that long-distance passengers and goods can enjoy a relatively cheep fare/freight while shorter distance passengers and goods are penalized by a fare/freight lifted to a certain extent.

ii) Raise the road fare/freight indirectly by introducing a compulsory insurance system. At present, only a few percent of vehicles pay for the insurance, and the average insurance cost is extremely low compared to other cost components. The compulsory insurance will raise the vehicle operating cost to the same extent (presumably a few percent), and the raised cost will bring about a higher fare/freight rates. This will, on one hand, penalize the road users, but, on the other hand, will lift up the levels of service of road transport by compensating the high risk of traffic accidents.

The countermeasures stated above need careful and detailed studies before implementation. Since marketing studies are definitely necessary for the railways, these studies are recommended to be conducted in conjunction with the marketing studies.

6.4.2 Necessity of Construction of Road Transport Data Base

During the course of the Study, it was observed that there were a number of serious inconsistencies in the present system of collecting, compiling and processing road transport data in Pakistan.

These include:

1) Poor and inconsistent systems for reporting traffic count data from local government to central government. The following is different by province:

   - Criteria for determining survey coverage and station location
   - Timing and frequency of the conduct of survey
   - Duration of survey (24 hrs, 16 hrs, 12 hrs, etc.)
   - Definition of vehicle category.

   These also need adjustment and coordination with the NTRC traffic counts.

2) Lack of skillful manpower and data processing facility. In the government agencies of Pakistan in charge of transport planning, various data are collected and compiled.

Due to the lack of expertise, however, data are not efficiently collected and compiled and, therefore, cannot be immediately referred to without ad hoc data processing when required.

3) In 1) above, only traffic count data were discussed. This is because the traffic count data are the most fundamental and are collected most intensively at present. However, the situation is almost the same for other data including origin-destination, axle load and road/bridge inventory data.

In view of the above, it is considered to be urgent for the government of Pakistan to take necessary action in order to rationalize the tasks of data collection, compilation and processing avoiding duplicate works and inconsistency. At the same time, the scope and methodology to construct a road transport data base need to be determined.

In this context, a comprehensive study on the construction of road transport data base is recommended.

This study includes:

(a) Review of the existing road transport data

- Traffic count data
- Origin-destination data
- Axle load data
- Road and bridge inventory data
- Miscellaneous

(b) Review and evaluation of the existing survey methodology and reporting system

- Evaluation of the location of traffic count stations of NTRC and local governments
- Review and evaluation of the methodology and survey forms of various road transport surveys
- Review and evaluation of the existing systems for reporting statistical data on road transport.

(c) Construction of basic data base on road transport

- Traffic count data
- Origin-destination data
- Axle load data
- Road and bridge inventory data
- Miscellaneous

This comprises collection of existing data, additional surveys and compilation of all the data as a basic data base. The coverage of the proposed data base shall be all the

national and provincial road of approximately 50,000 kms. The created data based shall be installed on a micro-computer suitable to Pakistan. Basic softwares necessary for the system shall be also provided/developed.

(d) Planning of upgrading the data base

Recommendations shall be made on:

- Necessary hardware including micro-mainframe links.
- Software necessary to further upgrade the established data base system in relation to the hardware
- Reporting system necessary to maintain and periodically update the data base system
- Survey methodology including survey forms to be used in Pakistan
- Schemes on manpower training.

6.4.3 Various Suggestion/Recommendation by Sectoral Studies

The following are the issues that are suggested/recommended as the state-of-the-art during the course of each sectoral studies. They include various measures to improve the existing management, monitoring, operation and financing systems of the transport sector in Pakistan. (Refer to Part III of the report in detail)

(1) Railway Planning

- Possible direction to treat unremunerative local lines
- Review of disadvantageous taxation system of the railways
- Flexible policy for rates and fares
- Introduction of JNR's privatization as an example of restructuring of railway management system.

(2) Road Planning

- Development policy of the road improvement for the North-South traffic; N5 and N55.
- Introduction of 'Maintenance Control Index Formula' (MCI) in order to develop the road maintenance performance monitoring system.
- Introduction of 'Build-Operate-Transfer' (BOT) formula as an example of privatization for roads development.

(3) Road Transport Planning

- Introduction of intermodal transport system connecting road and railway for long-haulage, such as 'Piggyback' system for trailer transport.
- Vehicle inspection system
- Professional licence system to up grade the quality of mechanics
- Monitoring system for semi-public bus operation
- Expansion of bonded container and cargo transport to the private sector.

(4) Port Planning

- Improvement of custom clearance system including the expansion of bonded areas outside of the port area to maximize the advantages of containerization.
- Introduction of various fund raising system for container berth construction in order to cope with the world wide requirement for containerization
- Rationalization of tariff level between Karachi Port and Qasim Port to keep adequate competitive/supplemental relationship
- Introduction of coastal industries to Port Qasim industrial zone.

(5) Aviation Planning

- Study feasibility to establish the second airlines excluding for feeder service operation separated from PIA.
- Subsidy system for unprofitable domestic route services.

6.4.4 Proposals on Further Studies

The following subjects one suggested to be studied in detail during the Seventh Five Year Plan period, in order to confirm the feasibility of important projects with high priority.

(1) Railway

- Study on electrification; Lahore-Rawalpindi, Samasata-Khanewal, Karachi-Samasata and Sibi-Quetta
- Study the train operation system in the trunk lines.

(2) Roads

- Additional carriageway project along N-5; Nowshera-Chablat and Rawalpindi-Kharian Section
- Review of the previous Engineering Studies (N-55)
- Sukkar-Rohri bridge construction project
- Lahore bypass project
- Bridge inventory survey
- Indus highway improvement project.

(3) Road Transport

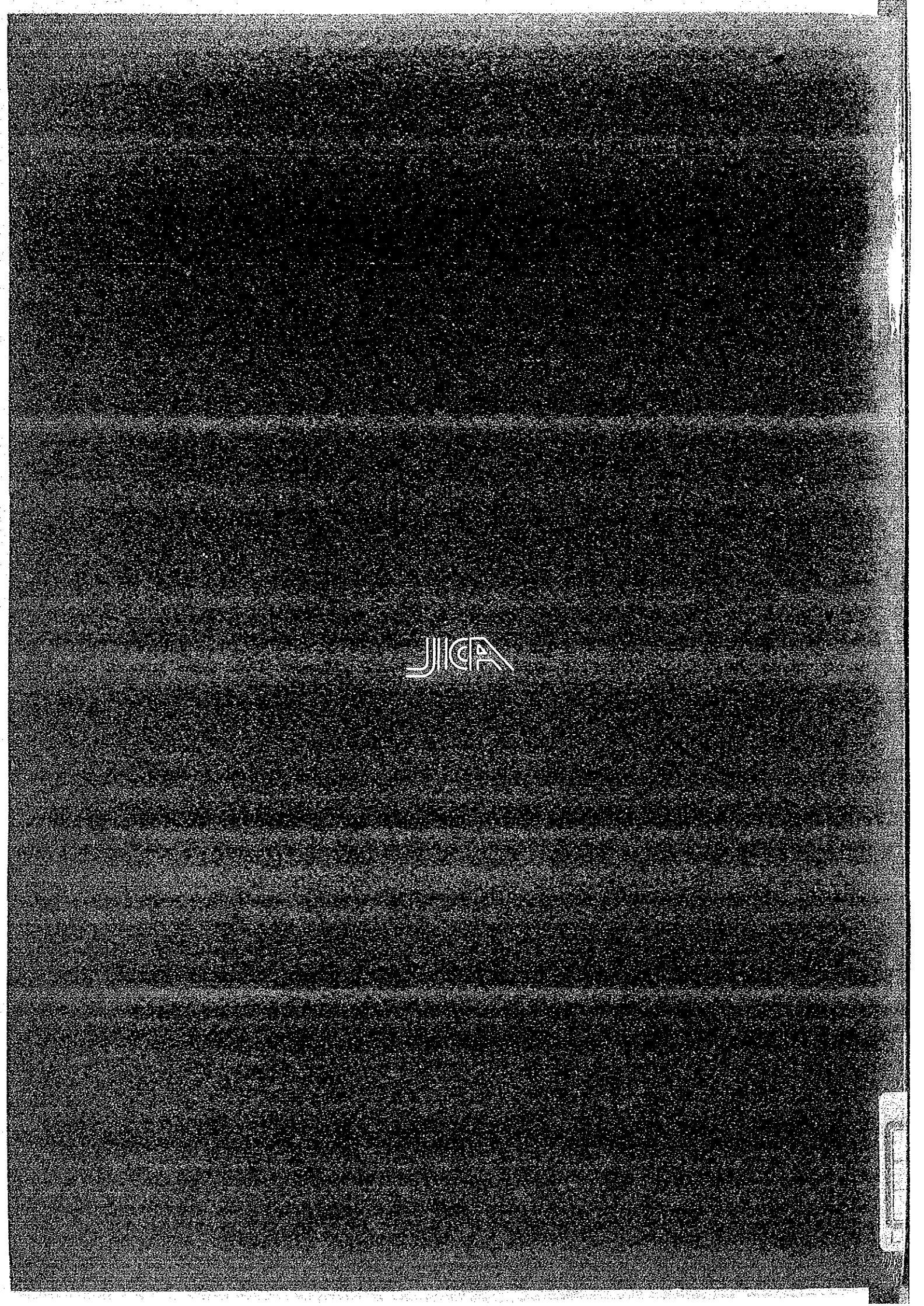
- Comprehensive study on inter-city bus industry
- Urban transport study in Lahore
- Urban transport study in Peshawar
- Urban transport study in Rawalpindi/Islamabad.

(4) Port

- Feasibility study of converted container terminals in Karachi port.

(5) Airport/Aviation

- Study on feeder service system of airlines.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