THE STUDY
ON
THE NATIONAL TRANSPORT PLAN
IN
THE ISLAMIC REPUBLIC OF PAKISTAN

FINAL REPORT

Part I MAIN REPORT

March 1988

JAPAN INTERNATIONAL COOPERATION AGENCY

PREFACE

In response to the request of the Government of the Islamic Republic of Pakistan, the Government of Japan has decided to conduct a Study on the National Transport Plan and entrusted the study to the Japan International Cooperation Agency (JICA).

The JICA sent to Pakistan a study team, headed by Mr. Giichi KATAOKA, comprising experts from Pacific Consultants International Co., Ltd., ALMEC Co., The Overseas Coastal Area Development Institute of Japan and Japan Railway Technical Service, three times from March to April, from August to October in 1987 and in January, 1988.

The team had a series of discussions on the Project with the officials concerned of the Government of Pakistan and conducted field surveys.

After the team returned to Japan, further studies were made and the present report has been prepared.

I hope that this report will serve for the development of the Project and contribute to promote friendly relations between our two countries.

I wish to express my deep appreciation to all the officials concerned of the Government of Islamic Republic of Pakistan for their close cooperation extended to the team.

March, 1988

Kensuke Yanagiya

Kensuke Yanagiya
President
Japan International Cooperation Agency

March, 1988

His excellency Mr. Kensuke Yanagiya
President
Japan International Cooperation Agency
Tokyo, Japan

Letter of Transmittal

Dear Sir,

It is with great pleasure that I present this report entitled The Study on The National Transport Plan in The Islamic Republic of Pakistan to the Government of the Islamic Republic of Pakistan.

This report embodies the results of the study which was carried out from March 1987 to March 1988 by the Japanese Study Team commissioned by the Japan International Cooperation Agency following the request of the Government of the Islamic Republic of Pakistan.

The study team, headed by Mr. Giichi Kataoka, conducted a series of surveys on various relevant agencies throughout the country, analysing data, and preparing on Master Plan for the year 2005/06 and investment plan for the Seventh Five Year Plan.

Furthermore, the study team and the advisory committee, headed by Dr. Shigeru Morichi, Professor of Tokyo Institute of Technology, held a series of discussions in the course of the study with the counterpart officials concerned in order to oriente, smoothen and accelerate the study.

I sincerely hope that this report will be useful as a basic reference for the improvement of the present transport condition and contribute to the nationwide development of Pakistan through the improvement of transport systems.

I wish to express my appreciation to the officials concerned of the Government of the Islamic Republic of Pakistan for their close cooperation extended to the Japanese Team.

Very truly yours,

G. Kataoka

Giichi Kataoka
Team Leader
Study on the National Transport Plan
in the Islamic Republic of Pakistan

PART I MAIN REPORT

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CHAPTER 1 INTRODUCTION

CHAPTER 1 INTRODUCTION

1.1 Study Background

The population of Pakistan was 95 million in 1985 (with 3% growth per annum since 1972) and covered an area of 796 thousand sq. kms. The economic policy has centered on several National Development Plans, and currently the Sixth Five Year Plan (FY 1983/84 - 1987/88) is being implemented. In spite of a number of constraints for desirable economic growth, GDP at 1959/60 constant prices grew in excess of 6% per annum during the Fifth Five Year Plan (FY 1978/79 - 1982/83). The Government set at 6.5% per annum the GDP growth rate in real terms during the Sixth Five Year Plan.

Major transport routes in Pakistan extend in a north-south direction following the pattern of population and economic activity distribution. The ports of Karachi and Qasim facing the Arabian Sea handled over 90% total of exports and imports; on the other hand, more than 50% of international trade has its origin or destination in the province of Punjab whose capital is Lahore. Lahore is situated 1,200 kms away from Karachi which is the center of economic and export/import activities and has a population of approximately 5 million. The major economic centers are scattered over the country, resulting in the necessity of long-distance movement of commodities along several major corridors as shown in Fig. 1.1.1.

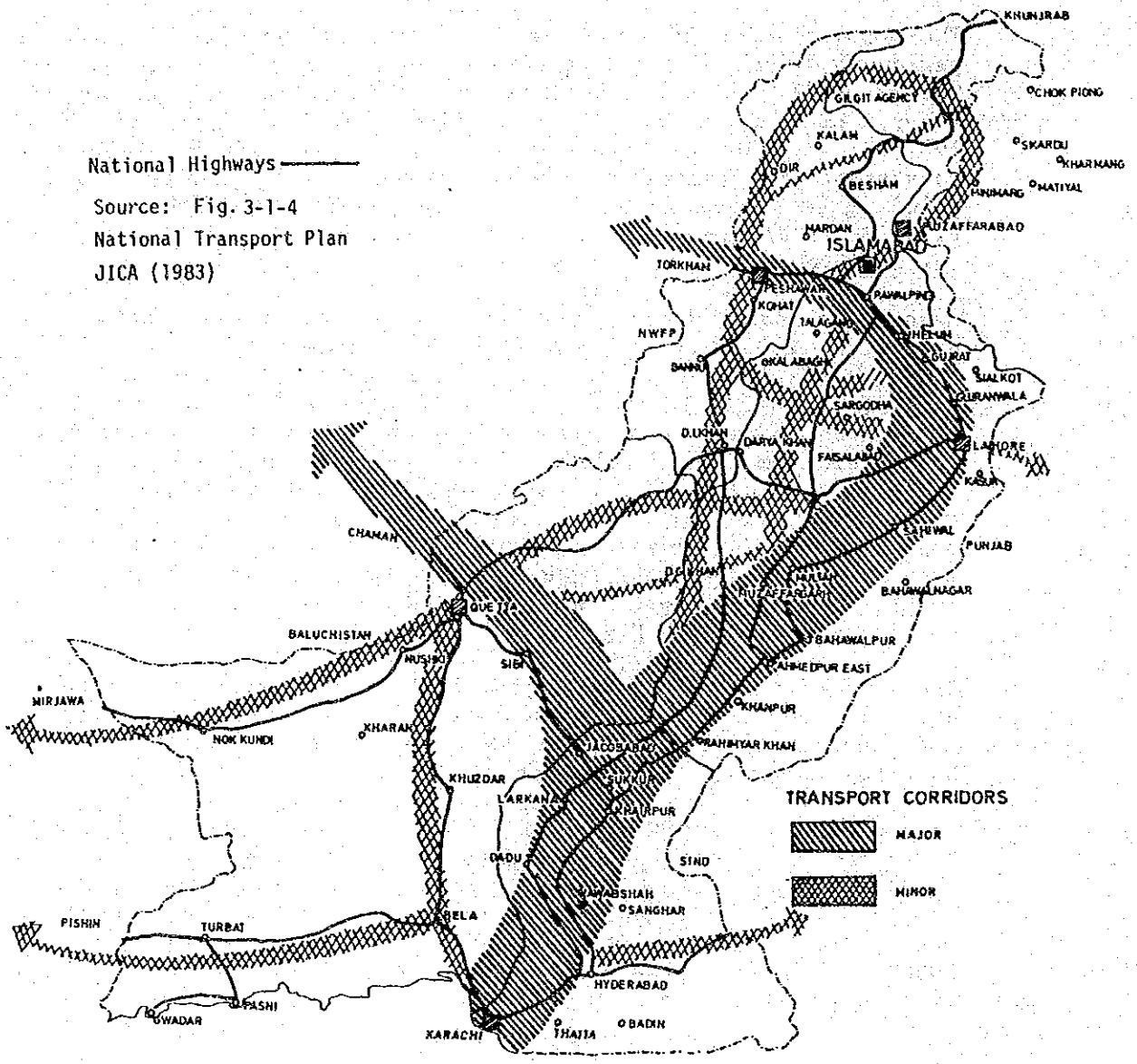
The economic development has resulted in the increased transport demands along these corridors. However, the transport system is not adequately coping with the demand and creating various bottlenecks despite the Government efforts for improvement.

It was in the years 1981 to 1983 when "The Study on National Transport Plan in the Islamic Republic of Pakistan" was conducted by JICA (Japan International Cooperation Agency) at the request of the Pakistani Government. The study recommended a comprehensive Master Plan for the National Transport Sector (for the year 2000/01) and a plan of action for implementation during the Sixty Five Year Plan period.

In order to prepare the succeeding Seventh Five Year Plan (FY 1988/89 - 1992/93), the Pakistani Government had again requested the Japanese Government to provide technical assistance for the study of the projects to be recommended in the Seventh Five Year Plan after reviewing the National Transport Plan, and a long-term Master Plan (for the year 2005/06).

JICA dispatched the Study Team to Pakistan from March 6th, 1987, on the basis of the Scope of Work agreed between the JICA and the Government of the Islamic Republic of Pakistan for the Study of a National Transport Plan agreed on November 11th, 1986.

Fig. 1.1.1 Transport Corridors



1.2 Framework of the Study

1.2.1 Objective and Themes of the Study

(1) Objective

The study aims at reviewing and updating the present Master Plan of the National Transport System, and thereby formulating the Investment Programmes for the next Five Year Plan.

(2) Main Themes

In order to achieve the above-mentioned objective, the Study covers the main themes as outlined below.

1) Review and Update of the Present National Transport Plan

   i) Data collection and analysis of the present situation of the national transport system in Pakistan.

   ii) Review of the implementation of the present Master Plan and Investment Programmes for the Sixth Five Year Plan.

   iii) Identification of the problems of the national transport system and the present Master Plan.

   iv) Updating of the demand forecast.

   v) Update of the present Master Plan for the year 2005/06.

2) Formulation of the New Investment Programmes

   i) Demand forecast of the trunk and inter-regional routes for the Seventh Five Year Plan.

   ii) Selection of priority projects.

   iii) Cost estimates of the selected projects.

   iv) Formulation of the Investment Progammes for the Seventh Five Year Plan.

3) Policy Options in the Transport Sector

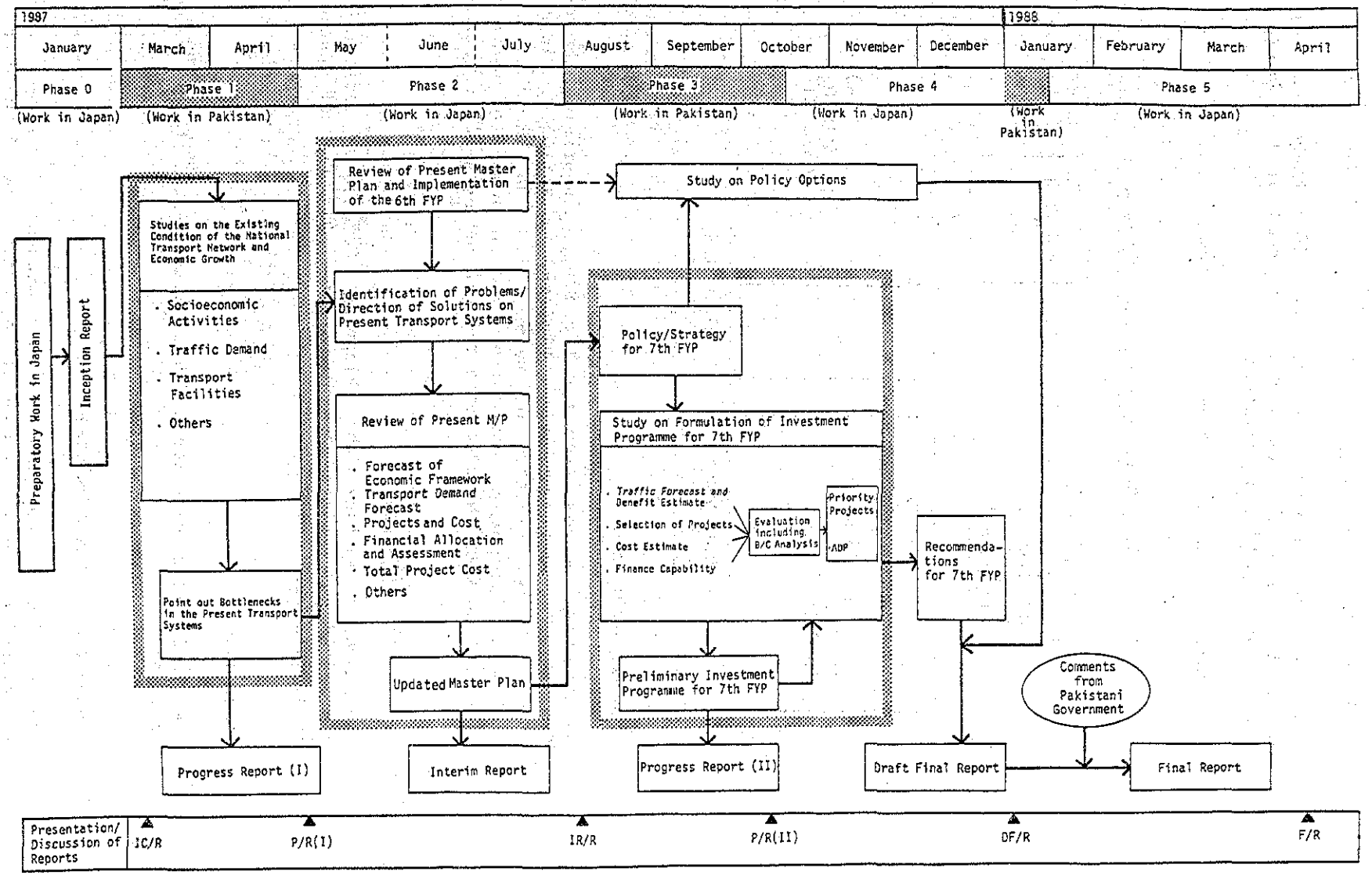
1.2.2 Study Area

The study focuses mainly on the national and international trunk routes and inter-regional transport connected with the trunk routes, covering all modes of transport for the whole country.

1.2.3 Overall Study Schedule

The Study commenced at the beginning of March in 1987 and completed in March, 1988. The outline of the schedule is as follows:

Fig. 1.2.1 Overall Schedule of the Study

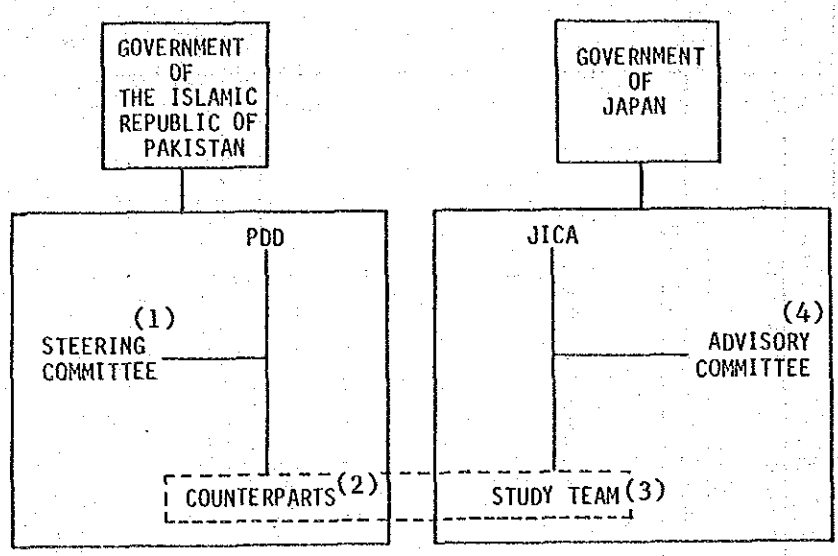


1.3 Study Organization

The study was carried out by the JICA Study Team in close cooperation with the authorities concerned of the Government of the Islamic Republic of Pakistan.

The overall organization framework is shown below.

Fig. 1.3.1 Study Organization Framework



(1) Steering Committee

An inter-agency committee for the Study, comprising the members from the Planning Commission, Ministry of Railways, Ministry of Communications, Ministry of Defence and T&C Sections of each Provincial Government, was established in order to ensure proper coordination with the concerned federal and provincial agencies.

(2) Counterpart Team

The team comprised the Planning Commission officials, of cooperated and assisted the Study Team. The list of counterparts is as follows:

(3) Study Team

The Study Team dispatched by JICA consists of 13 members as follows:

(4) Japanese Advisory Committee

The committee composed of the Japanese Government officials supervised the technical aspects and activities of the Study Team.

Table 1.3.1 List of Counterpart Officials

1. Malik Mohammad Saeed Khan, Chief, T&C Section, Planning Commission.	Chief Coordinator and Comprehensive Transport Planning.
2. Mr. Mr. Sadiq Swati, Chief, NTRC, Planning Commission.	Co-Coordinator.
3. Mr. M. Akram Swati, Chief, Macro Planning Section, Planning Commission.	Regional Dev. and Financial Investment Planning.
4. Mr. Abdul Majeed, Deputy Chief, NTRC, Planning Commission.	Transport Demand Forecasting (1).
5. Dr. M. Aslam Chaudhary, Assistant Chief, T&C Section, Planning Commission.	Socio-economic and Transport Demand Forecase.
6. Mr. M. Kazim Idris, Deputy Chief, NTRC, Planning Commission.	System Analysis.
7. Mr. Khurram Azad Khan, Deputy Chief, T&C Section, Planning Commission.	Ports and Shipping and I.W.T. Planning.
8. Mr. Abdul Waheed, Deputy Chief, T&C Section, Planning Commission.	Aviation and Airport Planning.
9. Mr. Bashir Ahmed, Deputy Chief (Roads), NTRC, Planning Commission.	Road Transport Planning.
10. Mr. Mahmood Ahmad Larik, Deputy Chief (Railways), NTRC, Planning Commission.	Railways Planning.
11. Mr. Tahir Sharif, Assistant Chief, T&C Section, Planning Commission.	Road Planning.
12. Mr. Shahid Iqbal Assistant Chief, T&C Section, Planning Commission	Logistics

Note: NTRC: National Transport Research Center

Table 1.3.2 List of the Study Team Members

Assignment	Name
1. Team Leader	Mr. Giichi KATAOKA
2. Comprehensive Transport Planning	Mr. Osamu OHTSU
3. Transport Demand Forecasting and Project Evaluation	Mr. Takashi SHOYAMA
4. Regional Development and Financial Investment Planning	Mr. Masahide SHIMMYO
5. Railway Planning (1)	Mr. Toshikazu URIU (up to April, 1987) Mr. Kazumaru SHINOYA (from May, 1987)
6. Railway Planning (2)	Mr. Masatoshi YAMAZAKI
7. Road Planning	Mr. Torao TOKOZUMI (up to April, 1987) Mr. Kinichi KATO (from May, 1987)
8. Road Transport Planning	Mr. Kunio OHASHI
9. Port and Inland Water Transport Planning	Mr. Tokuo HIKAWA
10. Maritime Transport Planning	Mr. Akiomi OHKAWA
11. Airport and Aviation Planning	Mr. Shinichi SAKABE
12. Airport Planning (2)	Mr. Hidetoshi SUGIURA
13. Systems Analysis	Mr. Takeshi KATO

Table 1.3.3 List of the Advisory Committee Members

Assignment	Name	
Chairman	Dr. Shigeru MORICHI	Professor - Tokyo Institute of Technology
Member (Railway)	Mr. Mitsugi OKUDA	Japan Railway Construction Public Corporation
Member (Road)	Mr. Yasuyuki KAMODA	Ministry of Construction (up to April, 1987)
	Mr. Toshiki NUMATA	Ministry of Construction (from May, 1987)
Member (Port/ Shipping)	Mr. Tatsuhiko IKEDA	Ministry of Transportation (up to April, 1987)
	Mr. Hiroshi KATO	Ministry of Transportation (from May, 1987)
Member (Air)	Mr. Takao OKUYAMA	Ministry of Transportation

(5) JICA Staff

Project Officer	Mr. Atsushi KAWAI	(up to April, 1987)
	Mr. Toshiharu TAKAHASHI	(from May, 1987)

1.4 Reports

Since commencement of the Study in March 1987, the Study Team submitted the following reports in accordance with the progress of the Study.

- Inception Report: beginning of March, 1987
- Progress Report (I): end of April, 1987
- Interim Report: beginning of August, 1987
- Progress Report (II): end of October, 1987
- Draft Final Report: middle of January, 1988

As the summary of the Study, this Final Report is submitted with the contents of the entire results of the Study. All the contents in the reports submitted in the course of the Study are reviewed and rearranged into this Final Report.

Final Report consists of three parts, that is, 'Main Report', 'Socio-economic Study and Transport Demand Analysis' and 'Sub-sectoral Studies'.

Each part covers the following contents of the Study and the composition by chapter.

PART I: Main Report

- Overall summary of the Study, some of the contents are extracted from Part II and Part III.

(Chapter Composition)

1. Introduction
2. The Nation and its Economy
3. General Views of Transport System
4. Socio-economic/Financial Framework
5. Summary of the Master Plan (for 2005/06)
6. Proposals for the Seventh Five Year Plan (1988/89 to 1992/-93)

PART II: Socio-economic Study and Transport Demand Analysis

- Economic/Financial framework and transport demand forecast as the basic conditions for planning.

(Chapter Composition)

Socio-economic/Financial Framework

1. Projection of Population
2. Projection of National Economy
3. Projection of Regional Economy
4. Financial Framework for Investment

Transport Demand Forecast

1. Methodology
2. Interpretation of the National/Regional Socio-economic Framework
3. Updating of OD Tables from 1980/81 to 1985/-86
4. Analysis of Modal Choice
5. Macroscopic Transport Demand Forecast
6. Microscopic Transport Demand Forecast

PART III: Sectoral Studies

- Detailed analysis on present condition, Master Plan and proposals for the Seventh Five Year Plan by each sub-sector.

(Chapter Composition)

PART III A

- Railway Planning
- Road Planning
- Road Transport Planning

PART III B

- Port Planning
- Shipping
- Inland Water Transport
- Airport/Aviation Planning

CHAPTER 2 THE NATIONAL AND ITS ECONOMY

CHAPTER 2 THE NATION AND ITS ECONOMY

2.1 Geography

The Islamic Republic of Pakistan comprises four provinces, namely; Punjab, Sind, North West Frontier Province (NWFP) and Baluchistan; Federal Capital of Islamabad and Federally Administrated Tribal Areas (FATA).

2.1.1 Location, Boundary and Area

Pakistan is located between 23°-42' and 36°-55' north latitudes and 60°-45' and 75°-20' east longitudes. It is bounded in the north and north-west by Afghanistan, in the east and south-east by India, in the south by the Arabian sea and in the west by Iran. The Peoples Republic of China lies in the north and north-east alongside Gilgit and Baltistan while close across the northern border is the USSR.

The total area of Pakistan is 796,095 Sq. kilometres. The north-south length of the country is about 1,600 kilometres while the maximum east-west breadth is about 1,000 kilometres.

2.1.2 Topography

Pakistan has a variety of physical features, comprising mountains, plateaus, plains and deserts. Physiographically the country is broadly divided into the following four major divisions:

(1) Mountainous and Hilly Areas

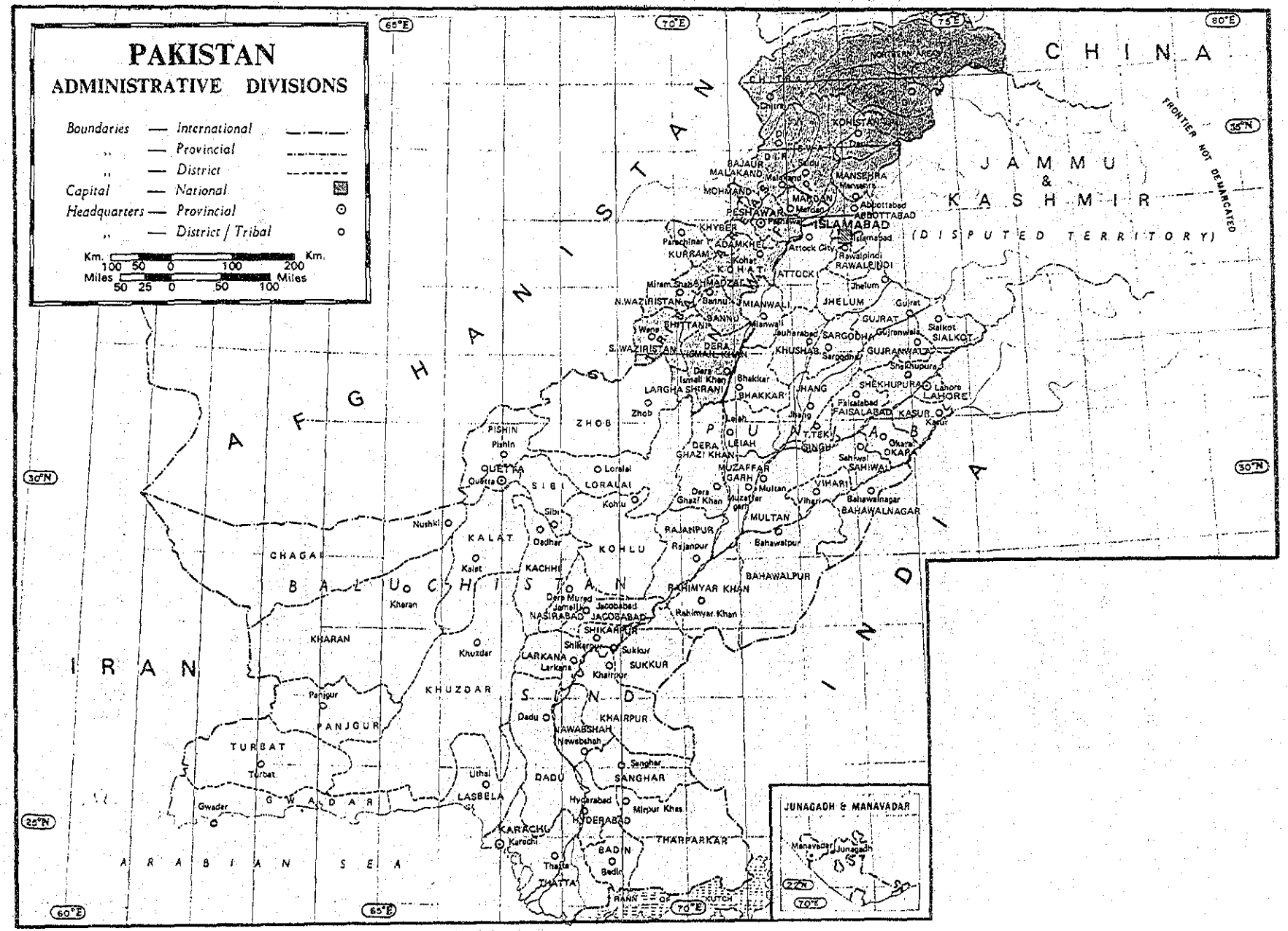
The mountainous and hilly areas are mainly found in the north and west, which may be sub-divided into the following four parts:

i) Northern mountains
ii) Western bordering mountains
iii) Sulaiman mountains and Kirthar hills
iv) Mountains and hills of sub-Himalayas, Siwaliks and Salt Range.

(2) Plateaus

There are two important plateaus, namely, the Baluchistan plateau and Potwar plateau.

Fig. 2.1.1 Pakistan, Administrative Divisions



(3) Plains

The plains are mostly formed by the Indus and its tributaries. They may be sub-divided into the following four parts:

i) Trans Indus plain
ii) Upper Indus plain
iii) Lower Indus plain
iv) Deltaic plain

(4) Desert Areas

The desert areas lie along the south-eastern border of Pakistan, which may be sub-divided into two parts of Cholistan Desert and Thar Desert.

2.1.3 Rivers and Streams

Almost all the major rivers and streams are part of the Indus system. A few small rivers and streams in Baluchistan are either lost in the inland drainage or flow directly to the Arabian sea.

The principal tributaries of the Indus river are the Jhelum, the Chenab, the Ravi and the Sutlej Rivers. The Indus and its four eastern tributaries traverse long distances through the Himalayas and capture most of their flow before entering into the plains of Pakistan. Among these rivers, the Indus has a discharge of more than 50 per cent of the total volume of water. The volume of discharge of water in these rivers shows a great seasonal variation.

2.1.4 Climate

Owing to its north-south length of about 1,600 kilometres, distance from the sea, absence of large inland water bodies and good vegetation cover, the country has a continental type of climate characterized by variation of temperature both seasonally and daily.

The summer season is characterized by high temperature and dryness. Day time temperature ranges between 41°C to 46°C. While the Indus plains are blazing hot in the summer, the northern and north-western hill stations experience a very pleasant weather. The mean maximum and minimum temperatures in June at Murree, Parachinar and Quetta are 27°C and 16°C, 31°C and 18°C and 33°C and 15°C, respectively.

In the winter season the maximum and minimum temperatures along the coastal areas are the highest and remain around 24°C and 13°C respectively. Northwards, in the Indus plains these temperatures are usually around 18°C and 4°C respectively.

The amount of annual rainfall is the heaviest in the northern mountains. The areas in the extreme north-west, largely sheltered from the monsoonal effect, receive lesser amounts of rain. A sharp decrease in annual rainfall is noticed in the lower Punjab and the upper Sind area. Due to proximity of the sea, the rainfall in the lower Sind area increases. In Baluchistan the amount of rain is higher as compared to the central part of the Indus plain.

The northern mountains and the Indus Basin receive major amounts of rainfall during the Monsoon but the greater part of Baluchistan and the western bordering mountains get most of the rain dues to western disturbances during late winter.

2.2 Population and Labour Force

2.2.1 Population

(1) 1981 Population Census

1) Total Population

The population of Pakistan in 1981 the Population census (conducted in March, 1981) was 84,253.6 thousand persons. The population density per square kilometre was 105.8 persons in the nation-wide average. On the population by rural and urban areas, 71.7% of the total population lived in the rural area and 28.3% of the total population was in the urban area. (See Table 2.2.1)

2) Growth Rate

The average annual growth rate of population was 3.06% between 1972 population census and 1981 population census, as against 3.67% between the 1961 population census and 1972 population census. (See Fig. 2.2.1)

3) Population by Province

On the population by province, the Punjab (including Islamabad) was 47,632.7 thousand persons and occupied the 56.5% of the total, while the population of Baluchistan was only 4,332.4 thousand persons (5.1% of the total). The composition of the urban population had a high share in Sind (43.3%) due to the inclusion of Karachi, while that in NWFP (including FATA) and Baluchistan were in low levels of less than 20%. The population density was specially lean in Baluchistan, while that of Punjab was relatively heavy. (See also Table 2.2.1).

4) Distribution of Major Cities

There were 26 cities, which had a population of 100 thousand and over in 1981, in Pakistan. Their distribution is shown in Tables 2.2.2 and Fig. 2.2.2.

An overwhelming majority of those major cities is located along the corridor of Karachi - Lahore - Rawalpindi - Islamabad - Peshawar. The number of those major cities by province was 17 for Punjab, 6 for Sind, 2 for NWFP and only one for Baluchistan.

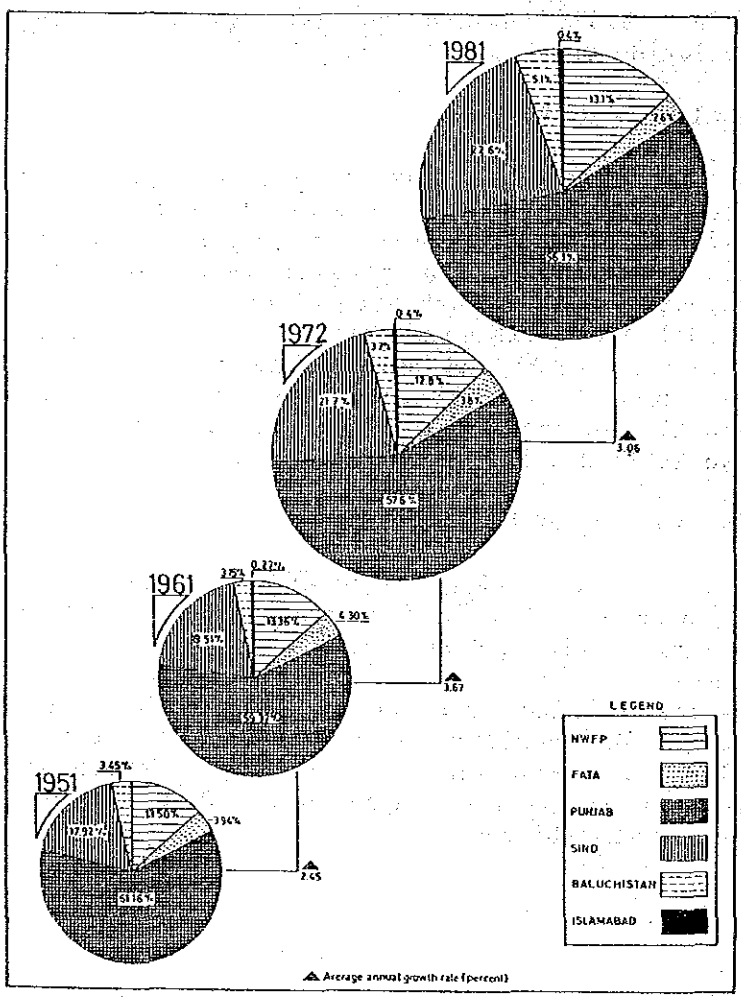
Tale 2.2.1 Population of Pakistan in 1981 Population Census

(1,000 persons)

	Pakistan Total	Punjab	Sind	NWFP	Baluchistan
Population	84,253.6	47,632.7	19,028.7	13,259.8	4,332.4
Population density (persons/sq.km)	105.8	230.9	135.0	130.3	12.5
Population composition					
in rural (%)	71.7	72.2	56.7	87.4	84.4
in urban (%)	28.3	27.8	43.3	12.6	15.6

Note: Punjab includes Islamabad, and NWFP includes FATA.
Source: 1981 Census Report of Pakistan

Fig. 2.2.1 Population Size, Growth and Distribution by Province, 1951-1981



Source: 1981 Census Report of Pakistan

Table 2.2.2 Distribution of Major Cities, 1981

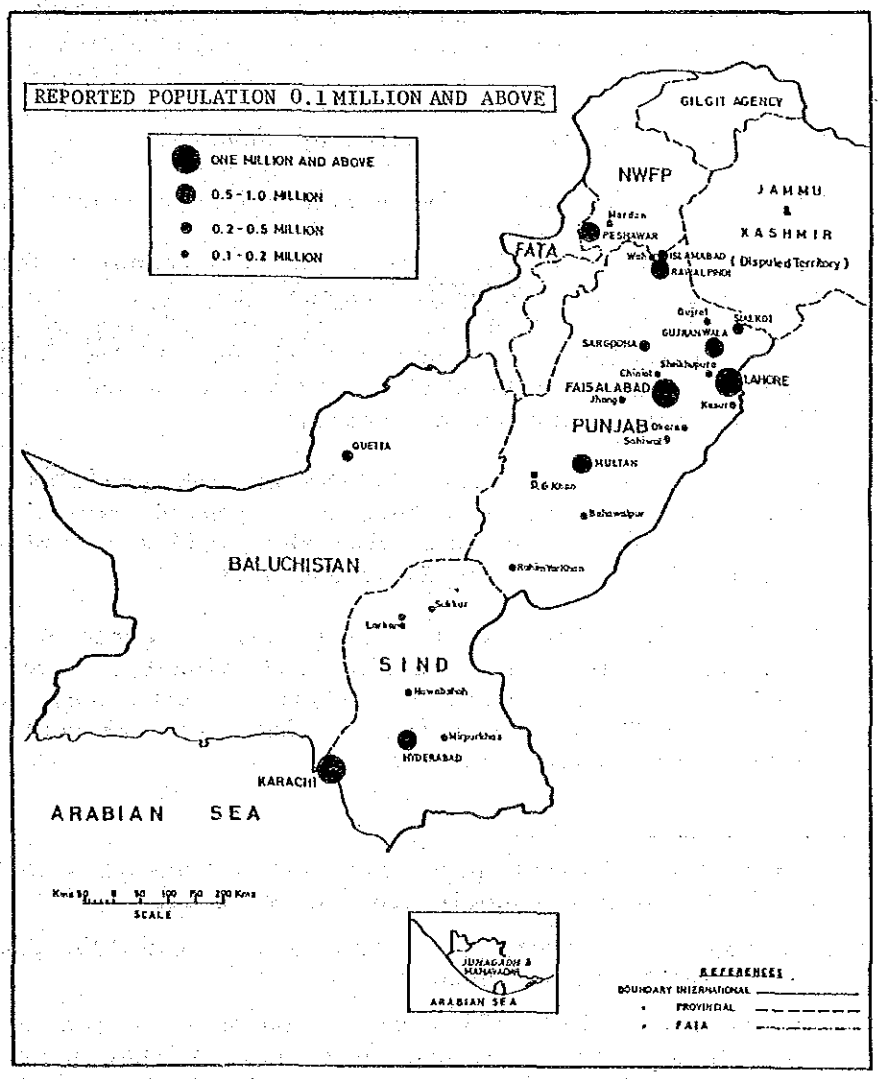
(in number)

Population size	Pakistan Total	Punjab	Sind	NWFP	Baluchistan
0.1 - 0.19 million	15	10	4	1	-
0.2 - 0.49 million	3	2	-	-	1
0.5 - 0.99 million	5	3	1	1	-
1.0 - 2.49 million	1	1	1	-	-
2.5 million and over	2	1	1	-	-
Total	26	17	6	2	1

Note: Rawalpindi and Islamabad have been counted as a combined city block.

Source: 1981 Census Report of Pakistan

Fig. 2.2.2 Major Cities, 1981



Source: 1981 Census Report of Pakistan

(2) Population on January 1, 1986

The Government of Pakistan estimates the growth rate for the population of 3.1% per annum for recent years.

The population on Jannuary 1, 1986 was estimated at 97,670 thousand persons, and 100.70 thousand persons for January 1, 1987[1/]. (Source: Statistics of Economic Survey, 1986-87)

2.2.2 Labour Force

(1) Labour Force Based on the 1981 Census

The population of 10 years old and above was 56,338.9 thousands in 1981 (1981 Census report). It was equivalent to 66.9% of the total population. The population (10 years old and above) of working and looking for work was 22,626.4 thousand. It corresponds to 40.2% of the population of 10 years and above in March, 1981. Of which, 21,924.6 thousands were the working population (10 years and above) and another 701.8 thousands were persons looking for work.

(2) Structure of Working Population by Industry

More recent information is available in other official sources.

The first is the data given in the Economic Survey, 1986-87. According to the Economic Survey, the crude activity rate was estimated, by 28.72%[2/] of the persons of age 10 years and above based on Labour Force Survey, 1985-86 of FBS, and the civilian labour force is estimated at 28,050 thousand persons, of which 27,020 thousand persons are employed.

The Labour Force Survey 1985-86 of FBS provided a more detail information on the structure of employed persons[3/] by industry (This concept is the same with the civilians employed persons in Economic Survey). Table 2.2.3 shows it.

As shown in Table 2.2.3, the number of employed persons in the agriculture, forestry, hunting and fishery, cover 54.0%, while 13.1% is in manufacturing, 11.4% in commerce, restaurants and hotels, 10.0% in community, social and personal services, and 11.5% in all other industries.

1/ Factors influenced by the population estimation in the future will be discussed in the Socio-economic Study of Part II.

2/ This rate does not correspond to the rate in the 1981 Population Census due to different basis surveyed.

3/ Employed persons include all civilian persons of age 10 years old and above who, during the reference week, were either working for pay or profit in cash or kind, including unpaid family helpers or had a job but did not work.

Table 2.2.3 Structure of Employed Persons by Major Industries, 1985-86

(%)

	Pakistan Total	Punjab	Sind	NWFP	Baluchistan
Agriculture, forestry, hunting and fishing	54.01	52.93	51.91	59.24	67.78
Mining and quarrying	0.26	0.28	0.12	0.07	1.17
Manufacturing	13.14	14.87	13.20	6.97	4.01
Electricity, gas and water supply	0.52	0.47	0.58	0.83	0.05
Construction	5.24	5.59	3.87	6.84	3.67
Commerce, restaurants and hotels	11.40	11.00	13.16	10.30	10.03
Transport, storage and communication	4.42	4.17	4.56	4.82	6.24
Financing, insurance, real estate and business services	0.94	0.77	1.70	0.49	0.37
Community, social and personal services	10.01	9.84	10.84	10.40	6.65
Activities not adequate defined	0.07	0.08	0.06	0.05	0.02
Total	100.00	100.00	100.00	100.00	100.00

Source: FBS; Labour Force Survey 1985-86.

2.3 National Economy

2.3.1 Present Feature of National Economy

(1) General

Main summaries of the National Economy in 1985-86 are shown in Table 2.3.1.

As shown in Table 2.3.1, gross domestic product at factor cost is estimated at Rs. 485,210 million and net national product at factor cost (National income) is estimated at Rs. 490,135 million. Per capita GDP at factor cost was Rs. 4,968 and Rs. 5,018 for national income in 1985-86[1/]. These levels of per capita incomes corresponded to approximately US dollar 307 and US dollar 311 respectively when it is converted to US dollar at a rate of one US dollar = Rs. 16.157. (This exchange rate in 1985-86 was calculated by the Study Team, using Annual Report 1985-86 of the State Bank of Pakistan.)

Regarding the value added by economic activity in 1985-86, the distribution share of GDP (gross domestic product) at factor cost of current prices is shown in Table 2.3.2. A notable point is that agricultural sector yields only 24.5% of the total value added of GDP at factor cost, although this sector employs 54.0% of the total active labour force. Manufacturing sector yields 17.2% of the GDP at factor cost with 13.1% of the total active labour force. (See also Table 2.3.2 above)

(2) Economic Growth Rates

An overall feature over the past ten years is shown in Table 2.3.3 and 2.3.4. National accounts in Pakistan for constant prices are shown by prices in 1959-60[1/]. However, the Study Team has decided to study the national accounts by using 1985-86 prices as the basis of constant prices since the prices in 1985-86 would be more appropriate in reflecting the updated sectorial composition. Figures shown in these tables are at 1985-86 constant prices.

Gross domestic product (GDP) at factor cost grew at an annual rate of 6.9% at 1985-86 constant prices in the first four years of the Sixth Five Year Plan period. (See Table 2.3.3) The annual growth rates by major economic activity in the first four years of the Sixth Five Year Plan period are 7.9% in manufacturing, 4.4% in

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1/ According to our hearing at FBS, FBS is compiling a new national accounts series, which set in 1980-81 as the basis year for estimates, and it is said that the new series will be published within a few months. When the new series is published, all data on national accounts will be revised principally.

Table 2.3.1 National Accounts of Pakistan in 1985-86

	(Rs. million)
Gross Domestic Product at Factor Cost (GDPF)	485,210
Gross National Product at Factor Cost (GDPF + Net factor income from abroad)	520,460
Gross National Product at Market Prices (GDPF + Indirect Taxes - Subsidies)	574,787
Net Domestic Product at Factor Cost (NDPF) (GDPF - Provision for fixed capital formation)	454,885
Net National Product at Factor Cost (NDPF + Net factor income from abroad)	490,135
Per Capita Income: (Rs.)	
GDP at factor cost	4,968
GNP at market prices	5,885
NNP at factor cost (national income)	5,018

Note: Figure for net factor income from abroad is used for data supplied by PDD.

Source: FBS, "National Accounts of Pakistan, 1983-84 to 1986-87" and data supplied by PDD.

Table 2.3.2 Distribution of GDP at Factor Cost by Economic Activity in 1985-86

	(%)
Agriculture	24.5
Mining and Quarrying	2.4
Manufacturing	17.2
Construction	6.3
Electricity and Gas Distribution	2.3
Transport, Storage and Communication	8.1
Wholesale and Retail Trade	16.7
Banking and Insurance	3.1
Ownership of dwellings	2.8
Public Administration and Defence Services	8.7
Services	8.0
Gross Domestic Product at Factor Cost	100.0

Note: Figures for each sector are rounded off.

Source: Federal Bureau of Statistics; National Accounts of Pakistan, 1983-84 to 1986-87.

Table 2.3.3 Performance of GDP and GNP at 1985-86 Constant Prices

	Value at 1985-86 constant prices (Million Rs)					Annual growth rates (%)			Percentage distribution (%)		
	1977-78	1980-81	1982-83	1985-86	1986-87	1977-78 to 1982-83	1980-81 to 1985-86	1982-83 to 1986-87	1978-79	1982-83	1986-87
Agriculture	86,475	98,233	105,613	118,670	125,373	4.1	3.9	4.4	29.9	26.6	24.2
Major crops	43,863	51,149	55,203	60,711	64,257	4.7	3.4	3.9	15.2	13.9	12.4
Minor crops	14,991	16,237	17,199	18,590	19,148	2.8	2.7	3.2	5.2	4.3	3.7
Livestock	24,833	27,483	29,688	35,709	37,812	3.6	5.4	6.2	8.6	7.5	7.3
Fishing	2,503	2,924	3,210	3,669	3,745	5.1	4.6	3.9	0.9	0.8	0.7
Forestry	283	440	313	391	411	2.0	(-) 2.3	7.0	0.1	0.1	0.1
Mining and Quarrying	4,883	6,519	7,348	11,448	12,277	8.5	11.9	13.7	1.7	1.9	2.4
Manufacturing	40,776	54,124	66,201	83,670	89,898	10.2	9.1	7.9	14.1	16.7	17.3
Large scale	29,502	39,356	48,528	60,534	64,489	10.5	9.0	7.4	10.2	12.2	12.4
Small scale	11,274	14,768	17,673	23,136	25,209	9.4	9.4	9.4	3.9	4.5	4.9
Construction	16,217	19,831	22,904	30,421	33,848	7.1	9.0	10.3	5.6	5.8	6.5
Electric and Gas											
Distribution services	5,114	6,980	7,876	11,136	12,246	9.0	9.8	11.6	1.8	2.0	2.4
Transport, storage & communication	21,365	26,634	30,725	39,429	42,476	7.5	8.2	8.4	7.4	7.7	8.2
Wholesale and retail trade	45,566	55,815	65,781	81,665	86,483	7.6	7.7	7.1	15.8	16.6	16.7
Banking and insurance	8,025	7,648	11,258	14,855	15,424	7.0	14.2	8.2	2.8	2.8	3.0
Ownership of dwellings	10,257	11,410	12,247	13,623	14,112	3.6	3.6	3.6	3.5	3.1	2.7
Public administration & defence	25,411	31,435	33,661	42,053	45,682	5.8	6.0	7.9	8.8	8.5	8.8
Services	24,865	29,398	32,867	38,860	41,093	5.7	5.7	5.7	8.6	8.3	7.9
GDP and factor cost	288,952	348,027	396,481	485,210	515,912	6.5	6.9	6.9	100.0	100.0	100.0
						(6.6)	(6.8)	(6.9)			
Net indirect taxes	30,608	41,581	43,557	54,327	62,306	7.3	5.5	9.4			
GDP at market prices	319,560	389,608	440,038	539,537	581,218	6.6	6.7	7.2			
						(6.6)	(6.7)	(7.1)			
Net factor income from abroad	24,301	25,933	37,062	35,350	31,839	8.8	6.3	(-) 1.0			
GNP at market prices	343,861	415,541	477,100	574,787	613,057	6.8	6.7	6.5			
						(6.7)	(6.7)	(6.3)			

Remarkes: See footnote of Table 2.3.4.

Table 2.3.4 Performance of Expenditure on GNP at 1985-86 Constant Prices

	Value at 1985-86 constant prices (Million Rs)					Annual growth rates (%)			Percentage distribution (%)		
	1977-78	1980-81	1982-83	1985-86	1986-87	1977-78 to 1982-83	1980-81 to 1985-86	1982-83 to 1986-87	1978-79	1982-83	1986-87
Consumption	292,060	350,345	388,908	504,639	510,147	5.9	7.6	7.0	84.9	81.5	83.2
Of which, excldding balancing item	293,576	365,144	399,393	504,639	523,085	6.3	6.7	7.0	85.4	83.7	85.3
Balancing item	(-) 1,516	(-) 14,799	(-) 10,485	0	(-) 12,938	-	-	-			
Investment	55,462	58,199	75,914	90,319	101,130	6.5	9.2	7.4	16.1	15.9	16.5
Gross domestic fixed capital formation	53,609	52,040	67,801	81,319	92,015	4.8	9.3	7.9	15.6	14.2	15.0
Private	18,020	20,434	25,975	33,307	36,851	7.6	10.3	9.1	5.2	5.4	6.0
Public	35,589	31,606	41,826	48,012	55,164	3.3	8.7	7.2	10.3	8.8	9.0
Change in stocks	1,853	6,159	8,113	9,000	9,115	-	-	-	0.5	1.7	1.5
Exports of goods and NFS	37,522	64,118	67,645	63,075	81,580	12.5	(-)0.3	4.8	10.9	14.2	13.3
(less) Imports of goods and NFS	65,484	83,054	92,429	118,226	111,639	7.1	7.3	4.8	19.0	19.4	18.2
GDE at market prices	319,568	389,608	440,038	539,537	581,218	6.6	6.7	7.2	92.9	92.2	94.8
Net factor income from abroad	24,301	25,933	37,062	35,250	31,839	8.8	6.3	(-)1.0	7.1	7.8	5.2
GNE at market prices	343,861	415,541	477,100	574,787	613,057	6.8	6.7	6.5	100.1	100.0	100.0

Note for Table 2.3.3 and Table 2.3.4

1) Calculated by the Study Team based on FBS"national accounts of Pakistan, 1983-84 to 1986-87" and materials provided by PDD.

2) Data for 1986-87 are provisional

3) Figures in parentheses in Table 2.3.3 are the official growth rates at 1959-60 constant prices.

4) Balancing item in Table 2.3.4 is the statistical discrepancy between GDP estimated from production side and disposal of GDP estimated from expenditure side, that is, the item comes from a discrepency between deflators of production side and deflators of expenditure side.

agriculture, 8.4% in transport, storage and communication, 7.1% in wholesale and retail trade, etc.1/

Expenditures on gross national product (GNP) at market prices grew at an annual rate of 6.5% in the same period. Reviewing by component, gross domestic fixed capital formation grew at an annual rate of 7.9%, while consumption grew at 7.0% per annum. The exports and imports of goods and non-factor services grew at 4.8% per annum. (See Table 2.3.4)

(3) Structural Changes

The national economy has been experiencing a broad structural change. As shown in Table 2.3.3 and 2.3.4, the structural change, which has a trend of declining share in the agricultural sector and increasing shares in the secondary and tertiary sectors, of the national economy is also continuing during the Sixth Five Year Plan period.

Agriculture's share of GDP declines to 24.2% in 1986-87 from 26.6% in 1982-83, as against manufacturing's share increases to 17.3% in 1986-87 from 16.7% in 1982-83. Construction, mining and quarrying, and electricity and gas distribution are also increasing their shares of GDP. Within the agriculture sector, livestock grew at a rate of more than 6% while crops grew at a rate of less than 4% in the first four years of the Sixth Five Year Plan period. In expenditure on GNP at market prices, gross domestic fixed capital formation in the private sector shows an increase at rates of more than the average of total gross domestic fixed capital formation, reflecting a more liberalized economic policies.

2.3.2 Present Situation of the Regional Economy

Tables 2.3.5 and 2.3.6 show a present situation of the regional economy.

(1) Gross Regional Product by Province in 1985-86

As shown in Tables 2.3.5 and 2.3.6, percentage distribution of gross regional product (GRP) at factor cost is 53.5% for Punjab, 30.2% for Sind, 11.2% for NWFP, and 5.1% for Baluchistan in 1985-86.

Per capita GRP in Sind is more than 30% of the nation-wide average, while NWFP and Baluchistan are less than the average of the nation.

1/ These growth rates are to be understood within certain ranges because they, even in the medium period like four or five years, are influenced by specific abnormal factors both domestic and foreign in specific years. Examples are bumper or bad crop productions in a few major agricultural items in a specific year, and fluctuation of production in some manufacturing items by domestic and foreign demands and/or supply of raw materials based on various causes.

(2) Characteristics of Regional Economy by Province-wise

1) Punjab

A major characteristic is in the crops production. GRP originated from major crops as well as minor crops occupies approximately 70% and 61% of the whole domestic production in 1985-86, respectively.

Another characteristic is in small-scale manufacturing. Many small-scale manufacturing facilities are located in various areas of Punjab and its share occupies approximately 56% of the nation's total. Large-scale manufacturing units are located and diffused in various areas of Punjab. Wholesale and retail trade also is diffused in various areas of the province compared with Sind.

Mining and quarrying has a relatively small share reflecting geographic particulars.

2) Sind

The economic activities in Sind is relatively concentrated in Karachi division. And the per capita GRP of Sind is the highest among the four provinces.

Many manufacturing units are located in the province, specially in the Karachi division. In manufacturing, heavy and chemical industries and some other industries, having higher value added ratio like publishing and apparels, are operating in the province, especially in the Karachi division.

Reflecting an active manufacturing and existence of the largest city as Karachi, wholesale and retail trade, banking and insurance, and transport, storage and communication are well developed compared with the other provinces.

The two major ports and the sole factory of the Pakistan Steel Mills Company is located in the Karachi division.

3) N.W.F.P

A remarkable characteristic of NWFP is in electricity generation. A few big hydro-electric power stations at Tarbela and Kalabagh exist in the Province.

In agriculture, minor crops and livestock are relatively advanced than major crops.

Manufacturing and mining and quarrying are relatively under-developed in the province.

4) Baluchistan

The production of natural gas is the largest among the all provinces. In other economic activities, some minor crops (fruits) and livestock are only mentioned as relative developed activities for the province. These characteristics reflect its geographic particular.

Table 2.3.5 Gross Regional Product by Province in 1985-86

(Rs. million)

	Punjab	Sind	NWFP	Baluchistan	Pakistan Total
Agriculture	72,867	23,477	14,305	7,921	118,670
Major crops	42,300	12,080	4,365	1,566	60,311
Minor crops	11,383	2,092	3,076	2,039	18,590
Livestock	18,886	6,687	6,682	3,454	35,709
Fishing	235	2,568	11	855	3,669
Forestry	163	50	171	7	391
Mining and quarrying	3,596	3,499	246	4,107	11,448
Manufacturing	37,247	40,727	4,787	909	83,670
Large scale	24,332	31,994	3,536	672	60,534
Small scale	12,915	8,733	1,251	237	23,136
Construction	18,283	5,537	5,232	1,369	30,421
Electricity and gas distribution services	4,610	3,887	2,455	184	11,136
Transport,storage and communication	18,609	13,992	4,385	2,443	39,429
Wholesale and retail trade	42,732	24,507	9,779	4,027	81,045
Banking and insurance	7,086	6,417	981	371	14,855
Ownership of dwellings	7,588	4,727	940	368	13,623
Public administration and defence	24,895	9,798	5,930	1,430	42,053
Services	22,111	10,026	5,130	1,593	38,860
Gross regional product at factor cost	259,724	146,594	54,170	24,722	485,210

Note: Estimation by the Study Team based on various official statistics and data provided by PDD.

Punjab includes Islamabad, and NWFP includes FATA.

Source: JICA Study Team

Table 2.3.6 Percentage Distribution of GRP by Province in 1985-86

(%)

	Punjab	Sind	NWFP	Baluchistan	Pakistan Total
Agriculture	61.5	19.8	12.0	6.7	100.0
Major crops	70.1	20.0	7.3	2.6	100.0
Minor crops	61.2	11.3	16.5	11.0	100.0
Livestock	52.9	18.7	18.7	9.7	100.0
Fishing	6.4	70.0	0.3	23.3	100.0
Forestry	41.8	12.7	43.7	1.8	100.0
Mining and quarrying	31.4	30.6	2.1	35.9	100.0
Manufacturing	44.5	48.7	5.7	1.1	100.0
Large scale	40.2	52.9	5.8	1.1	100.0
Small scale	55.8	37.8	5.4	1.0	100.0
Construction	60.1	18.2	17.2	4.5	100.0
Electricity and gas distribution services	41.4	34.9	22.0	1.7	100.0
Transport, storage and communication	47.2	35.5	11.1	6.2	100.0
Wholesale and retail trade	52.7	30.2	12.1	5.0	100.0
Banking and insurance	47.7	43.2	6.6	2.5	100.0
Ownership of dwellings	55.7	34.7	6.9	2.7	100.0
Public administration and defence	59.2	23.3	14.1	3,4	100.0
Services	56.9	25.8	13.2	4.1	100.0
Gross regional product at factor cost	53.5	30.2	11,2	5,1	100.0
Per capita GRP (rupees)	4,782	6,525	3,614	4,191	4,968

Note: Summarized from Statistical Appendix 3-1 of PART II
Source: JICA Study Team

CHAPTER 3 GENERAL VIEW OF THE TRANSPORT SYSTEM

CHAPTER 3 GENERAL VIEW OF THE TRANSPORT SYSTEM

3.1 Transport Modes and Network

The transport system in Pakistan consists mainly of three kinds of transport modes for inter-regional movement both for passengers and freight; i.e. railways, roads and air lines.

The coastal shipping and inland water transport are not well-developed and only serve local movements in comparison with the other three.

Moreover the pipeline system transports natural gas and petroleum crude/products. The pipeline for natural gas is composed by the network centering around the Sui gasfield to provide that resource to the consumers in cities and some factories. The main pipeline system for petroleum transport is the Karachi-Multan pipeline, which was constructed for the crude oil transport to the proposed refinery in Multan and at present also transports petroleum products from refineries in Karachi to Multan.

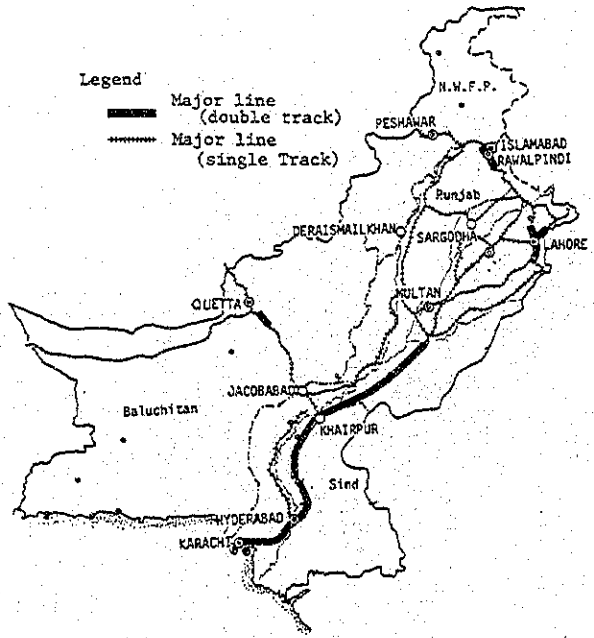
For international movement, both air and maritime transport play a significant role, especially air transport is for passenger and maritime for cargo. Though road transport has also an important feature as the international linkages between neighbourhood countries, such as through Asian Highways, the present status of international land transport in terms of transport volume is marginal.

As shown in Fig. 3.1.1, the existing transport network is formed as centering around the Punjab and Sind Provinces. The essential trunk line network of the country by railways, roads and air routes is devoted to the connection between lower-country and upper-country in accordance with the transport demand.

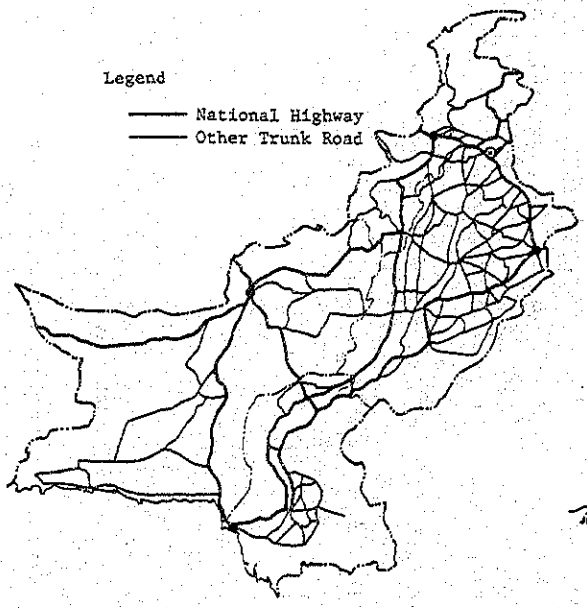
Fig. 3.1.2 shows the network service level by traffic zone, and the followings are noticed.

- The corridor along Karachi, Hyderabad, Sukkur, Multan, Lahore, Rawalpindi and Peshawar, is well-served by all transport modes.
- There are a few zones without any direct trunk network service, such as Sialkot, Bahawalnagar and Tharparkar near the Indian border.
- The frontier areas in the north, north-west and west of the country are served by air routes instead of other trunk land transport network.

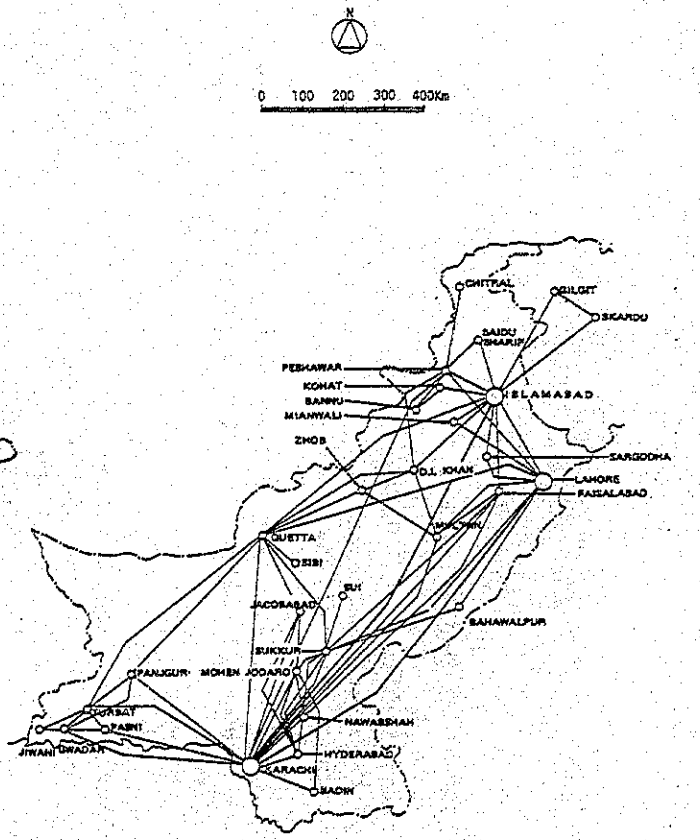
Fig. 3.1.1 Transport Network in Pakistan



Railways



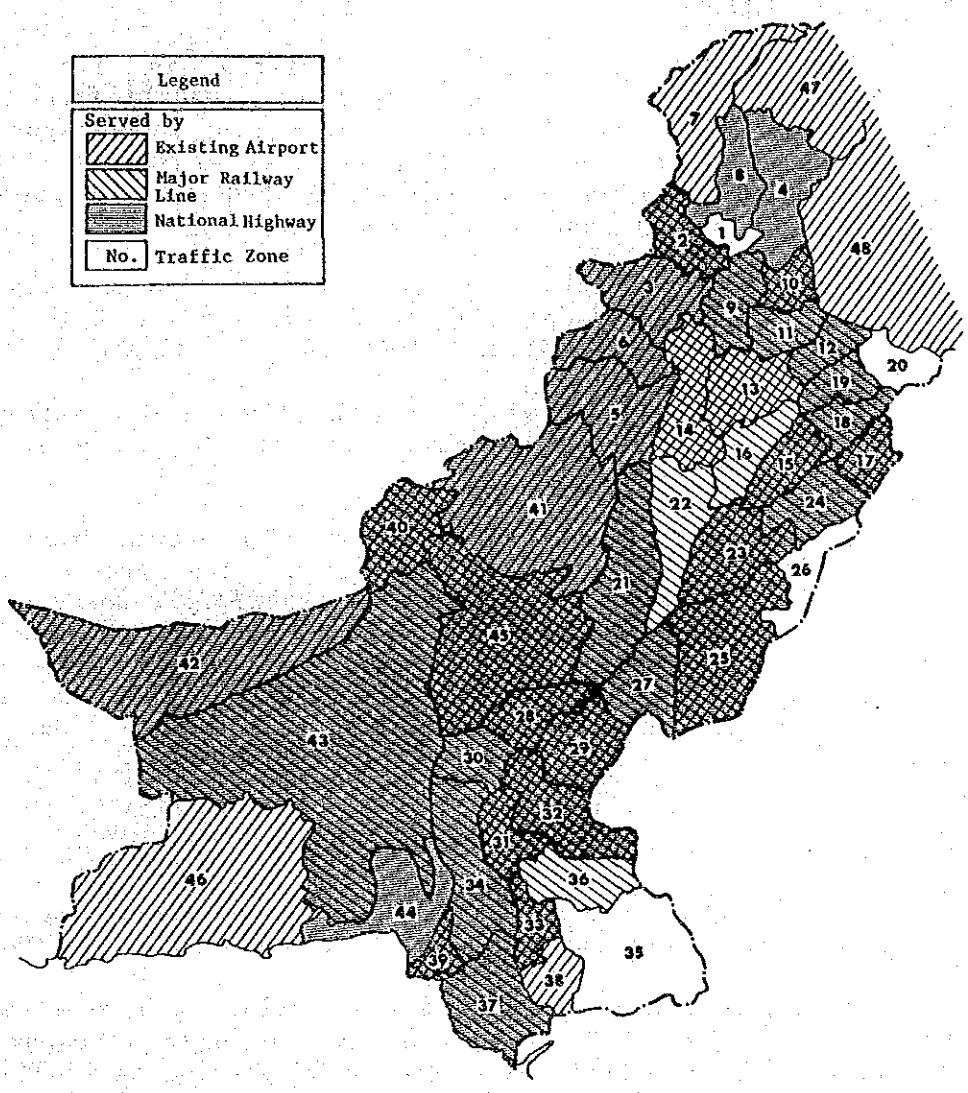
Roads



Air Routes

Source: JICA Study Team

Fig. 3.1.2 Network Service Level by Zone



Source: JICA Study Team

3.2 Historical Trends of Transport Demand

The overall macroscopic demand of domestic and international transport for the past 15 years is summarized as follows.

3.2.1 Domestic Transport

(1) Passenger Traffic

The total passenger traffic in Pakistan is 116 billion passenger-kms in 1985/86 and has increased steadily from 1971/72 at the rate of 6.8 percent per annum. This is transported by three means; railway, road and air, and each growth rate by mode is 4.1 percent by railway, 7.3 percent by road and 13.6 percent by air. The significant features by mode are:

Railway: Growth rate fluctuates between plus and minus and almost each five years indicate the high figures such as in 1972/73, 1977/78 and 1982/83.

Road: Except in 1975/76 growth rates show a steady plus trends and they have kept 8 to 10 percent in recent 5 years.

Air: Air transport showed very high growth from 1972/73 to 1977/78 and relatively low growth between 1977/78 to 1982/83. After 1983/84, however, again high growth rate of about 10 percent appeared.

The modal share, therefore, shows a certain change of the increase in road and air sector but a decrease in railways. (See Tables 3.2.1 and 3.2.2)

(2) Freight Traffic

The total freight traffic also indicated a continuous increase of 5.9 percent per annum and it reached 35 billion ton-km in 1985/86.

The modal split percentages show a substantial shift from railways to roads, a larger shift than that of passenger transport; the share by rail has sharply decreased to 24 percent in 1985/86 from 49 percent in 1971/72. That is, the comparison of total volume in 1971/72 and 1985/86 shows 1.07 times by railway and 3.34 by road in comparison with 2.23 in total.

Though the share by air transport is relatively small through these years, the growth rate is considerably high (12 percent per annum) and air transport would be expected to play a certain role in the future.

Table 3.2.1 Domestic Passenger Traffic by Mode

Year	Passenger-kms (million)				Share (%)		
	Railway	Road	Air	Total	Railway	Road	Air
1971/72	9,515	36,520	300	46,335	20.5	78.8	0.7
1972/73	11,069	40,577	325	51,971	21.3	78.1	0.6
1973/74	11,694	45,973	449	58,116	20.1	79.1	0.8
1974/75	12,354	49,860	559	62,773	19.7	79.4	0.9
1975/76	12,957	49,285	692	62,934	20.6	78.3	1.1
1976/77	13,199	51,765	849	65,813	20.0	78.7	1.3
1977/78	15,375	54,665	1,026	71,066	21.6	76.9	1.4
1978/79	16,713	57,219	1,093	75,025	22.3	76.3	1.5
1979/80	17,316	61,035	1,142	79,493	21.8	76.9	1.4
1980/81	16,387	65,991	1,205	83,583	19.6	79.0	1.4
1981/82	16,502	72,752	1,245	90,499	18.2	80.4	1.6
1982/83	18,031	79,513	1,340	98,884	18.2	80.4	1.6
1983/84	18,287	83,363	1,464	103,114	17.7	80.8	1.5
1984/85	17,806	89,952	1,615	109,373	16.3	82.2	1.5
1985/86	16,657	97,374	1,793	115,824	14.4	84.1	1.5

Source: Each Agency

Table 3.2.2 Growth Rate to the Previous Year, Domestic Passenger Traffic

(%)

Year	Railway	Road	Air	Total
1971/72	-	-	-	-
1972/73	16.3	11.1	8.3	12.1
1973/74	5.6	13.3	38.2	11.8
1974/75	5.6	8.5	24.5	8.0
1975/76	4.9	-1.2	23.8	0.3
1976/77	1.9	5.0	22.7	4.6
1977/78	16.5	5.6	20.8	8.0
1978/79	8.7	4.7	6.5	5.6
1979/80	3.6	6.7	4.5	6.0
1980/81	-5.4	8.1	5.5	5.1
1981/82	0.7	10.2	3.3	8.3
1982/83	9.3	9.3	7.6	9.3
1983/84	1.4	4.8	9.3	9.3
1984/85	-2.6	7.9	10.3	6.1
1985/86	-6.5	8.3	11.0	5.9
Annual Growth Rate				
1971/72 - 1975/76	8.0	7.8	23.2	8.0
1975/76 - 1980/81	4.8	6.0	11.7	5.8
1980/81 - 1985/86	0.3	8.1	8.3	6.7
1971/72 - 1985/86	4.1	7.3	13.6	6.8

Source: JICA Study Team

Table 3.2.3 Domestic Freight Traffic by Mode

Year	Ton-kms (million)				Share (%)		
	Railway	Road	Air	Total	Railway	Road	Air
1971/72	7,756	8,047	5	15,808	49.1	50.9	0.0
1972/73	8,363	8,940	6	17,309	48.3	51.7	0.0
1973/74	7,370	10,129	10	17,509	42.1	57.8	0.1
1974/75	8,544	11,001	11	19,556	43.7	56.3	0.1
1975/76	9,097	10,327	11	19,435	46.8	53.1	0.1
1976/77	7,857	11,438	15	19,310	40.7	59.2	0.1
1977/78	8,557	12,319	14	20,890	41.0	59.0	0.1
1978/79	9,375	14,904	15	24,294	38.6	61.3	0.1
1979/80	8,598	17,085	15	25,698	33.5	66.5	0.1
1980/81	7,918	18.207	16	26,141	30.3	69.6	0.1
1981/82	7,066	19,704	17	26,787	26.4	73.6	0.1
1982/83	7,323	21,200	19	28,542	25.7	74.3	0.1
1983/84	7,385	22,620	19	30,024	24.6	75.3	0.1
1984/85	7,203	24,126	24	31,353	23.0	76.9	0.1
1985/86	8,299	26,859	25	35,183	23.6	76.3	0.1
(A.C.G.R.) 1971-1986	(0.48)	(8.99)	(12.18)	(5.88)			

Source: Each Agency

3.2.2 International Transport

(1) Passenger Traffic

Total demand of international passenger transport indicates a high growth at a rate of 14 percent per annum (1972-1985) and the total number of passngers in 1985/86 was 2,900 thousand.

Air transport showed tremendously high growth rates up to 1978/79 (over 20 percent per annum), but in recent years they became very low because of the decreasing passengers to/from Middle-east.

In 1972/73 sea transport played an important role with the share of 28 percent of the total, but recently its share declined to a very negligible amount.

(2) Freight Traffic

The increasing trend of international freight traffic is relatively low (5.5 percent per annum) compared to the other traffic demand.

The sea transport at Karachi Port and Port Qasim has the dominant share in terms of tonnage since 1971/72, and its demand shows certain features corresponding with the port capacity; 10 million ton level from 1971/72 to 1977/78, 15 million ton level 1978/79 to 1983/83 and 20 million ton level after 1983/84.

Although air transport has a small share of international cargo traffic, less than one percent, it indicated continuous high increases from 1972/73 to 1982/83 (over 10 percent per annum).

Details are shown in Tables 3.2.5 and 3.2.6.

Table 3.2.4 International Passenger Traffic by Mode

Year	No. of Passengers (thousand)			Share (%)		Growth Rate to Previous year (%)	
	Air	Sea	Total	Air	Sea	Air	Sea
1971/72	-	57	-	-	-	-	-
1972/73	369	145	514	71.8	28.2	-	154.4
1973/74	465	110	575	80.9	19.1	26.0	-24.1
1974/75	632	100	732	86.3	13.7	35.9	-9.1
1975/76	881	62	943	93.4	6.6	39.4	-38.0
1976/77	1,192	76	1,268	94.0	6.0	35.3	22.6
1977/78	1,505	80	1,585	95.0	5.0	26.3	5.3
1978/79	1,814	64	1,878	96.6	3.4	20.5	-20.0
1979/80	2,093	51	2,144	97.6	2.4	15.4	-20.3
1980/81	2,356	37	2,393	98.5	1.5	12.6	-27.5
1981/82	2,553	39	2,592	98.5	1.5	8.4	5.4
1982/83	2,709	30	2,739	98.9	1.1	6.1	-23.1
1983/84	2,823	31	2,854	98.9	1.1	4.2	3.3
1984/85	2,838	29	2,867	99.0	1.0	0.5	-6.5
1985/86	2,821	29	2,850	99.0	1.0	-0.6	0
(A.C.G.R.) 1972-1986	(16.94)	(-4.71)	(14.08)				

Source: Each Agency

Table 3.2.5 International Cargo Traffic by Mode

Year	Tonnage (thousand)			Share (%)	
	Sea	Air	Total	Sea	Air
1971/72	9,036	-	-	-	-
1972/73	10,167	12	10,179	99.9	0.1
1973/74	10,368	17	10,385	99.8	0.2
1974/75	9,917	23	9,940	99.8	0.2
1975/76	9,846	28	9,874	99.7	0.3
1976/77	9,473	31	9,504	99.7	0.3
1977/78	11,565	39	11,604	99.7	0.3
1978/79	14,802	49	14,851	99.7	0.3
1979/80	14,558	59	14,617	99.6	0.4
1980/81	15,030	70	15,100	99.5	0.5
1981/82	16,547	73	6,620	99.6	0.4
1982/83	16,529	89	16,618	99.5	0.5
1983/84	17,681	92	17,773	99.5	0.5
1984/85	17,909	100	18,009	99.4	0.6
1985/86	20,253	115	20,368	99.4	0.6
(A.C.G.R.) 1972-1986	(5.93)	(18.99)	(5.48)		

Source: Each Agency

Table 3.2.6 Growth Rate to Previous Years, International Cargo Traffic

Year	Sea	Air	Total
1971/72	-	-	-
1972/73	12.5	-	-
1973/74	2.0	41.7	2.0
1974/75	-4.3	35.3	-4.3
1975/76	-0.7	21.7	-0.7
1976/77	-3.8	10.7	-3.7
1977/78	22.1	25.8	22.1
1978/79	28.0	25.6	28.0
1979/80	-1.6	20.4	-1.6
1980/81	3.2	18.6	3.3
1981/82	10.1	4.3	10.1
1982/83	-0.1	21.9	-0.0
1983/84	7.0	3.4	7.0
1984/85	1.3	8.7	1.3
1985/86	13.1	15.0	13.1

Source: JICA Study Team

3.3 Overall Review of the Five Year Plans

3.3.1 General

Pakistan has pursued six Five Year Plans since 1955 with the duration of Non-plan period, 1970-1978. These plans are the essential targets not only of physical infrastructure but also socio-economic, production and human resources developments.

The GDP growths achieved during each plan period and targeted by the Sixth Five Year Plan are summarized as follows:

Table 3.3.1 GDP and GNP Growths by Each Five Year Plan

	Annual Growth Rate (%)					
	First Plan (1955-1960)	Second Plan (1960-1965)	Third Plan (1965-1970)	Non-Plan Period (1970-1978)	Fifth Plan (1978-1983)	Sixth 1/ Plan (1983-1988)
Agriculture	2.1	3.8	6.3	1.7	4.4	4.9
Major Crops	2.3	4.7	9.1	0.9	4.8	3.6
Minor Crops	0.8	4.8	3.8	4.7	3.1	7.0
Others	2.2	2.1	2.3	2.0	4.3	6.0
Manufacturing	5.2	11.7	8.1	3.5	9.0	9.3
Large Scale	7.6	16.8	9.9	2.2	9.7	10.0
Other Sectors	3.6	8.3	6.6	6.2	6.0	6.4
GDP (FC)	3.1	6.8	6.7	4.2	6.0	6.5
GNP (FC)	3.0	6.8	6.8	4.9	6.3	6.3

Note: 1/ Target

Source: The Sixth Five Year Plan

3.3.2 Public Sector Outlays in the Sixth Five Year Plan

The Sixth Five Year Plan, following the Fifth Five Year Plan, had been planned for the period of July 1983 to June 1988. The plan aims at rapid and equitable development of the nation based on the prospected economic growth as mentioned above, and sectorial outlays are planned as in Table 3.3.2.

The 'transport and communication sector', considered as one of the most important sectors to provide necessary infrastructures to the growing demands of an expanding national economy, has a share of 20 percent of the total public sector expenditure which is next to 'energy sector' both in the Fifth and the Sixth Plans.

Table 3.3.2 Public Sector Outlays

(Rs. Million)

Sector	Fifth Five Year Plan		Sixth Five Year Plan	
	Allocation (Rs. million)	Composition (%)	Allocation (Rs. million)	Composition (%)
1. Agriculture	14,860	9.7	15,350	5.0
2. Water	15,770	10.3	32,100	10.5
3. Energy	38,830	25.4	116,500	38.2
4. Industry	25,400	16.6	20,500	6.7
5. Minerals	400	0.3	5,750	1.9
6. Transport and Communications	35,210	23.1	57,520	18.9
7. Physical Planning and Housing	9,000	5.9	15,500	5.1
8. Education and Manpower	5,640	3.7	19,850	6.5
9. Health	4,580	3.0	13,000	4.3
10. Population Welfare Programme	600	0.4	2,300	0.8
11. Others/Misc. Programmes	2,320	1.5	6,630	2.2
Total	152,610	100.0	305,000	100.0

Source: The Sixth Five Year Plan, 1983-88

Table 3.3.3 shows the sub-sectoral distribution of funds within transport and communications sector. The share of communications subsector increased from 12 percent in the Fifth Plan to 19 percent in the Sixth Plan. Within transport sector, roads and road transport has the highest share of the total both in the Fifth and the Sixth Plan periods and railways becomes the second in the Sixth Plan in place of ports and shipping in the Fifth Plan.

Table 3.3.3 Sub-sectoral Budget in T&C Sectors

(Rs. million)

Sub-sector	Fifth Plan			Sixth Plan		
Railways	5,566	(15.8)	(17.9)	10,000	(17.4)	(21.5)
Roads and Road Transport	11,816	(33.5)	(37.9)	23,420	(40.7)	(50.3)
Ports and Shipping	7,115	(20.2)	(22.8)	6,437	(11.2)	(13.8)
Air Transport	6,659	(18.9)	(21.4)	6,720	(11.6)	(14.4)
Communications	4,051	(11.5)	-	10,950	(19.0)	-
Total	35,207	(100.0)	(100.0)	57,527	(100.0)	(100.0)

Source: The Sixth Five Year Plan

Detailed composition by public and semi-public sector is indicated in Table 3.3.4. As shown in the table, approximately 63 percent is devoted to the public sector in the Sixth Plan and the shift of allocation from public sector to semi-public is significant.

Table 3.3.4 Detailed Budget Composition in Transport Sector

(Rs. million)

Sub-sector	Non-plan Period (1970-1978)		Fifth Plan (1978-1983)		Sixth Plan (1983-1988)	
I. Public Sector	10,828	(79.4)	22,483	(72.2)	29,154	(62.6)
• Railways	2,923	21.4	5,566	17.9	10,000	21.5
• Roads and Road Transport	6,268	46.0	11,521	37.0	16,270	34.9
• Ports & Shipping	1,230	9.0	4,382	14.1	1,884	4.0
• Civil Aviation	407	3.0	1,014	3.3	1,000	2.1
II. Semi-public Sector	2,803	(20.6)	8,673	(27.8)	17,423	(37.4)
• Roads	-		-		5,000	10.7
• Road Transport	6	0.0	295	0.9	2,150	4.6
• Ports & Shipping	765	5.6	2,733	8.8	4,553	9.8
• Air	2,032	14.9	5,645	18.1	5,720	12.3
Total (Transport)	13,631	(100)	31,156	(100)	46,577	(100)

Source: The Sixth Five Year Plan

3.3.3 Basic Strategies in the Sixth Five Year Plan

After reviewing the achievements during the Fifth Plan period, the basic strategies for the Sixth Five Year Plan were established by the following components.

1) Rational allocation of inland freight traffic between railways and roads from the viewpoint of minimizing the total transport cost.

2) Optimal utilization of the existing capacity of the system by rehabilitation and better maintenance of assets as well as enforcement of efficient operational techniques and managerial practices.

3) Accelerated cost recovery programmes, rational pricing policies for services provided by public sector; enlargement of self-financing by public corporations (semi-public sector), and induction of the private sector in programmes of roads, airlines and civil aviation.

The projections of transport demand are simultaneously made in accordance with the above-mentioned strategies as shown in Table 3.3.5.

Table 3.3.5 Transport Demand Target in the Sixth Plan

	Unit	1982/83	Sixth Plan (1983/84 - 1987/88)	Annual Compound Growth Rate (%)	
				Sixth Plan	(Fifth Plan) Actual
1. Railways					
· Passenger	MPKm	16,502	21,000	4.9	(4.1)
· Goods	MTKm	7,500	11,100	8.2	(-4.5)
2. Roads					
· Passenger	MPKm	79,513	106,885	6.1	(4.0)
· Goods	MTKm	21,200	29,294	6.7	(9.8)
3. Ports					
· Liquid Cargo	MT	8.400	11.449	6.4	(6.3)
· Dry Cargo	MT	8.958	12.915	7.6	(10.8)
4. Airlines					
Domestic					
· Passenger	MP	4.092	6.423	9.4	(8.8)
· Freight	MT	0.031	0.069	18.0	(2.1)
International					
· Passenger	MP	2.671	3.777	7.2	(16.4)
· Freight	MT	0.079	0.126	9.8	(15.2)

Source: The Sixth Five Year Plan

3.3.4 Overview of the Sixth Five Year Plan Progress

Since the detailed review of the plan is conducted by each sub-sector study in Part III, the outline of the mid-term review is summarized from the two aspects in this section.

(1) Transport Demand by Railways and Road

One of the essential key factors of the Plan is the adequate modal split between railways and road. The actual demand in the first three years of the Plan is estimated as follows:

Though the total volume of both passenger and freight transport demand in terms of pass-kms and ton-kms is exactly the same as that projected, at the annual growth rate of 5.9 percent for passenger and 7.0 percent for freight respectively.

While, by mode, railway could not achieve the target both in passenger and freight transport, 87 percent of the target. The modal share, therefore, shifted from railway to road transport in contrast with the target.

Table 3.3.6 Review of Traffic Demand, Land Transport

(Million)

		Railways	Road	Total
1982/83 Bench Mark	Ton-km	7,500 (26)	21,200 (74)	28,700 (100)
	Pass-km	16,502 (17)	79,513 (83)	96,015 (100)
1987/88 Target	Ton-km	11,100 (27)	29,294 (73)	40,394 (100)
	Pass-km	21,000 (16)	106,885 (84)	127,885 (100)
1985/86 1/ Target	Ton-km	9,500 (27)	25,753 (73)	35,253 (100)
	Pass-km	19,049 (17)	94,970 (83)	114,019 (100)
1985/86 2/ Actual	Ton-km	8,299 (24)	26,859 (76)	35,158 (100)
	Pass-km	16,657 (15)	97,374 (85)	114,031 (100)
Actual / Target	Ton-km	0.874	1.043	0.997
	Pass-km	0.874	1.025	1.000

Note: 1/ Calculated by interpolating between 1982 to 1988.
2/ The Study Team
3/ Figures in parentheses indicate modal share.

Source: Mid-Plan Review

(2) Estimated Expenditures

The performance of the Plan is also analyzed from the viewpoint of budget utilization as shown in Table 3.3.7.

These figures include the expected amount in 1987/88, since this year is the final year of the Plan, and in general the utilization of budget seems to be insufficient to the original allocation. The utilization percentage is higher in semi-public sector than public sector, 94 percent and 77 percent respectively. This figure in semi-public, however, is nominal and it becomes almost the same as in public sector in consideration of the original allocation to the Second Airlines shown in the note of the table.

Most of the sub-sectors does not reach the level of 80 percent of the original allocation except for FWO, Roads in Special Area and Provincial Roads & Road Transport in public sector; CAA and PIA in Semi-public sector.

Table 3.3.7 is also summed up as in the following Table 3.3.8.

Table 3.3.7 Sixth Plan Allocation and Utilization (Transport only)

(Rs. million)

	Sixth Plan Allocation (Gross)	Estimated Expenditure up to 1985/86	Total Estimated Expenditure during Whole Sixth Plan Period	Utilization Percentage (%)
I. Public Sector				
1. Pakistan Railways	10,000	4,008	6,930	69.3
2. Civil Aviation	1,000	378	558	55.8
3. Ports & Shipping	1,884	707	1,154	61.3
4. National Highways	5,959	2,022	4,498	75.5
5. NLC	-	102	162	-
6. FWO	170	195	259	152.4
7. Roads in Special Areas	1,930	978	1,964	101.8
8. Research	70	15	50	71.4
9. Provincial Roads & Road Transport	5,541	2,862	4,917	88.7
Sub-total (Public)	26,554	11,267 (42.4)	20,492	77.2
II. Semi-public Sector				
1. Road Transport	2,150	-	550	25.6
2. KPT	1,553	332	175	11.3
3. PNSC	3,000	-	-	0
4. CAA	3,000	1,533	2,233	74.4
5. PIA	2,720 1/	7,459	8,763	322.2 (161) 1/
Sub-total (Semi-public)	12,423	9,324 (75.1)	11,721	94.3 (77) 1/
Total (Transport only)	38,977	20,590 (52.8)	32,213	82.6 (77) 1/

Note: 1/ In the original Sixth Plan other Rs. 2,721 million was allocated to the Second Airlines, but it has been suspended during the plan period.

Source: PDD and Mid-Plan Review

Table 3.3.8 Sixth Plan Budget Utilization

	Original Allocation (Rs. million)	Estimated Expenditure (Rs. million)	Utilization (%)
I. Public Sector			
• Railways	10,000	6,930	69.3
• Roads and Road Transport	13,670	11,850	86.7
• Ports & Shipping	1,884	1,154	61.8
• Civil Aviation	1,000	558	55.8
II. Semi-public Sector			
• Road Transport	2,150	550	25.6
• Ports & Shipping	4,553	175	3.8
• Air	5,720	10,996	192.2
	(8,441)		(130.3)
Total	38,977	32,213	82.6
	(41,698)		(77.3)

Note: Figures in parentheses are with consideration of the allocation to the Second Airlines of Rs. 2,721 million.

Source: PDD

3.4 Energy Consumption by Transport Sector

In order to clear the position of transport sector, various studies were carried out from the viewpoints of economic activity, government budget allocation, labour force composition, and so on. These discussions are conducted in the following other chapters, and the preliminary analysis from the aspect of energy consumption which is summarized as follows:

Table 3.4.1 shows the energy consumption by sector from 1980/81 to 1985/86 in terms of tons of oil equivalent (TOE). Total energy consumption is increasing at the rate of 7.6 percent per annum, while that by transport sector is 5.7 percent. The share of transport sector, therefore, decreases from 20 percent in 1980/81 to 18 percent in 1985/86 in spite of the steady increase of transport demand.

Table 3.4.1 Energy Consumption by Sector

(Thousand TOE)

Sector	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86
Domestic	1,625	1,938	2,216	2,598	2,918	3,274
Commercial	414	457	470	538	585	614
Industrial	4,092	4,453	4,550	4,836	5,196	5,538
Agriculture	693	692	775	814	891	920
Transport	2,582 (19.8)	2,846 (19.9)	2,996 (19.6)	3,180 (19.4)	3,358 (18.3)	3,397 (18.1)
Power	2,153	2,272	2,505	2,592	2,995	3,136
Fertilizer	530	723	750	758	772	772
Other Govt.	934	934	1,006	1,043	1,134	1,139
Total	13,022	14,314	15,270	16,359	17,849	18,791

Note: Figures in parentheses indicate percentage composition.

Source: Energy Year Book, 1986

Since transport sector mostly depends on the petroleum energy among all the energy resources, the petroleum energy consumption by sector is tabulated in Table 3.4.2. As shown in the table, transport sector is the largest sector in petroleum consumption with the share of almost half to the total. The yearly trend, however, show the declining tendency same as that in all energy resources; from 58 percent in 1980/81 to 48 percent in 1985/86.

Table 3.4.2 Sectorial Consumption of Petroleum Products

(Thousand TOE)

Sector	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86
Domestic	517	544	594	679	748	800
Industry	261	304	392	689	814	946
Agriculture	179	124	161	173	219	243
Transport	2,487 (57.8)	2,745 (56.6)	2,890 (52.4)	3,067 (50.3)	3,239 (49.0)	3,410 (48.3)
Power	183	442	754	766	944	1,004
Other Govt.	679	688	723	726	649	654
Total	4,307	4,847	5,514	6,100	6,615	7,057

Note: Figures in parentheses indicate percentage composition.

Source: Energy Year Book, 1986

On the other hand, the consumption of electricity by Pakistan Railways electric traction shows declining trend of 10,472 TOE in 1980/81 to 8,568 TOE in 1985/86.

The sectorial consumption of petroleum products in other industrial countries is shown in Table 3.4.3, for reference.

Table 3.4.3 Sectorial Consumption of Petroleum Products in Major Industrial Countries, 1984

(Million TOE · %)

	Transport	Industry	Others	Non-energy	Power	Total
Japan	55.2	51.8	38.9	8.6	68.0	222.4
	(24.8)	(23.3)	(17.5)	(3.8)	(30.6)	(100)
West Germany	41.5	20.9	36.8	5.2	7.2	111.6
	(37.2)	(18.8)	(32.9)	(4.6)	(6.5)	(100)
France	33.8	17.0	22.6	3.4	8.8	85.5
	(39.5)	(19.8)	(26.5)	(3.9)	(10.2)	(100)
U.S.A.	450.3	77.3	106.5	44.9	36.3	715.3
	(63.0)	(10.8)	(14.9)	(6.3)	(5.1)	(100)
England	35.8	13.1	8.9	3.5	26.7	88.0
	(40.7)	(14.9)	(10.1)	(4.0)	(30.3)	(100)
Italy	26.1	14.1	16.8	2.6	19.8	79.5
	(32.9)	(27.8)	(21.1)	(3.3)	(25.0)	(100)
Pakistan	3.2	0.8	1.0	0.6	0.9	6.6
	(49.0)	(12.3)	(14.6)	(9.8)	(14.3)	(100)

Source: OECD, Energy balance of OECD countries

3.5 Present Problem Areas

The detailed studies in the existing condition by each sub-sector are carried out in the Part III of this report, and some characteristics are summarized as follows:

3.5.1 General

The transport sector is considered as one of the most important sector for the national economic activities, and in the Five Year Plans the second largest amount of budget has been allocated to this sector next to the energy sector.

The actual utilization, however, in the Sixth Five Year Plan is less than 80 percent in terms of budget allocation, and this is not sufficient to healthy development of the sector.

Although the total traffic demands have almost reached the prospected demand to cope with the developing economic activities, the modal share between railway and road has been biassed against the desirable share from the viewpoint of minimizing the total transport cost.

The capacity of the existing transport facilities was examined from various aspects and it was found that there were certain rooms with some necessary measures to utilize the present assets.

In the future, however, all the facilities will be required to argument their capacity to cope with the increasing transport demand.

3.5.2 Railway

The existing line capacity from the viewpoint of ground facilities of the main lines, according to theoretical analysis by the Study Team, has enough room along major sections between Karachi and Lodhran because of the double-track. Some sections, while, with single track already has reached its capacity in terms of operatable number of trains. As for the rolling stock, though there are many old-aged locomotives and wagons, certain rooms of 5 to 10 percent are found both in locomotives and wagons/coaches compared to the existing transported traffic volume, if the sufficient parts and maintenance works are provided.

Meanwhile, the actual transport by railway shows deteriorating features such as:

1) decreasing passenger demand in the shorter distance transport by advantageous bus service.

2) unfeasible operation in passenger train services within about 500 kms of train distance.

3) decreasing transport modal share in major commodities such as cement, wheat and paddy, between NLC (National Logistic Cell)

4) inconvenient services to the users in freight transport such as transport time, frequency and delivery/collection services in comparison with lorry.

Though, more or less these results are due to the inadequate improvement of facilities and operating/management systems by the relatively insufficient budget allocation to the railway, the following counter measures seems to be necessary.

- full utilization of the existing facilities
- reasonable fare/tariff structure
- modernization of facilities and rehabilitation/maintenance towards the long-term target
- improvement of service from the viewpoints of users
- encouragement of advantages in the longer haulage of freight transport which is analyzed clearly in the Study.

As a result of these counter measures, it is expected that the economically desirable modal share between railway and road transport will be implemented to cope with the demands required.

3.5.3 Road

The trunk road network in Pakistan, which consists of 18,300 kms of national and provincial highways, serves major areas of the country.

The network configuration itself is almost adequate to cope with the traffic movement required by the economic activity.

While, the condition of the trunk road facilities is found to be insufficient from various engineering points-of-view. The pavement condition, for instance, of the roads is recognized as 'poor' by the site reconnaissance survey in the Study.

That is, approximately 80 percent of the total trunk roads with a length of 18,300 kms belong to 'poor' group in the surface condition, but only a few percent of the total length belongs to 'good' and 'fairly good' condition.

Other problems, moreover, are also found in the inadequate design standards and the obsolete construction procedures.

In general, the problem areas in road planning are summarized in the following four factors:

1) The rapid traffic growth during the past 15 years and especially high proportion of heavy-laden trucks in the traffic flow,

2) Insufficient budget allocation and expenditure for road maintenance and reconstruction/rehabilitation compared to the required standards by traffic growth,

3) Inadequate planning and management of highway development, and

4) Inappropriate/obsolete road construction techniques.

3.5.4 Road Transport

The problem areas in road transport are summarized as follows:

1) No Clear Cut Policy in terms of:

- Privatization
- Nationalization
- Mixed Approach;

2) Lack of Coordination among Multifarious Transport Related Agencies

3) Over Regulation in Terms of Fare are Finances for Semi-Public Bus Corporations

4) Non Credit Facilities for Private Sector and High Interest Rate of Lenders

5) Oversupply of LCVs and Decrease in Large Size Buses

6) Road Safety, Quality of Vehicle Fleet and Accident Compensation

3.5.5 Ports

There are two major ports for international trade, Port Karachi and Port Qasim, the existing two ports have some problems as summarized in the following:

- Port Karachi:

  1) Lack of container yard and container handling equipment

  2) Unacceptable ship waiting time because of the insufficient berthing facilities including oil berths.

  3) Necessary improvement of inland access transport systems to/from the port, both road and railway transport.

  4) Inefficient customs clearance procedures only within port area and dry ports.

- Port Qasim:

  1) Rationalization of the current tariffs, higher than in Port Karachi, in order to encourage the utilization of existing port facilities.

2) Necessary improvements in port operating system such as the assignment of stevedoring companies made by PQA for the users convenience

3) Financial burden by dredging work at the entrance channel of the port

4) Insufficient utilization of 4,000 hectares of land reserved for industries in/next to the port area.

3.5.6 Inland Water Transport

There are navigable inland waterways from Qasim to Kalabagh and from Mithankot to Lahore, about 2,000 kms long, with some improvement and construction of canals and barrages along the river Indus.

Though the economic advantages on inland water transport are significant, there is no comprehensive feasibility study emphasizing economic and technical aspects to justify the investment plan for waterway improvement.

3.5.7 Shipping

The following points are indicated in order to solve the present problems in Pakistani maritime transport.

1) to increase the number of Pakistani fleet in order to cope with the required cargo demand both of containers and bulk cargoes in the future.

2) to maintain the fare share of 40 percent in the main liner conference by Pakistani ships as the target.

3) to replace the aged ships from the viewpoint of efficiency.

4) to prepare for general tendency of the containerization
   - to improve the container carrying capacity
   - to procure/arrange container handling equipment
   - to simplify the customs clearance system
   - to provide efficient container transport to/from the Inland

5) to arrange efficient fleets and solicit higher rated cargoes by Pakistani fleet in order to get better performance.

3.5.8 Airport/Aviation

The air transport sub-sector has been allocated with rather sufficient budget compared with other sub-sectors, and major three airports have been gradually improved in their facilities.

However, some problem areas are pointed out when the recent trends of passenger and cargo transport demand are taken into consideration.

1) to authorize and implement the development programme in accordance with the long-term master plan for the major three airports; Karachi, Lahore and Islamabad.

2) to install air traffic control radar as well as to improve the air navigational aids and air communication system.

3) to encourage the construction of feeder service airports from the viewpoint of the national unity.

4) to replace the aged fleet and introduce new vessels in accordance with the demand requirement.