10

TRANSPORT AND COMMUNICATION

10

TRANSPORT AND COMMUNICATION

A: PAKISTAN RAILWAYS

ORIGIN AND GROWTH

The history of transport is as old as that of man himself. But not so of the railways. The railways are a younger member of the transport family. On land, the sledge, the litter, the cart, the chariot, the tramway, borne by man or drawn by animal; and on water; the raft, the canoe and the boat moved by wood and wind - all these are much older means of transport. The modren railway was a development of the horse-drawn wagon or tramway, used in England in sixteenth to eighteenth centuries for haulage of minerals to rivers or ports.

In 1825 the first 'common carrier' steam railway was born when the Stockton and Darlington Railway was opened for the general carriage of goods.

The historic day for the Pakistan Railways is **13th MAY 1861**, when first railway line was opened between Karachi and Kotri, a distance of 169 kilimeters. On 10th April, 1862, the line was opened from Lahore to Amritsar, a distance of 58 kilometers.

The railway brought great benefits to the country. The railways opened up the interior, connected distant places, conquered time, boosted agriculture, carried products to far-off markets, helped in the establishment of industry, bridged untamed rivers, bored through inaccessible mountains, and contributed to the general well-being of the community.

Strategic lines were built for purely military purposes, irrespective of commercial considerations, though in later years some sections of these lines came to acquire commercial importance too. The First Anglo-Afghan War in the eighteen-forties and the annexation of the Punjab in 1849 brought the British power into direct contact with the frontier tribes and Afghanistan and opened a new chapter in British frontier policy. From then onward the North-West Frontier became the favourite theme of British civilians, soldiers and Viceroys.

The plains of the Punjab were separated from the Central Valley of Afghanistan, the deserts of Balochistan and the Russian Empire in the north, by ranges of mountains intersected by passes which had always been regarded as the most vulnerable points of the Indo-Pakistan sub-continent. From these passes, since the earliest days of recorded history, had poured a long succession of invaders into India. Through the Khyber came the armies of Darius, Alexander, Mahmud, Changez, Tamerlane, Babar, Nadir Shah and Abdali. The armies of Alexander came from the Buner and Malakand sides also and Mahmud took the routes of Paiwar Kotal up the Kurram way and those of the Gomal and the Tochi too. History underlined that the control of these passes by British forces was necessary, and it was decided that for marching forward into Afghanistan there should be lines of occupation along:

- The Khyber Pass to Landi Kotal
- The Kurram Valley to Kurram
- The Gomal Valley to Wana

- The Zhob Valley to Lora Lai
- The Bolan Pass to Quetta
- The Harnai route to Pishin and Chaman
- The Balochistan route to Nushki

The most important strategic lines and the most interesting too were the Sindh-Pishin Railway, the Bolan Railway and the Khyber Railway. During World War I, the need for a railway link with Iran was also felt and another strategic line - the Nushki Extension Railway - was built in those years. The Bolan Pass, leading to Quetta and Kandhar, and the Khyber Pass, leading to Kabul were the two important "Gates of India".

The British ruled India till 14th August, 1947, on which date it was divided into two sovereign states, - Pakistan and India. In 1947, North Western Railway, named as such at that time, had 11,088 route-kilometers of which 3,043 were transferred to India leaving 8,045 to Pakistan. The route-kilometers increased to 8,557 with the merger of part of the Jodhpur Railway of undivided India falling in Sindh. In February, 1961, the Railway was renamed as Pakistan Western Railway and in May, 1974 as Pakistan Railways. Pakistan Railways, now comprises 8,774.87 route-kilometers, 781 stations and 42 train halts in 1997

Pakistan Railways forms the life line of the country by catering to its needs for large scale movement of freight as well as passenger traffic. It not only contributes to its economic growth but also promotes national integration. Details are given in Table 10.8

Chronological Developments

1861 Karachi-Kotri Section, 169 Kilometers

1862 Lahore-Amritsar Section, 58 Kilometers

1947 North Western Railway (then) Route-Kilometers 8045 Km. which increased to 8557 Km with the merger of Jodhpur Railway falling in Sindh.

1952 Construction of Heavy Repair & Diesel Electric Workshop at Rawalpindi.

1954 Railway line was extended to Mardan - Charsadda section, which was opened on 25th August of that year.

1956 The 2'-6" Jacobabad-Kashmore line was converted to 5'-6" broad gauge.

1961 Northern Western Railway renamed as Pakistan Western Railway and renamed as Pakistan Railways in 1974.

1963 Karachi Circular Railway was opened for goods traffic linking Drigh Road and Drigh Colony Station with Wazir Mansion.

1964 Karachi Circular Railway was opened for Passengers Traffic

1967 Railway Hospital (100 bed) was completed at Rawalpindi.

---- Hyderabad Mirpurkhas section was converted from Meter Gauge to Broad Gauge.

---- Construction of Kot Adu-DG Khan-Kashmore Rail Link (306 Km longest construction since independence).

1968 Goods Traffic opened between Kot Adu & DG Khan. Passengers Traffic between Kot Adu-DG Khan (Ist Phase)

1970 Electric Traction on Lahore-Khanewal section 286 Km. in length with 29 electric locomotives was introduced.

1971 Carriage Factory at Islamabad (capacity to manufacture 150 Passenger Coaches) was constructed.

1972 DG Khan-Kashmore (IInd Phase) goods traffic opened.

1973 DG Khan-Kashmore (IInd Phase) Passengers Traffic opened.

1974 Lahore Dry Port to provide direct foreign trade facilities. Later more Dry Ports at Rawalpindi, Peshawar, Larkana, Multan ,Faisalabad and Quetta.

1980 Kotri Bridge on River Indus providing double & single line track between Guddu and Kotri: strengthening the double track between Karachi-Lodhran (843 Km.)

1980 Marshalling Yard Pipri (can handle 2500 Wagon per day with a scope of 5000 W.P.D.)

1981-82 Four Concrete Sleeper Factories at Khanewal, Kohat, Kotri and Shaheenabad.

1986 Provision of vhf/uhf microwave telecommunication system spreading over 2200 Km between Karachi and Rawalpindi on main line excluding Lahore-Khanewal Section.

1993 First Locomotive was rolled out by the locomotive factory at Risalpur whose capacity is to manufacture 25 locomotives on single shift basis and has manufactured so far 23 locomotion.

Other Achievements

- Improved signalling system on main lines and commercial branch lines
- Computer system for reservation
- Fast non-stop passengers services
- Lower class airconditioned accommodation
- Closed circuit TV in passenger coaches and main stations
- A new building for DS Office, Peshawar (1997)
- Wagah Station re-built (Indo-Pak border)

B: NATIONAL TRANSPORT RESEARCH CENTRE

The nucleus of the National Transport Research Centre was established within the Planning Commission in June, 1964. By 1985, it attained sufficient strength and was renamed as the Operational Research Wing. At the same time it was decided to add a Road Research Wing which has since been commissioned. An Urban Transport Wing has also been established to develop idigenous expertise in preparing comprehensive Urban Transportation Plans. A Railway Research Wing and a Training Wing are being added. In addition, a Multi-Modal Transport Programme has been launched to help facilitate the international trade. The Centre is housed in its own building in H-8. The administrative control of the Centre has been transferred to the Ministry of Communications with effect from 8th October, 1992.

The Centre is guided by an Inter-Ministerial Committee under the Chairmanship of Minister for Communications with members drawn from the Ministries of Finance, Planning, Railways, Civil Aviation, Science and Technology and four provinces. The Inter-Ministerial Committee is assisted by three Sub Committees namely, Research Coordination Committee, Research Advisory Committee and Cost Appraisal Committee. The Centre has five main Wings, namely Operation Research, Road Research, Urban Transport, Railway Research and Training. The

Centre has completed 201 research studies and 15 are in hand up to 31.7.1997.

Statistical data plays a key role in planning research and policy formulation at regional and national levels. Research, plan formulation or policy framework requires reasonable amount of data initially for carrying out indepth analysis essential for accurate inferences. The data requirements increases exponentially as the economy grows and develop complex interdependencies. National Transport Research Centre since its inception, as one of its highest priorities, undertook the task of collection of required data. Time series data for all modes of transport have been collected since 1947 and is being regularly updated, published and computerised.

One of the most important highway planning data pertains to traffic counts. The Centre has regularly been collecting, compiling, analysing and publishing traffic data since 1986, through 20 Permanent Traffic Count Stations, 10 on National Highways and 10 on other major roads in the country. The data from these stations has been successfully used for evolving Traffic Factors for Pakistan including hourly, daily, monthly and seasonal variations, Peak-Hour Factor; Directional Distribution; Vehicular Composition, Traffic Growth etc.

Informatiuon on origin-destination is specifically required for Comprehensive Transport Planning. It is useful for general planning and operation of transport services in the country as well. The data concerning road transport can only be obtained by means of periodic surveys. The first survey was carried out in 1968-69 with the assistance of foreign consultants and formed basis of comprehensive transport planning studies by TRACO. The second and third surveys has been carried out by the National Transport Research Centre in 1980 and 1990 with its own resources without any outside help. It forms the basis for the Five Year Plans. Details about roads and vehicles on road are given in tables 10.8 and 10.9 respectively.

C: NATIONAL HIGHWAY AUTHORITY

At the time of independence, the total length of roads in Pakistan was 50,367 km. Out of this 9,809 km length was of high type and 40,558 km of low type. During the last 50 years, the road length has increased considerably and by now(1996-97) the total length of roads in Pakistan stood at 228206 km (124711 km of high type and 103495 km of low type), overall increase of over 453% but about 1271% increase in high type roads and 252% increase in low type roads. This clearly shows that road communication is playing a vital role in the transportation system of Pakistan. For the past several years, the railway is unable to take its share of ever increasing transportation load, which is being shifted to roads. At present the rail/road traffic load ratio is 12:88 which indicates the need for massive investment in road section to take upto this extra load.

In 1971, the then Government gave a new concept of communication system in the country and established the Indus Highway Board with objectives of planning, construction and maintenance of highways on the basis of commercial viability as well as strategic needs of Pakistan. Emphasis was laid on linking Karachi with the Northern parts of the country. The increasing economic activities made it imperative that the Indus Highway Board be upgraded as National Highway Board so that it could complete assignements without any interruption. Later, the National Highway Board was remodelled as the **National Highway Authority (NHA)**, in

June, 1991, with a high level governing body which is called the National Highway Council.

It took over the construction and maintenance of national Highways. Realizing the importance of an adequate and efficient highway network, a Gigantic Programme for construction of Motorways and other major highways were undertaken.

National Highway Authority is responsible for the development and maintenance of eight National Highways having a total length of 6,587 Km. The length of National Highways is only 6% of the entire metalled road net work of the country but they carry 63% of the road traffic of the country. The preferred mode of transportation in Pakistan is road transportation carrying 92% of passengers and goods traffic. The present road net work is not adequate to meet the requirements.

The newly liberated Central Asian Republics (CAR) desire to promote economic activities through the deep sea ports of Karachi and Gawadar for which quality construction of highways in an imperatiave. The construction of Economic Cooperation Organization (ECO) highway (N-40), linking Pakistan, Iran and Turkey and N-25 and improvement and extension of the Korakorum Highway (N-35) is the part of countrywide national highways programme for Transit Trade Traffic with China and CAR. The Government of Pakistan has concluded Transit Trade Agreements with Central Asian Republics and their implementation will consequently give the national highways of Pakistan an international status. Another important communications project is the construction of 635 km long Liari - Ormara - Pasni - Gawadar - Jiwani Makran coastal road which will prove an effective link between the ports.

National Highways, their names, numbers and lengths are given below in table 10.1.

Table 10.1 Highways Names, Designations and Lengths

Highway No	Name of Highway	Length (km)
N - 5	Karachi-Multan-Lahore-Torkham	1762
N - 25	Karachi-Khuzdar-Quetta-Chaman	799
N - 35	Hassanabdal-Gilgit-Khunjrab	806
N - 40	Lakpass(Quetta)-Nokundi-Taftan	610
N - 50	Kuchlak-Zhob-D.I. Khan	531
N - 55	Jamshoro-Larkana-Peshawar	1247
N - 65	Rohri-Sibi-Quetta	385
N - 70	Qila Saifullah-DG Khan-Multan	447
	Total:	6587

National highways are briefly described as under.

1. **N-5 (Karachi - Lahore - Peshawar - Torkham)**

National Highway N-5 having a length of 1,762 km is the main North-South link and carries about 60% of the entire traffic of the country. N-5 is the life line of Pakistan and 80% of economic activity is in its corridor. There is an urgent need of upgrading this road to a 4-lane facility. Some parts have been dualised and up graded where as the work on the others is going on.

2. **N-25 (Karachi - Khuzdar - Quetta - Chaman)**

This road provides a shortest route from Karachi Port to Central Asian States via Afghanistan. Starting from Karachi, and covering only 18 kilometers in Sindh, this road, leads to Chaman, a border town on Afghanistan frontier, passing through 781 kilometers of Balochistan. It is 12 feet (3.65 m) wide and is of low specifications. It requires improvements, widening and strengthening according to modern specifications.

3. **N-35 (Hassanabdal - Gilgit - Khunjrab)**

A symbol of determination and friendship of two neighbouring countries, Pakistan and China, is the Korakoram Highway (KKH). Covering 14 kilometers in the Punjab, 176 kilometers in NWFP, mostly along the "Father of the waters" and 616 kilometers in Northern areas, through scenic views of Hunza, passing through Pasu, Sost, etc., reaches the heights of Khunjrab. This highway is and will be used for transit traffic of China as well as Central Asian Republics.

4. **N-40 (Sariab - Dalbandin - Nokundi - Taftan)**

National Highway N-40 starts from Lakpass near Quetta and passing through Noshki, Dalbandin, Nokundi, ends at Taftan near Pakistan/Iran border, having a length of 610 Km. This highway also makes a part of ECO Highway linking Pakistan with Iran and Turkey.

5. **N-50 (D.I. Khan - Zhob - Kuchlak)**

Originating from N-55, at D.I. Khan, covering a distance of 143 kilometers in NWFP, enters in Balochistan and passing through Zhob, reaches Qila Saifullah where N-70 merges in it. It further reaches Kachlak and merges in to N-25, covering a distance of 388 kilometers in Balochistan.

6. **N-55 Indus Highway (Jamshoro-Larkana-D.G.Khan-Peshawar)**

The second largest highway after N-5, the Indus Highway (N-55) is an alternate North-South link. Travelling along the Indus river a distance of 491 kilometers in Sindh, and 360 kilometers in Punjab, it reaches D.I. Khan. Further streching 396 kilometers in NWFP, connecting D.I. Khan, Bannu and Kohat, almost all southern NWFP, it reaches Peshawar, making a short cut of about 400 kilometers as compared to N-5. The Overseas Economic Cooperation Funds of Japan (OECF) is financing the project on a long term soft loan. The Jamshoro-Peshawar length is 1247 km and involves upgrading of the existing inter-city road to a 2-lane asphalt concrete road with a tunnel near Kohat.

7. **N-65 (Rohri - Sibi - Quetta)**

Originating from N-5 at Rohri, crossing N-55 on the right bank of the Indus river, connecting Jacobabad and Sibi, this highway merges with N-25 near Quetta, covering 89 kilometers of Sindh and 296 kilometers of Balochistan.

8. **N-70 (Multan - D.G. Khan - Qila Saifullah)**

Starting from Multan, travelling a distance of 186 kilometers in the Punjab, enter in Balochistan and comes to an end at Qila Saifullah after covering a further distance of 261 kilometers where it merges with N-50.

The provincial break up of National Highways is given below in table 10.2.

Table 10.2 Provincial Breakup Of National Highways

Designated	Name	Punjab	Sindh	Baloch-istan	NWFP	N. Area	Total Length
N-5	Karachi-Torkham	1023	612	0	127	0	1762
N-25	Karachi-Chaman	0	18	781	0	0	799
N-35	H.Abdal-Khunjrab	14	0	0	176	616	806
N-40	Sariab-Taftan	0	0	610	0	0	610
N-50	Kunchlak-D.I.Khan	0	0	388	143	0	531
N-55	Jamshoro-Peshawar	360	491	0	396	0	1247
N-65	Rohri-Quetta	0	89	296	0	0	385
N-70	Qila Saifullah-Multan	186	0	261	0	0	447
Total length (Kilometres)		1583	1210	2336	842	616	6587
Province wise % age		28.9	22.61	26.15	12.42	9.92	100

MOTORWAYS

1. Islamabad - Peshawar Motorway (M-1), 155 Km is planned to be constructed in near future. The work on the project has been started in December 1997. Expected completion date is 2000.

2. Islamabad-Lahore Motorway (M-2), 339 Km in length, is operational now. The work was awarded to M/s DAEWOO of Korea in March, 1992.

3. Pindi Bhattian - Faisalabad Motorway (M-3), (53 km).

4. Faisalabad - Multan Motorway (M-4), (243 km).

5. Multan - D.G. Khan Motorway (M-5), (85 km). This is further extension of Lahore-Islamabad Motorway upto D.G. Khan (381 Km). This has been awarded priority among the pre-construction state projects. The M-3 project takes off from Pindi Bhattian on Lahore-Islamabad Motorway and terminate at D.G. Khan on Indus Highway after bypassing Faisalabad, Toba Tek Singh, Shorkot, Khanewal and Multan. Two bridges on riever Chenab and Indus will also be constructed.

6. Gawader - Ratodero Motorway (M-6), 895 km is being designed as a 4 lane expressway. Initally two lane highway will be constructed which will ultimately be converted into four lane expressway on generation of traffic in the future.

7. Karachi - Hub - Dureji - Kakar Motorway (M-7), 341 km in length, will be direct excess to Karachi from up country in addition to the existing network namely N-55 & N-5. Total length of this section will be approximately 341 km. Initially a 2-lane will be constructed and additional lanes will be added later. Design criteria of the Pakistan Motorway is being adopted for this section of Motorway.

D: PORT QASIM - A MULTIFACETED PORT

Fifty Kilometers from the city of Karachi - the economic epicentre and megapolis of Pakistan - at the interface of a vast landscape and mangrove-dotted seascape is located port Muhammad Bin Qasim, the first industrial and multi-purpose deepsea Port of Pakistan with potential to be a state-of-the-art commercial-cum-industrial park of the 21st Century.

Government of Pakistan established Port Qasim Authority (PQA) by an Act of Parliament on 29th June, 1973 to plan, design, develop, operate, manage and maintain 2nd seaport of Pakistan.

Foundation Stone for Port Qasim was laid on 5th August, 1976. The first berth, Iron Ore & Coal Berth(IOCB) was put into operation on 30th September, 1980. Seven multi-purpose berths with requisite supporting infrastructure and back-up facilities were available early 1983 for operation.

Total land area of port Qasim comprises 12000 Acres which is divided in to the following three zones.

1. North Western Industrial Zone (NWIZ) 2700 Acres
2. South Western Industrial Zone (SWIZ) 1000 Acres
3. Eastern Industrial Zone (EIZ) 8300 Acres

A Bulk Oil Terminal started operation in April, 1995 on Build, Own, Operate(BOO) basis, to handle imports of Furnace Oil. A two-berth Container Terminal through conversion of existing 3 berths is expected to start handling of gearless cellular container vessels early 2nd half of 1997. A checmicals jetty is being developed to start bulk handling and storage of chemicals and chemical products in the last quarter of 1997. Dedicated separate terminals on "Build, Operate, Transfer"(BOT) basis for handling LPG, Grain, Fertilizer, Edible Oil/Molasses have been planned for construction through private sector participation.

Since inauguration of operational activity in 1980, port facilities of PQA have acted as a catalyst and magnet to transform virgin sand dunes into distinct contours of industrial skyline of Greater Karachi. The magnitude of development and the momentum of mutation accomplished so for promise to elevate this area to the prime industrial park of Pakistan early next century. Total or greater part of the area can be developed as Special Zones, as for example in People's Republic of China and other countries in South-East Asia. Investments from different countries, with respective management skills, production system, work ethics, marketting and financial techniques would result in cross-fertilization of these fundamentals of economic development.

OPERATIONAL PERFORMANCE AS SEAPORT

Since inauguration of Iron Ore & Coal Berth (IOCB) in September, 1980, Port Qasim has handled by June, 1997 a cargo volume of 90 million tons carried by 3675 vessels, as detailed below in box 10.1.

Box 10.1 Port Performance

Cargo Handling At Port Qasim

Description	Cumulative Sept.80 to June,97 (Million Tonnes)
A. Multipurpose Terminal (Berths 1-7)	
Furnace Oil (Import)	8.43
Chemicals (Import)	0.19
Edible Oil (Import)	1.39
LPG (Import)	0.18
Crude Oil (Export)	1.44
Wheat (Import)	21.09
Rice (Export)	0.23
Sugar (Import)	0.23
Pulses (Import)	0.32
Jute (Import)	0.21
Others (Imp./Exp.)	3.95
TOTAL Multipurpose	46.86
B. Furnace Oil Terminal	
Furnace Oil (Import)	6.22
C. Iron Ore & Coal Berth (Iron Ore & Coal for Paksteel)	36.67
TOTAL Imports (Dry + Liquid)	76.36
TOTAL Exports (Dry + Liquid)	13.38
GRAND TOTAL	89.75
Number of Ships	3675

E: CIVIL AVIATION AUTHORITY

The Civil Aviation Authority is an official organisation to manage and develope civil aviation. The network of PIA covers 55 International and 37 domestic stations. Three private airlines, i. e., Shaheen, Bhoja and Aero Asia are also providing air travel services. Table 10.3 shows the airports which handled the airtraffic whereas table 10.11 gives the details of the air services by airlines.

Table 10.3 AIRPORTS/ACRODROMES WHICH HANDLED TRAFFIC, 1996-97

Sr. No.	Airport	Province	Status of The Airport/Acrodrome	Commence-ment
1.	Karachi	Sindh	International	@1947
2.	Islamabad/ Rawalpindi		International	1947
3.	Peshawar	NWFP	International	1947
4.	Lahore	Punjab	International	1947
5.	Quetta	Balochistan	International	1956
6.	Gwadar	Balochistan	International	1966
7.	Pasni	Balochistan	International	1966
8.	Multan	Punjab	Domestic	1960
9.	D.I.Khan	NWFP	Domestic	1960

10.	Faisalabad	Punjab	Domestic	1961
11.	Chitral	NWFP	Domestic	1961
12.	Gilgit	Northern Areas	Domestic	1962
13.	Skardu	Northern Areas	Domestic	1962
14.	Moenjodaro	Sindh	Domestic	1966
15.	Nawabshah	Sindh	Domestic	1966
16.	Sukkur	Sindh	Domestic	1966
17.	Hyderabad	Sindh	Domestic	1966
18.	Jiwani	Balochistan	Domestic	1966
19.	Panjgur	Balochistan	Domestic	1966
20.	Sui*	Balochistan	Domestic	1966
21.	Turbat	Balochistan	Domestic	1978
22.	Zhob	Balochistan	Domestic	1979
23.	Bannu	NWFP	Domestic	1983
24.	Mianwali	Punjab	Domestic	1985
25.	Jacobabad	Sindh	Domestic	1985
26.	Saidu Sharif	NWFP	Domestic	1985
27.	Bahawalpur	Punjab	Domestic	1986
28.	Dalbandin	Baluchistan	Domestic	1986
29.	Mirpur Khas	Sindh	Domestic	1987
30.	Khuzdar	Balochistan	Domestic	1987
31.	Muzaffarabad	Northern Areas	Domestic	1988
32.	Rawlakot	Northern Areas	Domestic	1988
33.	R.Y.Khan	Punjab	Domestic	1990
34.	Ormara	Balochistan	Domestic	1990
35.	Kohat	NWFP	Domestic	1990
36.	Parachinar	NWFP	Domestic	1993
37.	D. G. Khan	Punjab	Domestic	1995
38.	Sehven Sharif	Sindh	Domestic	1996

@ = Historic Commencement From 1935
* = Managed by Pakistan Petroleum

Table 10.4 AIR PILGRIMS BY ORIGIN AND SEX ,1997 (nos)

Prov/Sex.	Punjab	NWFP	Sindh	Bal.	FATA	AJ&K	NA	Pak.
Male	34568	8805	16367	5427	1038	745	521	67471
Female	32013	5154	12868	1757	419	497	62	52770
Total	66581	13959	29235	7184	1457	1242	583	120241

Table 10.5 HOURS FLOWN BY THE GENERAL AVAITION AIRCRAFT OPERATORS, 1995-96

General Aviation Operator	Hours
A. State Operators	
* Government Of Punjab	274
* Government Of Balochistan	524
* Government Of Sindh	201
* Department Of Plant Protection	94
* Oil & Gas Development Corporation	459
* W.A.P.D.A.	291
** Sub Total:-	1843

B. Flying Clubs

* Karachi Aero Club Ltd.	724
* Lahore Flying Club.	3247
* Multan Flying Club.	1388
* Rawalpindi Flying Club.	3626
* Peshawar Flying Club.	6582
* Quetta Soaring & Flying Club.	152
** Sub Total:-	15729

C. Private Operators

* M/S Agriculture Aviation Ltd.	-
* M/S Falcon Aviation Ltd.	-
* M/S Aircraft Sales And Services Ltd.	2925
* M/s Raji Aviation Ltd.	-
* M/s Kohistan Flying Academy	-
* M/s Schon Air(Pvt.) Ltd.	4160
* M/s Edhi Air Ambulance Service	610
* M/s Javed Air Services (Pvt.) Ltd.	-
* M/s Flight Express	-
* M/s Panjnad Aviation	13
* M/s Agha Khan Foundation	874
* M/s Wings Aviation Services (Pvt) Ltd.	31
* M/s Pakistan Aviators & Aviation (Pvt) Ltd.	463
* M/s TCS Aviation	113
** Sub Total:-	9189
*** Grand Total:-	26761

Box 10.2 PIAC AIRCRAFT FLEET, 31-3-1998

Type of Aircraft	No.	Type of Aircraft	No.
* B-747(Pax)	6	* B-747(Combi)	2
* DC-10	-	* A-300-B4	10
* A-310	6	* B-707 (Pax)	-
* B-707(Freight)	2	* B-720 B	-
* B-737	6	* Fokker-27	13
* Twin Otter	2	* 11-86 (Leased)	-
** Total:			47

Box 10.3 KEY FIGURES AIR TRAFFIC DURING THE YEAR 1995-96

Box 10.3a

Passengers (No.)	1995-96
International Terminal	4077,241
Domestic Terminal	9033,564
Transit	546,390
Total	13657,195

Box 10.3b Aircraft Movements (No.)	1995-96
Domestic	134,219
International	32,218
General	16,213
Local	62,569
Total	245,219

Box 10.3c Cargo and Mail (Metric Ton)	1995-96
Total Cargo	212,547
Total Mail	3,348.5
Total Cargo & Mail	215,895.5

F: TELECOMMUNICATION

The PT&T Department was established in August, 1947 which was responsible to run the services under the Telegraph Act, 1885. In 1962, the services were separated from the Post Office and new entity called Telegraph & Telephone (T&T) Department was established under Ministry of Communications. On 15 December 1990 Pakistan Telecommunication Corporation (PTC) was established to take over functions of PT&T Department. Its operations were governed by the PTC Act No. XVIII of 1991. The PTC was converted into Pakistan Telecommunication Company Limited (PTCL) on 1st January, 1996 through the Pakistan Telecommunication (Reorganisation) Ordinance No. XV of 1995, subsequently passed by the Parliament as an Act XVII of 1996. PTCL inherited all the assets and liabilities of the PTC.

In 1947 only 8,800 telephones were working in Pakistan. Only telegraph and plain telephone services based on old physical telegraph were available. Now the country has most modern services including telegraph, telephone, telex, data network, cellular mobile, paging, card pay phones, Internet and informatic services, nationally and internationally, through the latest technologies like Optical Fibre, Satellite, Microwave, Digital Radio Set (DRS), upgraded Coaxial Cable, VHF, UHF, Submarine Cables and VAST.

In 1947 only 5 automatic analogue old version exchanges were working in Pakistan. No city was directly linked nationally and internationally. In 1997, PTCL has more than 3.25 Million lines capacity out of which 80% are digitalized, 2.6 Million telephones working with 2446 exchanges, 756 NWD stations, 10,057 rural PCOs, 433 Telegraph offices, 5,203 international circuits, in the country. Main Fibre Optic Cable is 2738 Kms with subsidiary routes of 2100 Kms with 70,000 channels. Main Microwave length, 6507 Kms, is working for Telecommunication and T.V. through 160 M/W stations.

PTCL took over an installed capacity of 2,862,465 lines from the former PTC as on 31 December 1995. Another 352,783 lines were added which increased the capacity to 3,215,248 lines by 30 June 1996. The working connections increased from 2,227,715 to 2,376,786 on 30 June 1996, thereby utilizing 74% of the total installed capacity as on 30 June 1996. The company has three operational Gateway Exchanges, one at

Karachi and two in Islamabad. These International Gateway Exchanges have the latest 'C-7' signalling system comprising about 8,000 international circuits whereas 4,400 are working. The total international telephone traffic w.e.f 31.12.1995 to 30.6.1996 was 250.870 million minutes, out of which 213.483 million minutes were of incoming calls as compared with outgoing 37.397 million. A state-of-the-art international subscriber dialing system comprising of digital gateway exchanges operating through satellite earth stations and submarine cable is available to PTCL customers.

The country still needs big telecom expansion specially for rural coverage. In information technology and software export area, Government Of Pakistan has adopted a more liberal approach and private sector is already participating in these areas. Over the last seven years, capacity has expanded by 20-25% per annum with ALIS increasing by 21% per annum. The expansion programme succeeded in increasing telephone penetration, reducing pending applications and improving productivity considerably. The network expansion has been accompanied by steady increase in traffic inland and outland. The national long distance traffic has increased by 12-16% per annum, outgoing international traffic by 20-24% per annum and incoming international traffic by 20% per annum.

Telephone penetration which stood at less than 0.012 per 100 people has been increased to 2 per 100 people in 1997. The country also have the following value added services:-

- Call waiting, forwarding, abbreviated dialing, hot line etc.
- Integrated Services Digital Network (ISDN), services including caller ID
- Digital Cross Connect and digital leased lines
- Universal Access Number (UAN) and Free Phone (0800 lines)
- Video conferencing etc.
- IT, Internet, E-Mail and Voice Massaging Services

TRAINING / CENTRAL TELECOM RESEARCH LABORATORY

At the time of independence there were no facilities to train the people in telecom. Now a number of centers in which internal training is provided to the staff:-

- National Post Graduate Institute of Telecoms & Informatics for engineers which aims to promote and improve managerial skills of the officers of Grade 17 & above.
- Telecom Staff College Haripur provides technical training for staff of grade 11 and above.
- Nine Regional Telecom Training Schools which train technicians and supervisors.
- Fifteen Divisional Training Centers which train staff upto the level of departmental technicians.
- Central Telecom Research Laboratory is responsible for research and development activities undertaken by PTCL for modernization and innovation of the present system. In addition to conducting research to meet the broader PTCL requirements, it provides research facilities and guidance to separate manufacturing units of PTCL like TIP and CTI.

MANUFACTURING UNITS

In 1947 there was no manufacturing unit of telecom equipment. Now PTCL manufactures and markets telecommunication equipment through its subsidiaries, Telephone

Industries of Pakistan(Pvt.) Limited and Carrier Telephone Industries. There are a number of other units. Following are the most important, reputed units which are catering the telecom sector.

a) TELEPHONE INDUSTRY OF PAKISTAN (TIP)

TIP is manufacturing automatic digital exchanges, EWSD, Portable exchanges, telephone sets, Energy Meters and parts for exchanges and telephone sets. Production capacity has risen to 500,000 telephone units of various types and 250,000 digital exchange lines.

b) CARRIER TELEPHONE INDUSTRY (CTI)

CTI manufactures digital transmission, fibre optical and multiplexing equipment for voice and data, and provides repair facilities for the analogue transmission equipment owned by PTCL. Equipment produced includes:-

- Digital mircowave radios (2 MB to 34 MB).
- Higher order multiplexers/PCM and SDH equipment.
- Grid parabolic antennae.
- Mechanical parts, printed circuit boards, coils and transformer.
- A Quality Assurance System for process control and inward goods inspection, using modern electronic measuring equipment, which has been issued an ISO-9000 certificates.
- Introduction of Surface Mount Device Technology(SMD) to Pakistan.
- In-house software development.

c) ALCATEL PAKISTAN LIMITED (APL)

APL manufactures Alcatel E10 exchanges and transmission equipment. It also engineers and installs cables, and designs and produces the software required to run the equipment it manufactures.

d) TELECOM FOUNDATION (TF)

TF originally provided consultancy services, such as preliminary project studies, technical and financial feasibility studies and supervision. TF's computer division offers project oriented and computer bureau services to its clients as follows:-

- Geographical information system(GIS) and implementation of rural-based AM/FM software
- Management information system (MIS)
- Laying of outside plant for PTCL etc.)

National Radio Telecommunication Corporation (NRTC)

NRTC is manufacturing digital radio, battery eliminator, DPs for defence forces and PTCL.

QUALITY OF SERVICE

Telecom sector did improve due to digitalization, still there are complaints about service quality like; dropping of calls, and excessive billing, poor response from 17, 18, 109 and higher faults. Telecom sector is confronted with the challenge to minimize complaints. Modernization, change of culture, Creation of customer care culture and competition may improve the situation.

INVOLVEMENT OF PRIVATE SECTOR

In 1990 the private sector was invited to develop Cellular, Card Payphone and Paging services. More than 0.1 Million cellular, about 4000 Payphones and 30,000 Paging customers

are availing these facilities. Deregulated services are given below:

- Card Operated Pay Phone Service
- Cellular Mobile & Paging Services
- Trunked Radio Service
- Data, Internet and Electronic Mail Services
- Audiotex, Voice Mail and other Information Services.
- Satellite (Pak Sat Project) and GMPCS Services
- Manufacturing of Digital Exchanges/ PABXs, Terminal Equipment, Copper/ Fibre Cables and Jointing Material
- Software Development & Data Banks
- Manufacturing of Telephone Sets, Fax, Computer Terminal, Modems, Answering Machines & Intelligent Devices.

Box 10.4 TELEGRAPH OFFICES

Year	83	84	85	86	87	88	89	90	91	92	93	94	95	96
URBAN	108	111	121	142	152	165	174	186	195	282	285	327	330	319
RURAL	186	199	220	245	268	281	294	300	302	119	119	85	86	104
TOTAL	294	310	341	387	420	446	468	486	497	401	404	412	416	423

Note: Telegraph offices in Azad Jammu & Kashmir and Northern Areas are inclued in the statistics upto 1991.

Box 10.5 HIGHLIGHTS AS ON JUNE 30, 1996

* No. of Exchanges	2,307	* Exchange Lines(m)	3.22
* Working Connections(m)	2.377	* Overseas Paid Minutes(m)	491
* International Circuits	4,395	* Staff per 1000 Phones	23

• Domestic NWD call units (000)	10,816,000
• International Incoming Call Minutes(000)	418,203
• International Outgoing Call Minutes (000)	72,385
• Incoming International Calls (000)	135,782
• Outgoing International Calls (000)	26,864
• Incoming Outgoing Calls Ratio	83.5:16.5
• Lines installed (as on June 30)	3,215,248
• Lines in Service (as on June 30)	2,376,786
• Pending Application (as on June 30)	244,275

Table 10.6 TELEPHONE LINES AS ON JUNE 30, 1996

Telecom Region	Exchanges (No.)	Installed Capacity	Working Connections	Pending Demands
Karachi-I	43	385,294	290,412	2,273
Karachi-II	48	443,500	352,680	3,207
Southern(Sind-S)	208	134,526	75,590	579
Southern(Sind-N)	206	90,254	67,885	3,575

Western	269	131,698	72,236	3,900
Central	133	143,067	89,125	10,395
Northern	444	299,873	198,226	76,563
Multan	231	233,524	173,306	33,055
Lahore-I&II	46	497,564	403,968	22,345
Faisalabad	231	300,590	213,920	17,771
Gujranwala	165	241,164	178,227	44,810
Rawalpindi	253	103,355	82,250	15,704
Islamabad	30	210,839	178,961	10,098
Auto	996	3,098,350	2,277,897	
Manual	1,311	116,898	98,889	
Total	2,307	3,215,248	2,376,786	244,275

G: POSTAL SERVICE

GENERAL

Existence of postal system is found in the earliest historical records. From the twelfth Pharaonic Dynasty (Era 2000 B.C), in Egypt, we find that letter carriers were in constant danger from wild animals and unfriendly tribes.

The first recorded postal system in China dates from the Chou Dynasty (1122 to 255 B.C.). Marco Polo purported to have encountered foot and mounted couriers of the system throughout the empire and Manchuria. The Persian postal system of Cyprus the Great (558 to 528 B.C) has been admired by the writers of the time. One of the best and perhaps the best organized ancient postal system was the famous cursus publicus of the Roman Empire. It grew with the needs of the empire. A messenger could travel over 280 kilomierts in less than 24 hours. Five great Roman roads leading towards Cartage, Macedonia, Thracia, Spain, Germany and Britain catered for the postal despatches on fixed schedules.

The succeeding Islamic Empire, took over part of the old Roman System. Some 930 Postal despatch and receipt stations were located along the six great roads, fanning out from the capital at Baghdad. One of the caliphs is reported to have stated, "My throne rests on four pillars, and my power on four men, a blameless judge, an energetic Chief of Police, an honest minister of finances, and a faithful postmaster who gives me reliable information on everything".

Little is known of the extent of postal arrangement during the Dark Ages. In the middle ages postal systems assumed importance of mankind. Princes, religious organizations and universities created private messenger service. The university messenger services were the remarkable feature of the Middle Ages. The Messenger Service of the University of Paris was outstanding. This service was created in 1297 and was ultimately merged with the Royal Messenger Service after four hundred years in 1719. These messengers probably made their rounds on foot at first. Later they employed horses and afterwards added carts and wagons to convey passengers and luggage as well. The messenger made the rounds from Paris to the various home cities of the students and returned on fixed days.

In 1477 Louis XI of France decreed the establishment of Royal Service and organized a body of 230 couriers. We have seen the development of the "Post" from its inception as an official messenger service to its emergence as a public service institution. There were three major stages in the development of

the Posts. First, the movement on foot then by horses and finally through coaches.

By 1607, there was a regular service by English postmen to and from Brussels to pick up the continental mail. The regular Swedish postal system in 1620 began to operate to Denmark and south to Hamburg. The first Russian Postmaster appointed in 1665, set up a postal route from Moscow to Riga to pick up and send official despatches to Western Europe.

The final stage in the transformation of the Travelling Mail Service took place in the eighteenth and early nineteenth centuries.

50 YEARS OF PAKISTAN POST

Pakistan Post Office is one of the oldest Federal Government Departments in the South Asian Sub-Continent with over 150 years trail of history and traditions. After independence in 1947, the Department commenced its operations under a modified Post Office Act No. VI of 1898 as a combined Post & Telegraph Department. It was decided to bifurcate this large Department into two separate and independent Departments with effect from 1-7-1962. Its network has expanded tremendously from 3036 Post Office in 1947 to the present number of 13414. Today it has a manpower of about 50,000. Apart from collection and delivery of mail and running of Special Services, it performs multifarious functions such as, Life Insurance business (2,35,000 policy holders), Post Office Savings Bank transactions (1.2 million accounts), payment of Military Pensions (0.8 million pensioners), collection of Zakat through its counters all over the country, payment of subsidy to "Mustahikeen" (315,000), collection of several kinds of Provincial Taxes, issue of radio licenses and realization of its fee etc. etc.

Internationally, Pakistan Post has been playing its due role all along. Currently, it is an elected member of the two permanent bodies of the U.P.U. and is also chairman of one important Select Committee i.e. the strategic Planning Committee of the Postal Operations Council. Its officers are performing commendable duties and services in various capacities (such as consultants, Regional Experts and Advisors) in different parts of the world as International Civil Servants selected by the U.P.U. through global competition.

It has ambitious programs for provision of an efficient but cost effective service to its customers. Some important milestones in its 50 years of operation have been identified in the following calendar of events:-

IMPORTANT LANDMARKS:

- 1947- Office of the Postmaster General at Lahore starts functioning with effect from 15th August
- 1947 - British Indian postage stamps overprinted "PAKISTAN" on Ist october.
- 1947 - Pakistan joins UPU as its 89th member on 10th November.
- 1948 - A set of first four Pakistan Postage stamps with the words "Pakistan Zindabad" issued on 9th July.
- 1950 - Sindh and Balochistan Circle set up with effect from 13th September.
- 1952 - Premier participation in UPU Congress and election to Executive and Liaison Committee.
- 1957 - Fourteenth Congress held at Ottawa (Canada), re-elects Pakistan to the Executive Council. It also sets up another permanent body named the Consultive Council for Postal Studies. Pakistan is

elected as member to this body as well.

- 1959 - Introduction of All-up Scheme for all First class mail.

- 1961 - P & T Model School set up at Lahore.

- 1962 - Bifurcation of PT & T into Pakistan Post Office and T & T completed on 1st July.

- 1964 - The fifteenth Congress held at Vienna, re-elects Pakistan as member of the Consultative Council for Postal Studies (CCPS).

- 1968 - A separate postal circle with Headquarters at Peshawar (NWFP) set up with effect from 1st July.

- 1969 - The Sixteenth Congress held at Tokyo (Japan), elects Pakistan to both the Executive Council and the Consultative Council for Postal Studies.

- 1974 - Seventeenth Congress held at Lausanne (Switzerland), re-elects Pakistan to the Executive Council for Postal Studies. Pakistan chairs UPU-IATA contact committee which worked out agreed air conveyance rates for international mails which remained in force for next 20 years upto 1995.

- 1975 - Northern Punjab Circle with headquarters at Rawalpindi set up with effect from 16th December.

- 1976 - First (RCD) International Philatelic exhibition at Karachi in July.

- 1976 - A 23 carate gold powder stamp issued on 100th birth anniversary of Quaid-i-Azam on 25th December.

- 1977 - Joins APPU

- 1977 - Joins as founder member of South and West Asia Postal Union (SWAPPU).

- 1979 - Postal Directorate General moves to Islamabad

- 1979 - Pakistan participates in Eighteenth Congress and gets re-elected to the Consultative Council for Postal Studies for the fifth time.

- 1979 - Balochistan Circle operates independently w.e.f. July.

- 1981 - Establishment of Pakistan Post Foundation.

- 1984 - Participates in Nineteenth Congress held at Hamburg (Germany). Pakistan presents 18 proposals amending the Acts of UPU out of which 14 are accepted and acts as Vice Chairman of a Congress Committee on latter post (rates-Fixing and Payment). Pakistan is also elected to the Executive Council as well as to the Consultative Council for Postal Studies for the sixth time.

- 1985 - Postal Life Insurance Circle bifurcated into Northern and Southern Zones with effect form 22nd May.

- 1985 - Northern Sindh Circle with headquarters at Hyderabad set up.

- 1986 - Data post (ISP) with 22 countries established.

- 1986 - Airex Service revived.

- 1986 - Eco-philex stamps exhibition at Islamabad.

- 1987 - Inauguration of Postal Staff College

- 1987 - Urgent Mail Service (UMS) introduced on 1st January.
- 1987 - Urgent Money Order Service commenced w.e.f. April. 15.
- 1987 - Local Packet and parcel Service set up w.e.f. April 22
- 1987 - Postal Draft Service introduced on November, 15.
- 1988 - A 5 digit postocode intoruced on 1st January.
- 1988 - Savings Bank Mobile acc-
- ount introduced on january, 12.
- 1988 - Mr.Botto da Barros, DG, UPU visits pakistan
- 1988 - Postal Giro introduced w.e.f. March 5.
- 1988 - Fax Mail started on July, 4.
- 1988 - Fax Money Order Service introduced on August, 15.
- 1989 - Attends Twentieth Congress, held at Washington (USA). Is nominated as coordinator of the General Debate, gets re-elected to the Executive Council and the Consultative Council for Postal Studies. Avails seventh successive term of five-years in the CCPS.
- 1990 - A series of 27 stamps issued on Pioneers of Freedom Movement on August, 14.
- 1991 - Publication of monthly POSTNEWS and first ever Post Office Magazine PAKPOST commences.
- 1991 - Sub-contracting of Express Mail at Karachi.
- 1992 - Setting up of Agency Post Offices on franchised basis.
- 1992 - Revamping of National Mail Transportation System and setting up District Mail Offices.
- 1992 - Establishment of Pakistan Postal Services Corporation on August, 1.
- 1992 - Commercialization of philately and issue of first stamp on that basis on August, 25.
- 1992 - Overseas Circle set up on December, 1.
- 1993 - A separate circle for Azad jammu & Kashmir and Federal Capital Area Starts functioning on May, 1.
- 1993 - Express Post Circle starts operation independently w.e.f. July, 1.
- 1994 - Participates in the twenty-first Congress held at Seoul (Republic of Korea). Elected as Chairman of the Strategic Planning Working Party and also re-elected to the Postal Operations Council (erstwhile CCPS).
- 1994 - A collective incentive scheme for increase in revenue collection introduced on July, 1.
- 1994 - Mail Sorting and Transportation (MST) Circle created on September, 1.
- 1994 - Construction of the first POST PLAZA on commercial lines started in Satellite Town, Rawalpindi at an estimated cost of Rs. 34.735 Million w.e.f. September, 15.
- 1995 - Mr.Thomas Leavey, DG, UPU visits Pakistan.

- 1996 - Utility bills delivery centers set up in 4 major cities.
- 1996 - Pakistan Post Office again operates as an attached Department of the Ministry of Communications w.e.f. 7th July.
- 1996 - Computerized tracking system of Express Post items for 5 major cities set up w.e.f. September ,1.
- 1997 - Revised Time Test in Operation w.e.f. Ist October.

BROAD FEATURES OF POSTAL SERVICE IN PAKISTAN

- No. of Post Offices = 13414
- Area = 796,093 sq. kms
- One post office for = 9,837 persons
- One post office covers =60 sq. km
- UPU standard for developing countries

  i) One post office for 3000 to 6000 persons

  ii) One post office for 20 to 40 sq. Km.

Table 10.7 PROVINCE WISE BREAK UP OF POST OFFICES AS ON 31-5-1996

Province	GPO	HSGSO	TSOSG	TSO	APO	EDSO	EDPO	FPOs	NPO	TOTAL
Punjab	94	94	404	764	191	191	6169	117	117	8141
Sindh	55	55	156	282	071	071	1185	091	091	2057
Nwpf	19	19	194	236	084	084	1546	20	20	2222
Balochistan	02	02	069	059	019	019	0445	11	11	637
Azad Kashmir	18	18	026	074	013	013	0360	-	-	522
Norther Areas	01	01	02	021	005	005	0118	-	-	153
Federal Areas Islamabad	03	03	21	046	008	008	0105	10	10	206
Total	192	192	872	1482	391	391	9928	249	249	13946

Note: GPO: General Post Office, HSG: Higher Selection Grade, SO: Sub Office, TSO: Time Scale Office, SG: Selection Grade, APO: Agency Post Office, EDPO: Extra Departmental Post Office, EDSO: Extra Departmental Sub Office, FPO: Franchised Post Ofice, NPO: Night Post Office,

H: CONSTRUCTION MACHINERY TRAINING INSTITUTE

Physical Achievements of Construction Machinery Training Institute (CMTI), attached with Ministry of Communication, for the period from 1986 to 30 june 1997 are below in Box 10.6.

Box 10.6 Achievements of CMTI

	Description	Number
a.	Operator Course	1635
b.	Mechanic III Course	738
c.	Mechanic II Engine Course	446
d.	Mechanic II Chasis Course	373
e.	Prime Minister Scheme Operator Course (Evening Shift)	286
f.	Construction Machinery Planning and Employment Course	75
g.	Construction Machinery Supervision Course	66
h.	Diploma of Associate Engineer	91

j.	Third Country Training Programme (TCTP)	37
k.	Repaid Runway Repair Course	18
l.	CMO & M Course	551
m.	Armt Art Course	351
n.	DVR Refresher Cadre	650
o.	Operator Special Cadre	163
p.	Steel Fixer Course Ser-I	15
	Total:	5495

I: PRIVATE SOFTWARE EXPORT BOARD

The Private Software Export Board (PSEB) has been formed as an autonomous board under the Ministry of Communications. PSEB came into existence on July 4, 1995. It has a high powered executive board including ten Federal Secretaries and chaired by Special Assistant to the Prime Minister. PSEB has been formed with the objective of boosting the Pakistani software industry. It is working on several projects, implementation and execution of which will put Pakistan on the software map of the world. This is a new and rapidly growing industry and there is a lot of potential for its development in Pakistan.

The PSEB formulated the Policy Framework and Incentive Package for Software and Related Services which had been approved by the Cabinet in its meeting held on October 16, 1995. Its major components are formation of Private Software Export Board as a One Stop Shop to cater to all business needs of a prospective software house, Software Technology Parks scheme, an incentive package with a list of fiscal and corporate incentive, regulatory framework, including intellectual property issues. This policy framework is aimed at providing an attractive environment for the development of the software industry in Pakistan with participation of domestic and international corporations and isexpected to make software development one of Pakistan's major economic activities.

The Software Technology Parks (STP), providing a "One Window" solution to the needs of software ouses/Software Companies such as all types of approvals, customs clearance, etc., shall be built in the private sector on Build, Own, Operate (BOO) basis through the collaboration of local and foreign corporations and will be comparable in quality and function to techno-parks in the developed countries. Intellectual property rights of the Software Houses shall be protected in Pakistan under Intellectual Property Protection Laws.

PSEB shall facilitate projects between the Pakistani educational institutions and the computer industry to bridge the gap between academia and the industry.

PSEB facilitates the ISO-9000 training certification process in collaboration with Export Promotion Bureau of Software Companies as part of its regulatory function so that Pakistani Software Companies can offer services that are of internationally competitive quality. This will also fulfil the prequalification requirements for competing for sizeable international software contracts.

Figure 10 LENGTH OF HIGH/LOW TYPE ROADS

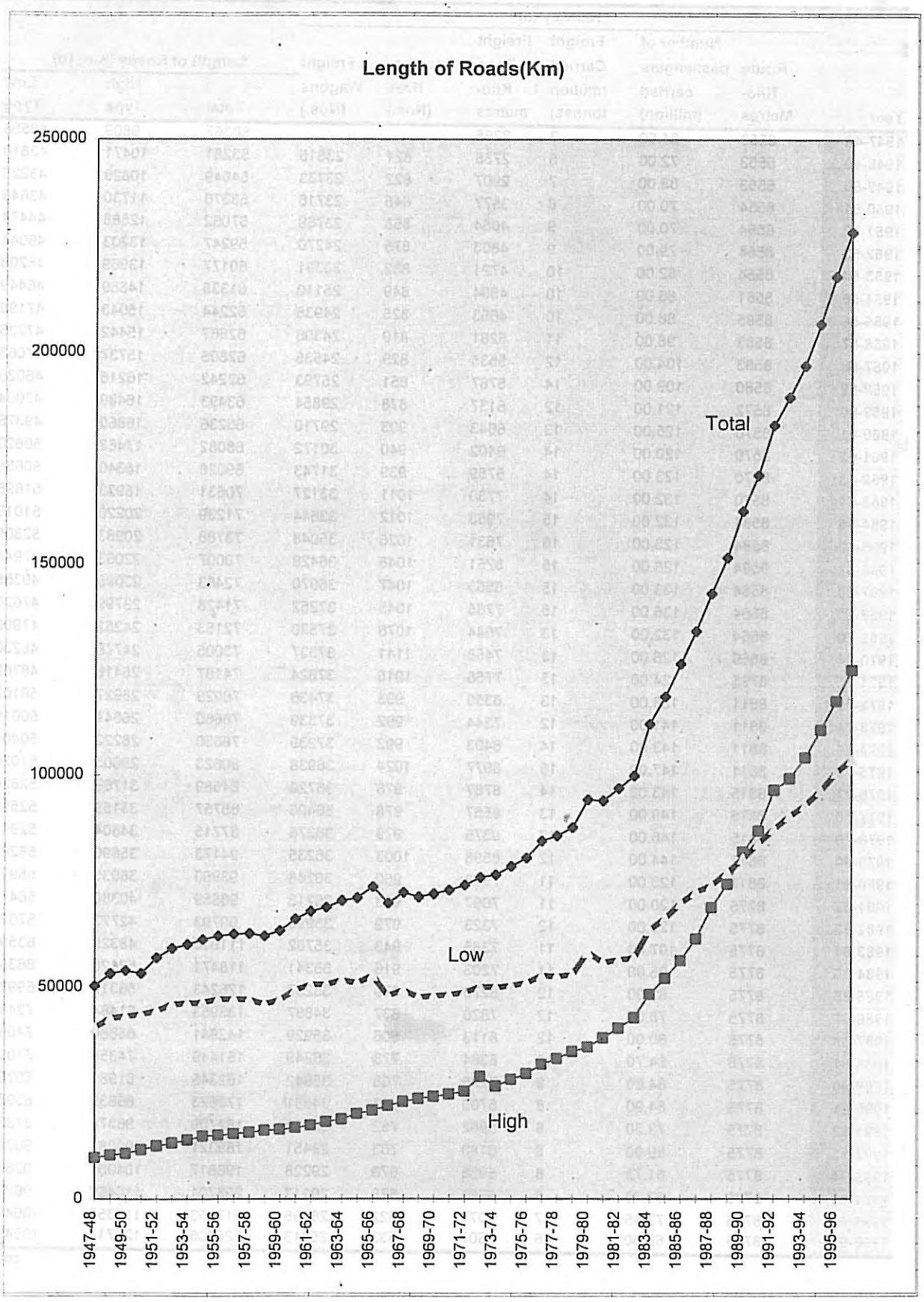

Table 10.8 TRANSPORT

Year	Railway (a)						Length of Roads (Km) (b)		
	Route Kilo-Metres	Number of passengers carried (million)	Freight Carried (million tonnes)	Freight Tone Kilo-metres	Locomo-tives (Nos.)	Freight Wagons (Nos.)	Total	High Type	Low Type
1947-48	8553	81.00	3	2265			50367	9809	40558
1948-49	5553	72.00	6	2738	821	23815	53281	10471	42810
1949-50	5553	68.00	7	2907	822	23733	54049	10829	43220
1950-51	8554	70.00	8	3577	845	23716	53376	11730	43646
1951-52	8554	70.00	9	4054	858	23769	57062	12588	44474
1952-53	8554	79.00	9	4803	875	24270	59247	13203	46044
1953-54	8554	82.00	10	4721	832	23391	60177	13969	46208
1954-55	8561	86.00	10	4594	849	25110	61338	14889	46449
1955-56	8585	88.00	10	4653	825	24935	62244	15048	47196
1956-57	8583	98.00	11	5281	819	24306	62667	15442	47225
1957-58	8583	104.00	12	5535	829	24538	62805	15737	47068
1958-59	8580	109.00	14	5787	851	25793	62242	16216	46026
1959-60	8572	121.00	12	6137	878	29854	63493	16489	47004
1960-61	8570	125.00	13	6643	903	29710	66236	16860	49376
1961-62	8570	120.00	14	6402	940	30172	68082	17462	50620
1962-63	8570	123.00	14	6759	939	31743	69028	18340	50688
1963-64	8570	132.00	14	7730	1011	33127	70631	18933	51698
1964-65	8584	132.00	15	7963	1012	33644	71239	20220	51019
1965-66	8584	123.00	16	7631	1026	35048	73788	20983	52805
1966-67	8584	128.00	15	8251	1045	36428	70007	22063	47944
1967-68	8584	133.00	15	8563	1047	36970	72463	23095	49368
1968-69	8664	136.00	15	7785	1045	37252	71428	23799	47629
1969-70	8564	132.00	13	7644	1076	37530	72153	24253	47900
1970-71	8566	126.00	13	7458	1141	37337	73006	24776	48230
1971-72	8795	124.00	13	7756	1015	37624	74187	25418	48769
1972-73	8811	136.00	13	8359	993	37436	76029	28927	50102
1973-74	8811	141.00	12	7344	992	37339	76660	26641	50019
1974-75	8811	143.00	14	8403	992	37239	78630	28222	50408
1975-76	8811	147.00	15	8977	1024	36938	80623	29603	51020
1976-77	8815	143.00	14	8767	978	36720	84589	31769	52820
1977-78	8815	149.00	13	8557	978	36406	85757	33159	52598
1978-79	8815	146.00	12	9375	979	36276	87715	34804	52911
1979-80	8817	144.00	12	8598	1003	36235	94173	35890	58283
1980-81	8817	123.00	11	7918	960	36248	93960	38035	55925
1981-82	8775	120.00	11	7067	963	26213	96859	40380	56479
1982-83	8775	123.00	12	7323	979	35990	99793	42773	57020
1983-84	8775	107.00	11	7385	943	35782	111916	48325	63591
1984-85	8775	95.00	11	7203	916	35341	118471	52120	66351
1985-86	8775	83.00	12	8270	879	35237	126243	56318	69925
1986-87	8775	78.00	12	7820	837	34867	133953	61464	72489
1987-88	8775	80.00	12	8113	806	35929	142941	68880	74061
1988-89	8775	84.70	10	8364	773	36249	151449	74355	77094
1989-90	8775	84.60	9	7226	768	35842	162345	81981	80364
1990-91	8775	84.90	8	5709	753	34851	170823	86839	83984
1991-92	8775	73.30	8	5962	752	30369	182709	96374	87335
1992-93	8775	59.00	8	6180	703	29451	189321	99083	90238
1993-94	8775	61.72	8	5938	676	29228	196817	104001	92816
1994-95	8775	67.70	8	6711	678	30117	206701	110462	96239
1995-96	8775	73.65	7	5077	622	26755	217853	117356	100497
1996-97	8775	68.80	6	4607	633	25213	228206	124711	103495

cont.

Table 10.8 TRANSPORT

Year	Cargo Handled at Sea Ports (000 Tonnes) Total	Import	Export	Shipping No. of Vessels	Dead Weight Tonnes	Gross Earnings (Rs Million) Pakistan Railways (a)	Pakistan National Shipping Corp.	Punjab Urban Tpt. Corp.	Karachi Tpt. Corp.	NWFP Road Tpt. Board
1947-48	3552	2216	1336				-	-	-	-
1948-49	3472	2225	1247	7	59414	245.1	-	-	-	-
1949-50	3409	2238	1170	10	87780	255.4	-	-	-	-
1950-51	3530	2339	1191	14	117470	266.3	-	-	-	-
1951-52	3824	2731	1093	22	161700	295.5	-	-	-	-
1952-53	3977	3065	911	25	190363	321.3	-	-	-	-
1953-54	3616	2707	909	25	203656	339.6	-	-	-	-
1954-55	3088	2181	906	24	195256	353.6	-	-	-	-
1955-56	3684	2571	1114	23	185242	361.8	-	-	-	-
1956-57	4357	3323	1033	23	185242	389.2	-	-	-	-
1957-58	4306	3448	858	21	168932	418.9	-	-	-	-
1958-59	3666	2683	983	29	244922	469.3	-	-	-	-
1959-60	4574	3479	1095	35	293256	482.7	-	-	-	-
1960-61	5059	3974	1085	41	353945	484.2	-	-	-	-
1961-62	4680	3545	1135	43	390212	475.8	-	-	-	-
1962-63	5650	4080	1571	43	390212	495.4	-	-	-	-
1963-64	5952	4596	1356	43	384449	543.3	-	-	-	-
1964-65	7934	6375	1559	50	458304	582.5	-	-	-	-
1965-66	7169	5269	1900	53	516137	592.1	-	-	-	-
1966-67	9220	6896	2324	59	593826	615.6	-	-	-	-
1967-68	8801	6508	2293	61	618758	624.0	-	-	-	-
1968-69	8585	5603	2982	65	682913	665.2	-	-	-	-
1969-70	9488	6028	3460	66	679692	731.2	-	-	-	-
1970-71	9587	6379	3208	71	749046	716.3	-	45.4	-	12.1
1971-72	9456	6397	3059	57	635937	785.4	-	36.8	-	11.3
1972-73	10512	7304	3208	54	620669	943.4	-	33.2	-	10.6
1973-74	10654	7559	3095	53	620734	1026.1	-	52.4	-	13.6
1974-75	10161	7858	2303	52	619574	1345.0	-	134.9	-	21.2
1975-76	10085	7691	2393	53	602243	1632.8	-	249.8	-	38.6
1976-77	9590	7216	2374	49	584195	1748.0	-	237.4	49.2	47.0
1977-78	11757	8917	2840	47	590992	2213.0	-	224.0	17.4	48.4
1978-79	15025	11987	3038	48	580225	2274.0	-	233.9	19.7	52.1
1979-80	14657	11259	3398	50	645450	2709.4	1141.7	274.9	37.1	56.7
1980-81	14653	11037	3616	55	738794	2492.4	1507.5	266.6	75.2	81.2
1981-82	15137	11589	3548	50	766601	3044.2	1688.4	281.4	89.3	164.5
1982-83	14789	13003	3526	47	731545	3395.0	1639.2	301.8	92.0	180.9
1983-84	17680	13771	3909	36	602744	3679.9	1625.3	326.2	94.3	194.8
1984-85	17910	14551	3359	35	596972	3677.2	2418.6	319.0	80.9	199.1
1985-86	20254	15441	4813	34	595209	4419.5	2657.6	238.9	85.8	197.6
1986-87	20192	15941	4251	30	522517	4884.0	2209.7	276.6	87.1	216.3
1987-88	21437	17226	4211	29	510624	5279.0	2643.3	195.3	98.4	254.5
1988-89	23021	18674	4347	29	510624	5318.0	3788.0	140.9	157.9	251.0
1989-90	24388	19822	4566	28	492400	5654.0	3165.0	166.0	166.3	274.0
1990-91	26367	21217	5150	28	494956	6696.0	3865.0	166.6	156.7	266.1
1991-92	27792	21798	5994	28	494956	8235.9	4063.0	107.7	182.7	261.2
1992-93	30233	24756	5477	29	518953	9031.0	3137.0	95.7	182.6	261.2
1993-94	30011	24376	5635	27	595836	9134.0	3302.0	40.9	-	221.3
1994-95	32297	25529	6758	15	264410	9224.0	4311.0	73.2	-	210.5
1995-96	33229	27533	5696	17	290353	8365.0	6962.0	61.6	-	-
1996-97	*31059	25421	5638	15	261836	9735.0	7761.5	-	-	-

Sources: National Transport Research Centre, Karachi Port Trust, Pakistan National shipping corporation, Pakistan Railway, Ministry of Communication and Provincial Bureaus of Statistics

Note: Data of Port Qasim is included in Karachi Port from 1982-83 onward. - Not available

* Port Qasim data is from July to March.

Table 10.9 MOTOR VEHICLES ON ROAD

Year	M.CYCLE SCOOTER	MOTOR CAR	JEEP	St. WAGON	TRAC-TOR	BUS	TAXI-CAB	RICK-SHAW	D/VAN	TRUCK	OTHERS	TOTAL
1947	3618	12749	1919	1326	-	4576	928	-	-	4929	532	30577
1948	4462	14815	2229	1515	-	2923	1089	-	-	5728	1087	33848
1949	5049	1555	2276	1553	-	4465	1260	-	-	6902	589	23649
1950	4668	15820	2276	1555	-	4334	1170	-	-	7015	215	37053
1951	5377	17538	2639	1791	-	5220	1558	-	-	8402	659	43184
1952	6974	19686	2962	2011	-	5759	1538	-	-	9642	248	48820
1953	8014	19271	2909	1967	-	5778	1477	-	-	10078	783	50277
1954	8848	19537	2939	1996	-	5414	1470	-	-	10795	702	51701
1955	7704	18495	2872	1952	-	5268	1170	2140	-	10423	1345	51369
1956	7070	19681	2961	2011	-	5426	1063	1942	-	10201	1349	51704
1957	7294	22583	3399	2306	-	5548	1091	1994	-	11287	333	55835
1958	11656	28522	4294	2912	-	6969	799	1617	-	12787	-	69556
1959	11618	32645	4911	3335	-	6924	1550	2857	-	12612	735	77187
1960	15510	35008	5267	3576	4994	8170	2606	4849	-	15394	853	96227
1961	24883	44119	6639	4505	1098	7697	3605	6729	871	15971	1240	117357
1962	27501	46298	6959	4777	1579	8547	4305	8052	874	15545	1507	125944
1963	32104	66270	6839	4641	1631	7092	5087	9531	849	15852	1385	151281
1964	36707	12896	6454	4383	1980	8707	5509	10324	1092	20037	1890	109979
1965	37402	43537	6552	4447	1965	8124	5160	9666	1080	19787	1723	139443
1966	38189	42949	6462	4387	1794	7470	5705	10693	1065	19540	1006	139260
1967	41777	42264	6359	4318	1872	7974	5690	10707	1070	19616	1046	142693
1968	44373	44373	6677	4531	1749	9195	5713	10943	1124	20616	980	150274
1969	53186	52760	7940	5390	3809	8893	5935	11126	1049	19246	2135	171469
1970	64065	57234	8613	5846	3844	9592	6264	11747	1163	21331	2152	191851
1971	73946	59200	8908	6047	5495	10312	6871	12891	1240	22741	3079	210730
1972	82131	63857	9609	6524	7619	11594	7744	14535	1297	23773	4265	232948
1973	95359	66975	10078	6844	9020	13482	8544	16045	1163	21323	5049	253882
1974	99070	55934	8257	5612	9324	14377	7777	14557	1054	18920	4072	238954
1975	112975	62172	9978	5964	12638	15372	8664	16195	1433	21087	4227	270605
1976	135105	70061	11608	6767	21589	18080	10995	18619	1769	23784	5466	323843
1977	166765	81565	13427	7764	29955	18900	11696	19968	2635	25745	6738	385158
1978	206431	95632	15669	9034	38204	20151	12587	22857	3701	28486	8261	461013
1979	241944	109382	17834	11171	45558	21822	14115	26403	5299	31220	9845	534593
1980	287622	148334	16875	15413	68187	25275	16854	31950	8503	34193	28853	682059
1981	326420	154241	16680	15839	79407	26881	17720	33707	9956	36842	38005	755698
1982	376071	182863	14108	21736	88199	25620	15524	34551	11941	40058	31933	842604
1983	424215	201994	15399	25671	106479	27361	16661	36228	13259	42761	33874	943902
1984	517448	230765	17196	32501	135712	30955	19023	37211	30439	49165	37791	1138206
1985	581255	268934	19755	39129	157043	32947	21177	37723	35106	54428	40537	1288034
1986	657569	297958	20730	46536	181102	34637	22228	38384	38294	60354	43023	1440815
1987	700004	323062	23139	52083	198891	36117	23446	38818	41661	66120	44974	1548315
1988	751970	350217	25939	59236	217646	38641	24870	39366	46161	71660	48096	1673802
1989	818398	395672	28226	64172	242493	40814	28382	40206	52892	78413	49836	1839504
1990	896179	427726	30840	69290	258169	43275	30873	41282	57563	82678	51516	1989391
1991	964408	452953	33430	74984	269516	45637	33492	42310	60944	86872	52256	2116802
1992	1143248	493098	37849	88773	341517	52393	41121	46659	69841	95501	55976	2465976
1993	1248154	522408	40292	97062	358325	57021	46333	50502	73408	102790	57265	2653560
1994	1343409	547834	43718	102211	374368	61288	49824	53467	77223	108437	64760	2826539
1995	1456702	575633	46878	110475	403253	65705	54829	56305	81897	114481	67792	3033950
1996	1579551	604842	50266	119407	434367	70442	60337	59295	86854	120863	70966	3257190
1997	1712759	635534	53900	129061	467881	75519	66398	62443	92110	127600	74289	3497494

Source: National Transport Research Centre

Table 10.10 PASSENGERS, CARGO AND MAIL HANDLED AT CIVIL AIRPORTS (Scheduled And Non-Scheduled)

Year	Passengers(000)			Cargo(000MT)			Mail(MT)		
	Domes-tic	Interna-tional	Total	Domes-tic	Interna-tional	Total	Domes-tic	Interna-tional	Total
1970-71	1231	543	1774	12	20	31	1363	3345	4708
1971-72	1075	516	1591	12	20	32	1086	2349	3435
1972-73	1139	625	1764	13	24	37	981	2326	3307
1973-74	1498	757	2255	22	30	52	1299	2233	3532
1974-75	1904	965	2869	20	34	54	1360	2717	4077
1975-76	2364	1240	3605	24	41	65	1632	2549	4181
1976-77	2760	1555	4315	31	44	75	2068	2409	4477
1977-78	3278	1928	5206	32	53	84	2130	2637	4767
1978-79	3358	2317	5676	36	67	102	2253	2848	5101
1979-80	3534	2640	6174	34	84	117	2425	3928	6353
1980-81	3574	2945	6519	38	95	133	2636	3620	6256
1981-82	3534	3201	6735	43	93	135	2882	3855	6737
1982-83	3829	3288	7117	46	106	153	3042	4332	7374
1983-84	4267	3122	7388	47	99	147	3252	3291	6543
1984-85	4646	3384	8030	57	121	178	3138	3291	6429
1985-86	5200	3686	8886	59	131	191	2858	3192	6050
1986-87	5720	3454	9174	60	134	194	3040	2870	5910
1987-88	6255	3751	10006	61	119	181	3224	2725	5949
1988-89	6821	3718	10539	64	124	188	2844	2791	5635
1989-90	6777	3595	10372	70	135	205	2616	2913	5529
1990-91	6787	3573	10360	70	112	183	2642	2482	5124
1991-92	7528	4157	11685	69	122	191	2598	2500	5098
1992-93	7951	4110	12061	81	130	212	2566	2516	5082
1993-94	9107	4093	13201	84	136	220	1372	2119	3491
1994-95	8901	4131	13032	80	136	216	930	2468	3398
1995-96	9504	4297	13801	79	143	222	954	2627	3581

Source: Civil Aviation Authority

Table 10.11 PASSENGERS. CARGO AND MAIL HANDLED AT CIVIL AIRPORTS BY AIRLINES (1995-96)

Airline	Passengers (#)	Cargo (MT)	Mail (MT)
Domestic			
'PIA	6766255	78102	700.8
Aero Asia	1679664	382	256.0
Bhoja Air	443106	926	-
'Shaheen Air	393616	-	-
Suhb Total:-	9282641	79410	956.8
International			
'PIA	2635629	68880	1269.3
Shaheen Air Int.	26761	-	-
Aeroflot	20541	406	1.7
Air France	-	4930	8.9
Air Lanka	18524	503	3.0
British Airways	75042	1800	74.2
Bangladesh Biman	6080	446	0.5
Air hina	17876	359	-
'Xiang Air of China	10081	1	-
'Lufthansa	104628	10428	252.2
'Ethopian Airlines	1677	260	0.3
'Gulf Air	216739	4586	68.7
Indian Airline	16869	158	0.6
'Iran Air	13656	148	27.5
'Yemenia	4775	99	0.1
'Kuwait Airways	32666	1409	42.2
'K.L.M.	54860	5953	64.8
'Malaysian Airlines	23420	1110	0.1
'Egypt Air	32324	664	11.6
'Oman Aviation	21145	50	-
'Qatar Airways	15274	142	1.5
'Royal Jordanian	14566	1467	1.7
'Singapore Airlines	80388	2996	36.0
'Saudia	499663	9688	97.2
'Swiss Air	14712	962	52.8
Syran Arab	18942	433	7.0
Thai Airways	132145	8062	255.3
Turkish Airline	25631	308	17.0
'Emirate	225411	6289	97.5
Uzbekistan Airlines	14529	560	-
Sub Total:-	4374554	133137	2391.7
Total	13657195	212547	3348.5

Source: Civil Aviation Authority