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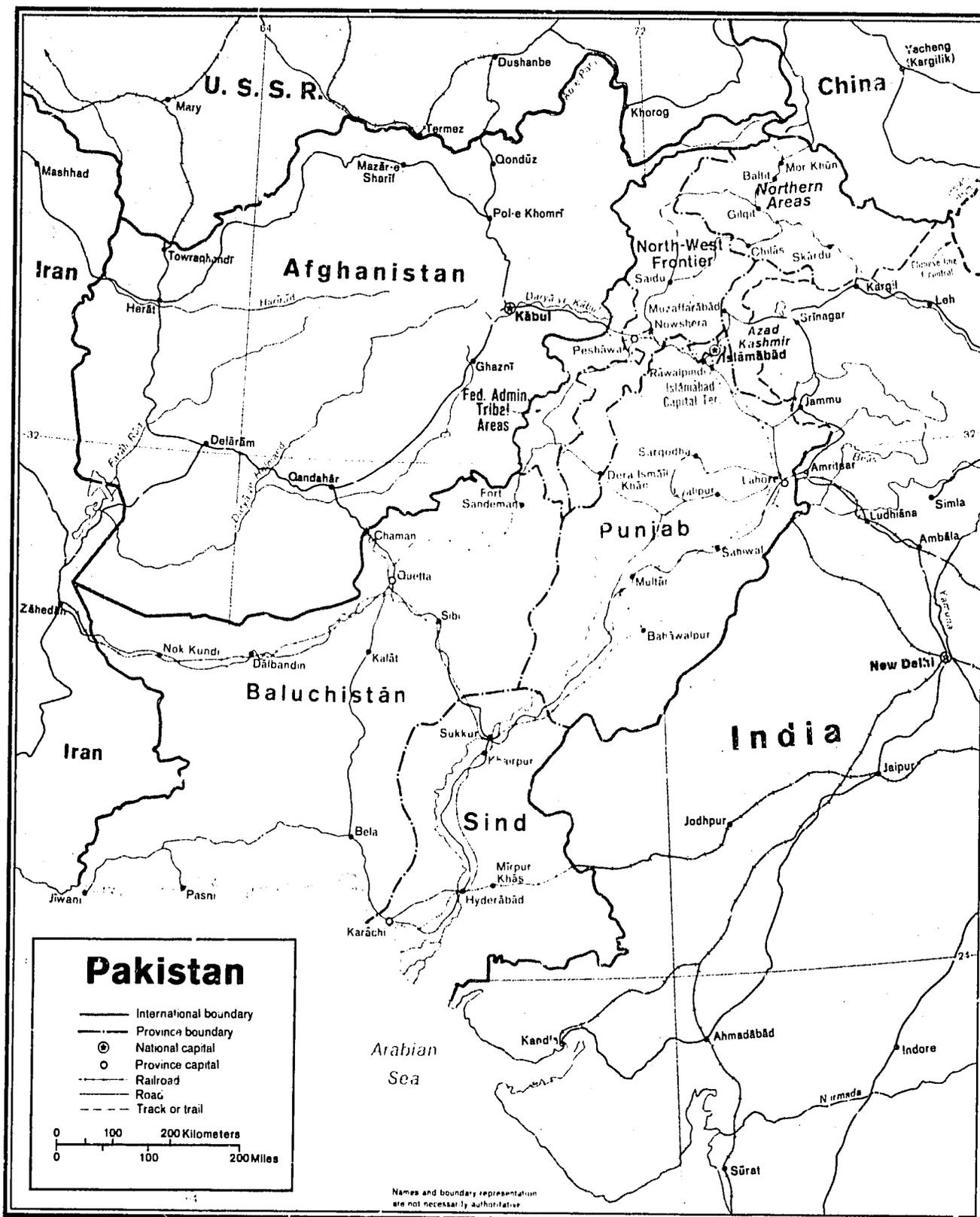
ISN 31993

# **Pakistan**

## **A Country Profile**



Office of Foreign Disaster Assistance  
Agency for International Development  
Washington, D.C. 20523



PAKISTAN: A COUNTRY PROFILE

prepared for

The Office of U.S. Foreign Disaster Assistance  
Agency for International Development  
Department of State  
Washington, D.C. 20523

by

Evaluation Technologies, Inc.  
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The Country Profile Series is designed to provide baseline country data in support of the planning and relief operations of the Office of U.S. Foreign Disaster Assistance (OFDA). Format and content have evolved over the last several years to emphasize disaster vulnerability, planning, and resources.

We hope that the information provided is also useful to other individuals and organizations involved in disaster-related activities. Every effort is made to obtain current, reliable data; unfortunately it is not possible to issue updates as fast as changes would warrant. Therefore, where the most current names and statistics are important, the bibliography points to regularly updated sources.

We invite your comments and questions. Please address these to OFDA at the address above.

September 1983

## ACKNOWLEDGEMENTS

We would like to express our appreciation for the valuable information provided by the USAID Mission in Pakistan and by the Director General of the Emergency Relief Cell of Pakistan.

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1. General Information1.1 Geographic Codes

AID Standard	391
AID Region	Asia/PNS
State Region	NEA

1.2 Host Mission in U.S.

Chancery: 2315 Massachusetts Avenue, N.W.  
Washington, D.C 20008  
Tel: (202) 232-8330

For current information on Pakistan Embassy staff, see the U.S. Department of State, Diplomatic List.

1.3 U.S. Mission in Pakistan

Embassy: AID/UN Building  
P.O. Box 1048  
Islamabad  
Tel: 24071  
Telex: 825864 (temporary)

For current information on U.S. Embassy staff in Pakistan, see the U.S. Department of State, Key Officers Of U.S. Foreign Service Posts.

1.4 Time Zones

EST+10; GMT+5

1.5 Currency and Exchange Rate

100 Paisa = 1 Rupee (R, Rs)  
US \$1.00 = 12.90 Rs (June 1983)

The value of the rupee was fixed at U.S. \$1.00 = Rs 9.9 for nearly a decade. Since January 1982 it has been pegged to a trade weighted basket of currencies, and has steadily depreciated against the dollar.

### 1.6 Travel and Visa Information

Passports are required. Visas are not required for transit trips of up to 15 days or tourist visits not exceeding 30 days. For longer visits or non-tourist travel, check embassy/consulate for specific requirements.

Cholera vaccinations are required for travelers who have visited an infected area within five days of arrival. Yellow fever vaccinations are required for visitors arriving from infected areas. Malaria suppressants are recommended.

### 1.7 Holidays

Pakistan Day	March 23
May Day	May 1
Eid-ul-Fitr	July *
Independence Day	August 14
Defence of Pakistan Day	September 6
Anniversary of Quaid-i-Azam's Death	September 11
Eid-ul-Azha	September *
Muherram (Muslim New Year)	October *
Eid-Milad-un-Nabi	December *
Quaid-i-Azam's Birthday	December 25

\* Dates of certain religious holidays are subject to moon sightings. There are also optional holidays for different religious groups.

### 1.8 Treaties and Agreements

Agricultural Commodities  
 Aviation  
 Defense  
 Economic and Technical Cooperation  
 Education  
 Finance  
 Investment Guaranties

Judicial Assistance  
Lend-Lease  
Peace Corps  
Relief Supplies and Packages  
Trade and Commerce

### 1.9 International Organization Memberships

ADB, Colombo Plan, FAO, GATT, Group of 77, International Atomic Energy Agency, ICAC, ICAO, IHO, International Labor Organization, IMF, ITU, International Wheat Council, NAM, RCD, UN, UNESCO, UPU, World Bank (IDA, IFC, IBRD), WHC, WMO, WSG, WTO.

### 1.10 Government

Although Pakistan's 1973 constitution provides for a parliamentary form of government, a military junta has ruled the country since 1977. Headed by General Mohammad Zia ul-Haq who is President and Chief Martial Administrator, the military government has dissolved all political parties, banned political activity, and curtailed the independence and jurisdiction of the judiciary. No elections have been held since 1977 as Pakistan proceeds to establish an "Islamic democracy."

In 1982, President Zia inaugurated the Federal Advisory Council which will act as an interim body until a Parliament is established. The supreme decision-making organ, however, remains the military council.

There are twelve provincially administered and ten federally administered tribal areas, each under a political agent and granted varying degrees of autonomy.

Additionally, "Azad" Kashmir, a disputed territory of which one third to one half is controlled by Pakistan, has its own Prime Minister, High Court, and Parliament, though ultimate authority is exercised by the Ministry of Interior.

**Regional  
Organization:**

Pakistan is divided into four provinces, each administered by a governor (appointed by the President), a chief minister, and a provincial council. The provinces are subdivided into districts and districts into tehsils (revenue or tax regions). The district is the most important administrative unit for public finance purposes.

The four provinces and their respective districts are:

Punjab: Bahawapur, Lahore, Multan,  
Rawalpindi, Sargodha.

Northwest Frontier (NWFP): Dera Ismai Khan,  
(D.I. Khan), Malakand, Peshawar.

Sind: Hyderabad, Karachi, Kairpur

Baluchistan: Kalat, Quetta

**1.11 Ethnic and Sociocultural Groups**

Although Pakistan is overwhelmingly Muslim, racial, linguistic, and tribal differences divide the society. The Punjabs, the largest group, control the government, economy, and armed forces. The three other major groups are the Sindhis in Sind, Baluchis who are nomads in Baluchistan, and the Pathans of the western hills.

**1.12 Languages**

The official language is Urdu, native to only 7% of the population, but widely spoken, especially in Punjab and Sind. Other languages include Punjabi, Sindhi, Pushtu, Baluchi, and Brahui. English is the common medium in government, law, commerce, and among the upper classes.

**1.13 Religion**

Islam is the official religion adhered to by 98% of the population. Although most Pakistanis belong to the Sunni branch of

Islam, practicing Shiites can be found in many communities. Religious minorities include Christians (1.4%), Hindus (1.4%), and Parsis (.01%).

#### 1.14 Geography and Climate

##### Area:

Pakistan extends northward 1,600 km from the Arabian Sea to the Himalayas, and is bounded to the west, northwest, and north by Iran, Afghanistan, and China, respectively. Pakistan shares a 2,000 km border with India to the east and southeast. The country comprises 803,943 sq km (about the size of California), excluding Jammu and Kashmir which are disputed with India.

##### Rivers:

The Indus River rises in the Tibetan Himalayas and flows across the Northwest Frontier, Punjab, and Sind to the Arabian Sea. The five rivers of the Punjab - Jhelum, Beas, Sutlej, Ravi, and Chenab - traverse the great Indo-Gangetic plain. The Zhob is the principal river in Baluchistan, running along the southern slopes of the Toba Kakar range and north into the Gumal River, a tributary of the Indus.

##### Climate:

Pakistan's climate is generally arid with extreme temperature fluctuations both seasonally and diurnally. Three seasons can be distinguished: November-February (cold, dry); March-May (hot, dry); June-October (hot, humid, southwest monsoon season). In the upper Indus plain, temperatures often exceed 36°C in summer while the lower Indus plain is cooler but more humid.

#### Selected Temperatures

	Mean	
	max. °C	min. °C
Multan	33.2	18.3
Peshawar	29.9	15.6
Quetta	24.3	7.3
Hyderabad	34.7	21.5
Karachi	31.9	20.7

**Topography:**

The northern and western areas of Pakistan are mountainous while a great plateau, 914 to 1220 m, covers most of Baluchistan in the southwest. The Indus plain dominates the eastern portion of Pakistan with large tracts of deserts and marshlands to the southeast. The lower Indus plain, corresponding generally to Sind Province, is lower in altitude, and declines to sea level at the coast. The upper Indus plain in the Punjab varies from 150-300 m and is a fertile agricultural area.

**1.15 Population**

**Total Population:**  
(1982 est.)

85.6 million. An estimated 2.9 million Afghanis have taken refuge in Pakistan, mostly along the western border.

**Population by Province:**

<u>Provinces</u>	<u>Number</u> ( '000)	<u>Density/</u> <u>sq km</u>
Baluchistan	4,305	12
North-West Frontier	10,885	146
Punjab	47,116	229
Sind	18,966	134
Federal Capitol Territory	335	369

**Urban Areas:**  
(1981)

<u>City</u>	<u>Number</u>
Islamabad (capital)	201,000
Karachi	5,103,000
Lahore	2,922,000
Faisalabad (Lyallpur)	1,092,000
Rawalpindi	806,000
Hyderabad	795,000

There are at least 14 other cities with populations in excess of 100,000.

Source: Statistical Pocket Book of Pakistan, 1982.

**Other Demographic Characteristics**  
(1981):

Overall density/sq km	105
Agricultural land density/sq km	309
Urban population (communities with 5,000 or more persons)	28%

Urban population in Karachi	21%
Average annual growth rate (1970-80)	3.1%

Source: World Bank Development Report, 1982.

Note - the majority of the population is concentrated in the Indus Valley. As a result, population density varies widely among provinces, e.g., 229/sq km in Punjab, and 12/sq km in Baluchistan.

### 1.16 Health

Vital Statistics: (1980)	Crude birth rate/1,000	44
	Crude death rate/1,000	16
	Infant mortality/1,000 live births	126
	Life expectancy at birth, years	50

Source: World Bank Development Report, 1982.

Nutrition: (1977)	Daily per capita calorie supply as a percentage of requirements	99%
	Population with access to safe water:	
	rural	5%
	urban	75%
	Population with access to sewage disposal:	
	rural	6%
urban	21%	

Source: Draft Environmental Profile of  
Pakistan, May 1981.

Major Diseases: Tuberculosis, bacillary dysentery and amoebiasis, malaria, diabetes mellitus, cardiovascular diseases, gastrointestinal diseases, infectious and parasitic diseases.

Health Care Administration: Health services are provided by the government at federal, provincial, and municipal levels, and by the private sector. In each province the local Department of Health implements health programs established by the Ministry of Health and Social Welfare (MHSW) in Islamabad. Provincial health care is organized on a divisional and district basis. There are, however, administrative problems.

related to the delineation of function and responsibility among federal, provincial, and local administrations.

A number of national industries and semi-public organizations provide health care to their employees. Although most of these health facilities are limited to first-aid stations and dispensaries, some of the larger organizations operate small hospitals.

Private sector health services include western-trained physicians and a large number of traditional practitioners of the unani, ayurvedic, and homeopathic systems.

Health Facilities: (1981)	Hospitals	600
	Dispensaries	3,478
	Total no. beds	46,195
	Persons/bed, total	1,779
	Persons/bed, rural	11,719
Health Personnel: (1981)	Registered physicians	26,668
	Registered nurses	9,872
	Persons-physician	3,425
	Para-medicals	22,024
	Pharmacists	1,245
	Dispensers	17,370

Source: Statistical Pocket Book of Pakistan, 1982.

See also section 3.5, Medical Resources.

### 1.17 Economy

#### Overview:

Pakistan's economy has been growing at an average annual rate of 6% since 1977. Agriculture, the major source of export earnings, accounts for 30% of GDP and employs 56% of the population. Industrial growth has averaged over 9% per year and represents about 17% of Pakistan's GDP. Consumer prices have risen about 7% annually during the last two years. The main industries are agricultural processing, textiles, cement, iron and steel products, tires, machinery, and fertilizer. Although nationalization of major industries took place during the 1970s, over 75% of

industrial investment remains in private hands. Generally favorable weather, and the decontrol of agricultural input and output prices have allowed Pakistan to become a net food exporter. Nonetheless, agricultural productivity remains relatively low and shortages are common.

**Balance of Payments:** Growth in exports of manufactured goods, stable commodity prices, and increased remittances from workers abroad have helped stabilize the current account deficit to approximately 0.5% of GDP. During the last two years, however, Pakistan's goods and services deficit increased by 30% over the 1980 level. This situation resulted from sluggish demand, falling commodity prices, and the rapid depreciation of the rupee against the dollar. In addition, the level of oil imports - about 66% of export earnings - demonstrates Pakistan's continued dependence on foreign energy supplies.

**Imports:** Pakistan's main import commodities in 1980-81 were petroleum and petroleum by-products (30%), non-electrical machinery (15%), transport equipment (12%), fertilizers (3%), iron and steel (7%), chemicals (6%), and electrical goods (5%).

Main suppliers of imports are Persian Gulf countries, the United Kingdom, the Federal Republic of Germany, Japan, and the United States.

**Exports:** Major exports during 1980/81 were rice (24% of total), raw cotton (23%), defense goods (13%), cotton cloth (11%), carpets (10%), cotton yarn (7%), petroleum products (7%), and fish (2%).

Primary markets are China, Middle East countries, the United States, Japan, Hong Kong, and the Federal Republic of Germany.

### 1.18 Communications

**Radio:**

The Pakistan Broadcasting Corporation (PBC) comprises 14 stations with a daily output of 220 transmission hours in 17 languages. Over 1.56 million radio licenses have been issued, and there are about 66.8 radio receivers per thousand persons.

**Television:**

The Pakistan Television Corporation (PTC) broadcasts seven hours daily from five stations: Lahore, Karachi, Rawalpindi/Islamabad, Peshawar, and Quetta. In 1982 there were an estimated 8.3 television sets per thousand persons.

**Telecommunications:**

All local, long distance, and international public telecommunications services are provided by the Pakistan Telegraph and Telephone Department (T & T). T & T is also responsible for licensing commercial and amateur radio transmitters, and for frequency regulation. In addition, the military, police, railways, and gas and power companies, operate independent telecommunications networks. As of 1981, Pakistan had about 358,000 telephones and 282,000 direct exchange exchange lines; or 4.2 telephones per 1,000 persons. However, less than a quarter of all telephone subscribers are located in small towns and villages. Extension of telephone service to parts of Baluchistan and the NWFP has been impeded by limited resources and the rugged terrain. There are also 1,160 Public Call Offices, covering approximately 50% of the 1,800 communities having any telephone service.

Telex is available in 11 main cities with about 2,440 subscribers. At the end of 1981, there were 824 public telegraph offices.

### 1.19 Transportation

**Roads:**

The road network extends to most cities, towns, and industrial areas, but quality

is poor. Most of the 40,000 km (1978) of roads are narrow and only half are bituminous surfaced. The rest are gravel surfaced and poorly engineered.

Motor road development is skewed. Nearly half of the bituminous roads are located in Punjab corresponding to the concentration of population. The 40-60,000 km of earthen roads in rural areas are often impassable during the wet season; only a sixth of 43,000 villages in Pakistan are linked to serviceable all-weather roads. Roads are maintained by the Ministry of Communications, provincial highway departments, and district councils.

There are 3,500 km of national highway. One road connects the port of Karachi to Quetta in Baluchistan and then runs northward to D.I. Khan in the NWFP. A national highway also runs parallel to the Indus River from Karachi to Hyderabad and Bahawalpur in Punjab. Peshawar, Rawalpindi, and Lahore are all linked by a national road.

#### Railroads:

The Pakistan railway system, government owned and operated, connects most of the major cities and provides access to India, Iran, and Afghanistan. Average hauling distance is rising, but revenue tons are declining as a result of road competition. Fare restrictions, outdated equipment, and poor management have hampered operational efficiency. In 1980-81, there were 12,607 km of track, 90% broad gauge.

#### Ports and Waterways:

Karachi Port on the Arabian Sea is presently Pakistan's only international port and the port of entry for seaborne trade for Afghanistan as well. Port facilities include 24 wide apron general cargo berths and four POL berths. In addition, four new dry cargo berths are being constructed. A new port, Muhammad bin Qasim, is located at Qasim, 56 km east of Karachi. It accommodates vessels up to 35,000 dwt. A 12 berth port is planned. In addition, two new ports are being constructed at Korangi and at Pasni in Baluchistan.

**Airports/Airlines:**

Major airports are located at Islamabad, Karachi, Lahore, Nawabshah, and Peshawar.

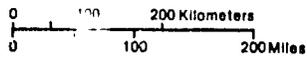
The following foreign airlines serve Pakistan: Aeroflot, Air France, Air India, Air Lanka, Alia Jordanian Airlines, Biman, British Airways, CAAC (PRC), Egyptair, Garuda Indonesian Airlines, Gulf Aviation, Indian Airlines, Interlug, Iran Air, Iraqi Airways, JAL, KLM, Kenya Airlines, Kuwait Air, Libyan Airlines, Lufthansa, Pan Am, Romanian Air Transport, Saudia, Swissair, Syrian Arab Airlines, Thai Air, and Turkish Airlines.

Also see section 3.6, Transportation Resources.



# Pakistan

- International boundary
- Provincial boundary
- ⊙ National capital
- Province capital
- Railroad
- Road
- - - Track or trail



Names and boundary representation are not necessarily authoritative

### 2.1 Overview of Physical Environment

Pakistan is located on the southwestern portion of the Indian subcontinent, extending from the Arabian Sea northward across the Thar desert and eastern plains to the Hindu Kush and Himalayan foothills. Four geographical areas can be distinguished: the northern and western highlands, the Baluchistan plateau in the southwest, the desert and barren marshland in the southeast, and the Indus River Valley.

The Himalayan, Karakoram, and Hindu Kush ranges stretch in a great arc just north of the borders of Pakistan from Afghanistan to Jammu and Kashmir. The Great Himalayas (7,000-8,000 m peaks) run across the extreme north in a southeast to northwest direction. The Lesser Himalayas lie to the south and provide a transition to the sub-Himalayan foothills. Rising more than 7,000 m along the border with China, the Karakoram range forms a right angle with the Hindu Kush range. Although the elevations decrease south along the Afghan border, passage is still very difficult. Hence, these mountain ranges shield the entire subcontinent from northern Asia. The Khyber Pass provides the easiest passage from Kabul to Peshawar. Several mountain chains just south of the Khyber Pass run in a north-south direction across Baluchistan toward the Arabian Sea.

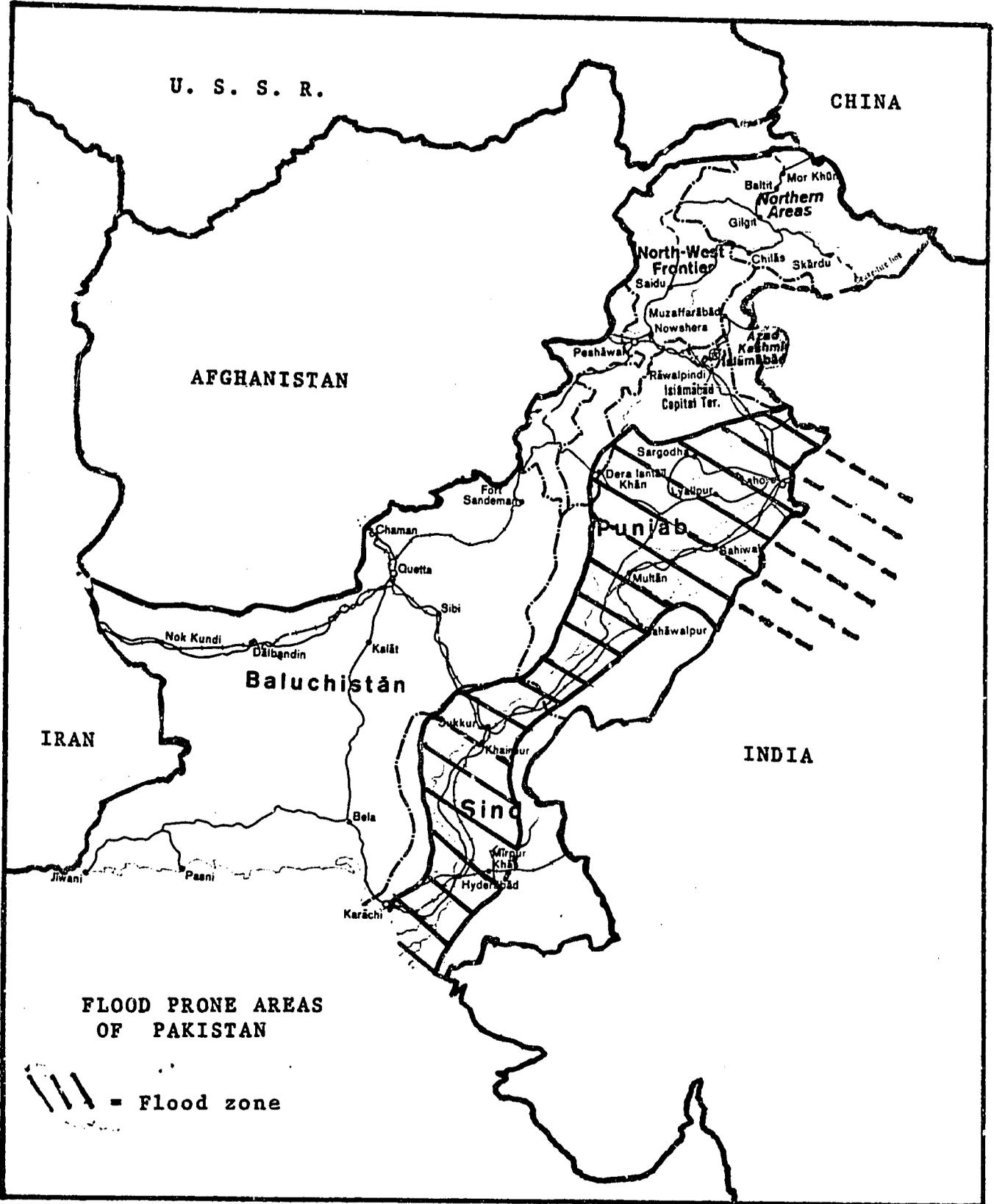
The Baluchistan plateau covers the southwestern quadrant of Pakistan at an average elevation of 1,000 m. The Province is defined by the mountain ranges along the Afghan border and those ranges emanating southwest and southeast from Quetta. A coastal plain extends along the Arabian Sea south of the Makran range. Baluchistan has several minor perennial rivers which flow into tributaries of the Indus River or into the Arabian Sea. In addition, several salt lakes and marshlands are located near the border with Afghanistan and Iran.

Punjab and Sind provinces occupy a large part of the fertile Indo-Gangetic plain, corresponding roughly to the drainage area of the Indus River and its tributaries: the Kabul, Jhelum, Chenab, Ravi, and Sutlej rivers. This area represents two-thirds of Pakistan's territory. The lower Indus plain, east of the city of Hyderabad, is one of the most productive agricultural regions of the country. Most of the lower plain is surrounded by sandy soils and includes the Thar Desert along 100 km of the Indian border. The low, swampy, and flood-prone area of the delta region fans out about 1,000 km from the coast.

### 2.2 Hazard Analysis

Floods: Floods are the most devastating and recurring disaster in Pakistan. More than 52,000 lives were lost in floods during the 1960s; 28 million people were affected, about 25 million hectares of land were inundated, and nearly 4 million structures were damaged or destroyed.

Figure 1



Source: U.S. Embassy Islamabad

Boundaries are not necessarily authoritative

Floods are generally restricted to the monsoon season from July through September, and occur primarily in Pakistan's two most populous provinces, Punjab and Sind, though vulnerability is somewhat lower in Sind.

Approximately 3.1 million hectares of a total 20.1 million hectares in the Punjab are located in flood zones. Serious floods affected the Indus basin in 1950, 1955, 1956, 1957, 1958, 1959, 1973, 1975, and 1978. From July to October in 1973, flood waters of an unprecedented magnitude ravaged agriculture and infrastructure in Punjab and Sind provinces. The intensity and volume of water carried by the Indus River and its tributaries caused unexpected breaches to numerous flood protection bunds. The event was preceded by a ten year drought.

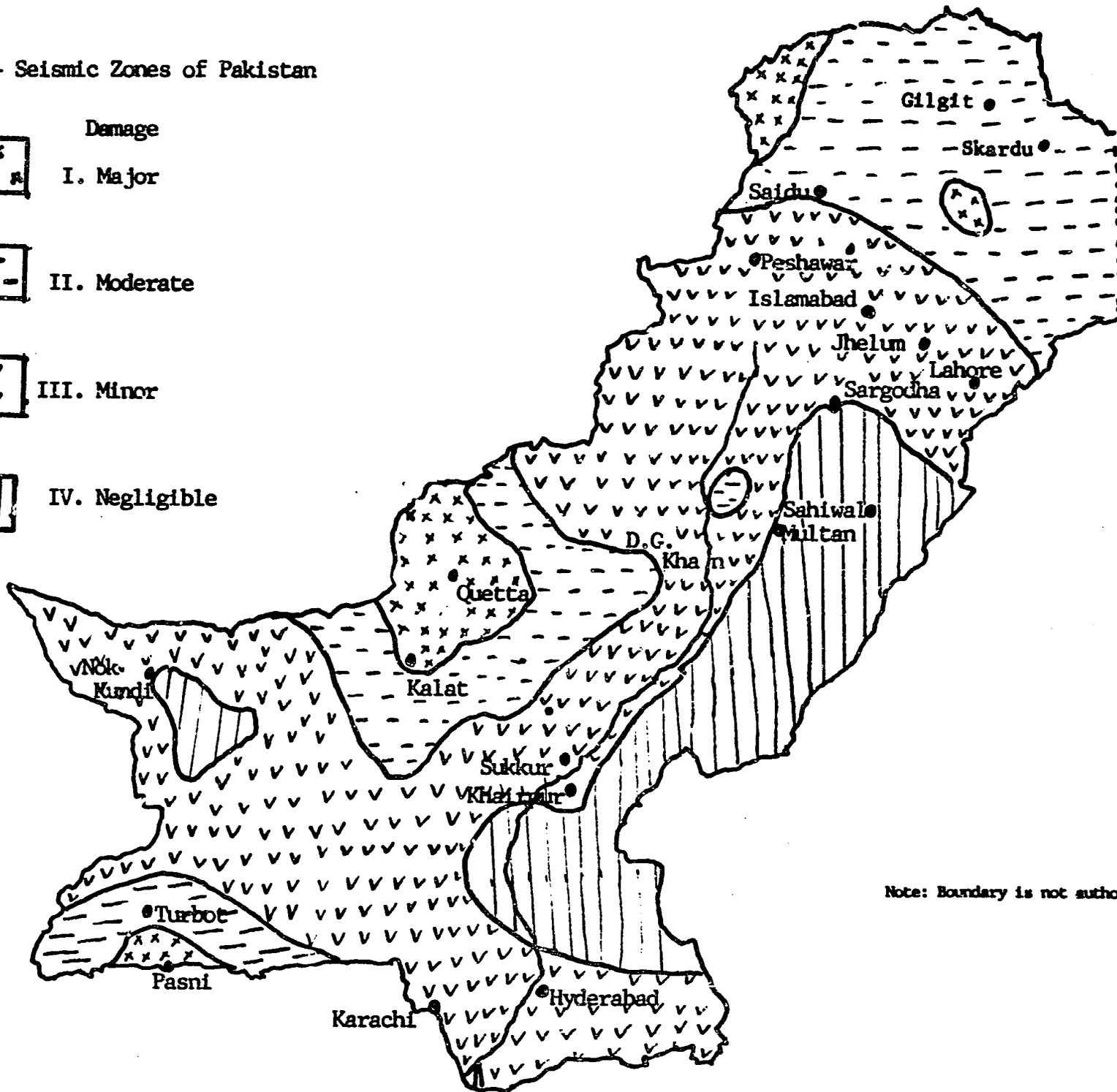
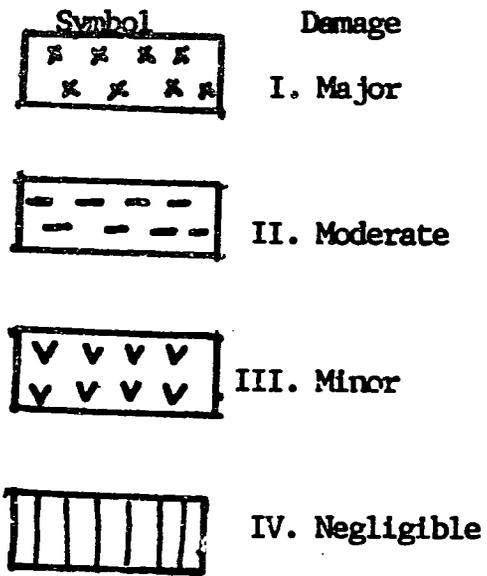
Flood protection is largely achieved through the construction of embankments or bunds. Virtually the entire length of the Indus River in Sind Province is bunded on both banks. In Punjab, marginal bunds have been constructed at all headworks and major river structures. Breaches, however, can occur at any location and inundate adjacent areas. In the Punjab, marginal bund failures tend to have more serious consequences because of the southwesterly sloping land.

The most flood-prone areas in Sind Province are the northern districts of Katcha, Pacca, and Sukhur. In Punjab, Sialkot district in the north and D.I. Khan district in the east are particularly vulnerable to flooding caused by hill torrents. Flash floods, often resulting from early monsoon rains, can induce serious damage throughout Sind and Punjab provinces, including Karachi, Pakistan's major port. These rains can lead to an unexpected rise in reservoir levels and inundate surrounding areas. During late June 1977, the city of Karachi received nine inches of rain in a 12 hour period. Because high tides prevented the rain water from draining into the sea, the city was inundated. Early monsoon rains in 1978 produced serious crop and infrastructure damage in all four provinces. However, because protective river embankments were strengthened and flooding was accurately forecast, losses were greatly reduced.

Deforestation in the mountainous areas of the Punjab and the NWFP has increased soil erosion and raised river bed levels downstream. The clearing of land for cultivation and livestock grazing has also stimulated landslide activity. Landslides have obstructed river flow in the Hills, and have resulted in flooding downstream when the accumulated water is released. In 1974 an avalanche in the mountains of the Punjab induced the formation of over 100 temporary dams along the headwaters of the Indus River. These events are compounded by the melting of glaciers which can also produce temporary dams.

Seismicity: The western areas of Pakistan, particularly between the Sulaiman range and the Afghanistan border, are considered to be highly seismic. The NWFP, Baluchistan, and northern Punjab along both margins of the Indus Valley, especially the Rann of Kutch, have been subject to

Figure 2 - Seismic Zones of Pakistan



Note: Boundary is not authoritative

destructive earthquakes. In December 1974, a major earthquake struck NWFP, Kashmir, and northern Punjab. Approximately 5,000 lives were lost and 5,200 houses were destroyed. The Swat and Hazara districts of the Indus Valley were the most seriously damaged by the quake. Rockslides and avalanches, however, caused more damage in the immediate aftermath of the earthquake, destroying homes, blocking roads, and burying household goods, agricultural tools, and animals.

Landslides: Landslides are a serious hazard in Pakistan's mountainous areas where thousands of homes, agricultural equipment, and infrastructure are destroyed each year. Many dams, including the Tarvella Mangla complex, have been destroyed by landslides. Landslides also contribute to river bed siltation in the Indus basin and threaten dams and barrages downstream. Earthquakes, snow melt, soil saturation, and other natural forces trigger landslides; however, human activities including land clearing for agriculture, livestock grazing, road construction, and irrigation projects aggravate Pakistan's landslide problem. As a result, many of Pakistan's watersheds are being destroyed, especially in the Azad Kash and Murcee Hills of the Punjab.

Drought: Uneven rainfall distribution and fluctuations in the onset, duration, and intensity of the monsoon season account for Pakistan's vulnerability to drought. Absence of any rainfall since 1978 in the southeastern part of Sind Province has produced near famine conditions among one-half million people who subsist mostly on the milk of their cattle.

Refugees: The influx of refugees from Afghanistan began in 1978 following the change in political leadership in Kabul, and reached a peak just after the 1980 Soviet invasion of Afghanistan. Historically, Pakistan has been hospitable to refugees, and has warmly accepted the wave of Afghans who now number nearly 3 million and continue to enter the country. About a quarter are adult males; the remainder are women and children. Most of the refugees reside in tents or thin mud structures in Baluchistan and NWFP. Semi-permanent settlements with markets and schools are being established. A well coordinated international relief effort has provided essential goods and services to the refugees; however, Pakistan's transportation and medical resources have been diverted to serve the refugees and are being greatly strained. Although the Afghans are free to move around the country, the Government of Pakistan (GOP) considers them guests who will eventually return to Afghanistan.

Malaria: Malaria is the most persistent and widespread disease in Pakistan. The country's geographic and demographic conditions, the large number of refugees, and the mobility of the population contribute to the malaria control problem. While nearly all areas of Pakistan are subject to malaria outbreaks, the Punjab is considered to be the most seriously threatened province. Malariogenic potential is also high along the entire Indus Basin including the cities of Hyderabad, Khaipur, Bahawalpur, Mullan, Lahore, and Sagodha.

Only the northern mountains, deserts, and isolated coastal areas are free of malaria. Most eradication projects have been conducted in the cities, although rural areas are also affected by the disease. Chemical toxins are used to combat the disease despite adverse environmental consequences.

The GOP's Malaria Eradication Project in the 1950's and 1960's achieved a high level of success. However, by the late 1960's large areas in which the disease was formerly controlled were suddenly subject to increased parasite incidence. The influx of Afghan refugees in the 1980's compounded malaria control efforts. In the refugee camps, malaria is considered the most serious health problem, after tuberculosis.

Other hazards: Industrial pollution and water supply contamination are posing additional health problems. Untreated industrial discharges are being deposited into rivers from which drinking water is drawn. In addition, chemical pesticides and fertilizers used for agriculture are seeping into the soil and contaminating ground water in the Indus basin. These areas are also exposed to infestation by locusts, rodents, insects, and flatworms. Locust invasions are a recurring menace to Pakistan, as semi-annual swarms damage crops. Breeding has been reported during the spring and summer in Bahawalpur, Khairpur, Mulanch Valley, Tharpurkar, Mekran, and Laskela.

Fires are a significant threat to lives and property, especially before the monsoon season at lower elevations. In February 1970, a midday fire broke out in the Gujuru Nala area of Karachi. Although a municipal fire fighting squad reached the affected area within 30 minutes, over 200 thatched homes were destroyed, leaving about 1,000 people homeless.

### 2.3 Disaster History

<u>Disaster</u>	<u>Location</u>	<u>Strike Date</u>	<u>Number Killed</u>	<u>Affected</u>
Earthquake	Quetta, Baluchistan	35/05/31	60,000	n.a.
Hail Storm	Hyderabad	39/03/10	n.a.	n.a.
Train Accident	Karachi	54/01/21	60	n.a.
Landslide	Lowarai Pass	59/12/16	48	n.a.
Cyclone	Coast, Indus Valley	64/06/12	450	4,000,000
Famine	Gilgit, Skardu	64/06/00	n.a.	300,000
Flood	Lahore District	64/10/00	n.a.	74,427
Cyclone	Karachi	65/12/15	n.a.	n.a.
Flood	Karachi Area	67/07/24	32	150,000
Cholera Epidemic	Multan District	68/04/00	37	1,075
Fire	Karachi	70/02/09	n.a.	1,105
Civil Strife	Punjab, Sind, Kash	71/12/00	n.a.	1,200,000
Flood	Punjab and Sind	73/08/00	474	4,800,000
Earthquake	N. Indus R. Valley	74/12/28	4,700	30,000

<u>Disaster</u>	<u>Location</u>	<u>Strike Date</u>	<u>Number Killed</u>	<u>Affected</u>
Heat Wave	Nationwide	75/06/00	14	n.a.
Flood	Punjab, Sind, NWFP	76/08/02	338	5,566,000
Flood	Widespread	77/07/00	848	777,000
Flood	Widespread	78/07/00	393	2,236,000
Heat Wave	Sind, Punjab	79/07/00	70	n.a.
Lightning Storm	Northern areas	80/06/13	18	n.a.
Earthquake	Northern areas, Damir	81/09/12	220	n.a.
Flood	Countrywide	82/08/00	15	10,000

#### 2.4 Vulnerability of Agriculture

Pakistan's major crops are wheat, rice, cotton, and sugarcane. A number of pulses, millet, sorghum, maize, and barley are also grown. Since 1980 agricultural growth has averaged 4.4% annually, but productivity has lagged behind increases in cultivated areas. Nonetheless, record cotton and sugarcane outputs were attained during 1981-82. Smaller rice purchases by bulk buyers in the Middle East have reduced earnings by 20% since 1980. Raw cotton, cotton cloth, and cotton yarn are all important export products. The level of raw cotton exports depends on textile manufacturing activity which has been declined because of the world-wide recession.

The main agricultural imports are edible oil, fertilizer, and wheat. Wheat and fertilizer imports are declining because of increased domestic production.

#### Crop Dates

<u>Crop</u>	<u>Harvest Period</u>	<u>Bulk of Harvest</u>
Wheat	Mar-June	Apr-May
Barley	Mar-June	Apr-May
Maize	Aug-Dec	Oct-Nov
Millet	June-Nov	Nov
Sorghum	Aug-Nov	---
Rice		
Autumn	July-Sep	July-Aug
Winter	Sept-Jan	Oct-Dec
Summer	Apr-May	Apr-May
Sugarcane	Oct-Jun	Dec-Feb
Potatoes		
Autumn	Dec-Feb	---
Spring	Apr-May	---
Hill crop	June-Nov	---

<u>Crop</u>	<u>Harvest Period</u>	<u>Bulk of Harvest</u>
Onions	Mar-June	Apr-June
Garlic	Feb-May	Feb-Apr
Chickpeas	Mar-May	Apr
Lentils	Feb-Apr	---
Dry beans		
Mash (Phaseolus mungo)	Oct-Feb	Nov-Feb
Mung (Phaseolus aurens)	Oct-Feb	Oct-Dec
Groundnuts	(Mar-Apr & Sept-Dec)	---
Linseed	Feb-Apr	mid Feb-mid Mar
Rapeseed & mustard seed	Jan-Apr	---
Sesame seed		
Winter	Oct-Jan	Nov-Dec
Summer	Sept-Oct	---
Tea	Mar-Dec	July-Early Oct
Tobacco	Mid Feb-July	Mid Feb-Mar
Tobacco (late snow)	Sept-Dec	---
Cotton	Sept-Jan	Oct-Dec
Sunhemp	Sept-Apr	Feb-Apr
Jute	July-Oct	Aug-Sept

Source: FAO, World Crop Harvest Calendar.

Pakistan boasts the largest system of integrated irrigation in the world covering 19.5 million hectares of cultivated land. About 75% of the cropped area (90% of Pakistan's agricultural production) relies on irrigation water supplies. Irrigated areas in the Indus basin, Peshawar valley, and plains (15.4 million hectares) account for the bulk of the harvest. Another 10 million hectares are cultivated under the "barani" method (rainfed or by small irrigation canals). Unfortunately, an increasing incidence of waterlogging and salinity is causing the water table level to rise, and is depleting soil nutrients. In addition, floods threaten crops and livestock along the entire Indo-Gangetic plain.

Although most earthquakes occur in remote non-agricultural areas, seismic activity in the northern Indus valley has resulted in some crop losses. Landslides in the NWFP have destroyed small agricultural plots in the highlands, and massive rockfalls, which often accompany earthquakes in mountainous areas, have damaged agriculture infrastructure including watermills (used for grinding wheat) and irrigation channels. The non-irrigated areas of the country are unsuitable for cultivation as they are subject to continuous droughts.

### 2.5 Vulnerability of Infrastructure

Human settlements and industry along the entire Indus basin are subject to flood damage. It is difficult to specify which areas are most vulnerable because a breach in a flood protection bund can occur almost

anywhere. The extent and severity of the flooding depends on precipitation levels, tides, and the occurrence of landslides and snow melts. During the 1973 floods, a breach south of the Panjad Headworks caused flooding 145 km away in the Abbasia Panjad canals. Most provincial plans, and some district plans, identify the locations of flood protection bunds and areas which have been repeatedly flooded.

About half the roads in Pakistan (40,000-60,000 km) are gravel or dirt surfaced and impassable during the monsoon season. In the mountainous areas of Pakistan, roads and bridges are particularly vulnerable to landslide and earthquake damage. Additionally, the country's largest dams are located along the southern edge of the Himalayan belt, an area of high seismicity. Most of Pakistan's major commercial centers are also located near this highly seismic area.

3. Disaster Preparedness and Assistance3.1 Host Country Disaster Plans and Organization

The 1970 cyclone in East Pakistan and the 1973 floods in Punjab and Sind provinces heightened awareness of the need for disaster planning. The formulation of disaster plans and the development of flood warning systems are manifestations of increased attention to disaster preparedness and prevention.

Disaster planning in Pakistan is conducted at the federal, provincial, and district levels. The Emergency Relief Cell (ERC) and the Planning Commission are the two most important entities at the federal level. The Planning Commission coordinates national disaster planning and determines resource allocations while the ERC coordinates disaster relief operations, serves as a liaison with provincial authorities, and initiates mitigation efforts. Direct involvement of the ERC is limited to the most serious disasters. Frequently recurring disasters, particularly floods, are usually dealt with at the provincial or district level. The Minister of Finance heads the ERC Committee, and the Director-General of the ERC reviews provincial and district plans to ensure consistency with national interests.

The Federal Disaster Plan is prepared by the Director-General in conjunction with ministers from the Railway, Communications, Water, and Irrigation ministries, regional representatives, and engineers. The Federal Plan outlines disaster prevention projects including dam synchronization, embankment construction, and crop financing to offset losses from disasters. Special regulatory bodies have been established for each kind of disaster. For example, the Central Flood Committee formulates national flood warning and relief policy, and meets several times a year to review all flood protection, warning, and relief plans. In addition, before each flood season, provincial officials inspect embankments, bunds, and other flood control structures.

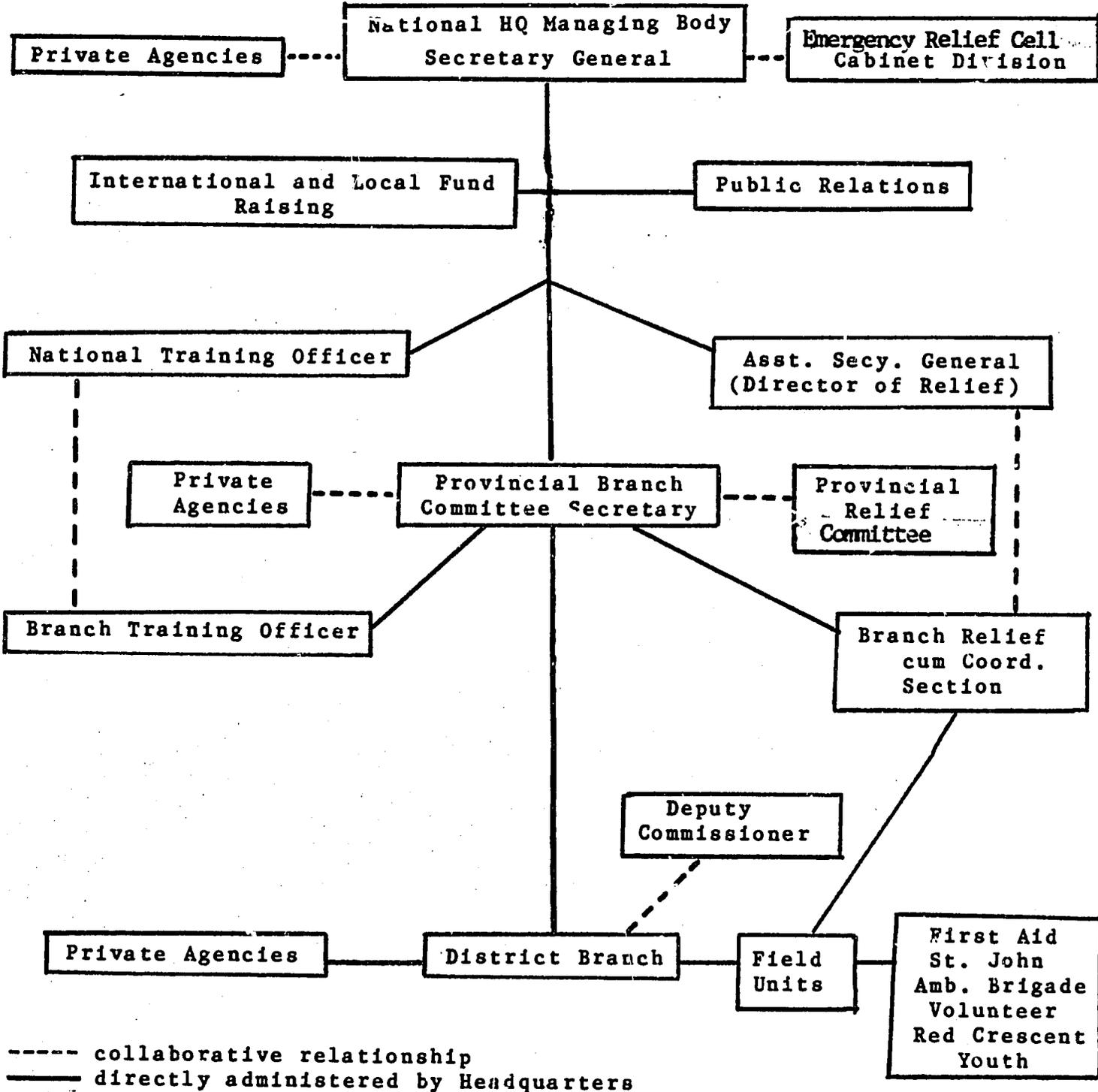
The Relief Commissioner in each province is responsible for all planning, preparedness, and relief efforts. As chairman of the Civil Administration, the Relief Commissioner must approve all flood warnings before they are broadcast to the public and conduct post-disaster surveys to assess infrastructure and agricultural losses.

Provincial disaster plans tend to be more operational in nature than the Federal Plan. In Punjab and Sind disaster plans emphasize flooding. The Punjab Flood Disaster Plan describes the roles of the Relief Commissioner, provincial authorities, and other "implementing agencies" involved in disaster relief. The "implementing agencies" refer to the following provincial departments: Health, Livestock and Dairy, Meteorology, Communications, Home, Food, Information, Telephone and Telegraph, and the Post Office. Additional implementing agencies

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Chart 1

Disaster Management Structure



include Pakistan Railways, the Police, Civil Defense, Civil Intelligence, and the Army. Rescue and relief operations are conducted at the provincial and district levels through the civil administrations of each province.

Each disaster-prone district has hazard-specific emergency plans. The district-level Deputy Relief Commissioner, assisted by a relief officer, is responsible for relief operations. A Relief Center is also established to manage finances and resource allocation. At the subdivisional level, the Assistant Commissioner has primary responsibility for implementing orders from the Relief Center, namely requisitioning and mobilizing manpower and supplies. The sector level, however, is the most important administrative unit in terms of direct relief. The sector officer and his staff conduct relief, rescue, and evacuations operations, and assess damages. Additionally, political parties and social welfare agencies play a major role in collecting food, clothing, and monetary donations.

The army maintains contingency disaster plans at the national, provincial, district, and sub-zone levels and army representatives participate in all Punjab Provincial Flood Commission and Central Flood Commission meetings. The army also performs rescue and aerial reconnaissance operations, and provides the Civil Administration with access to a wireless communications system.

### 3.2 Pakistan Red Crescent Society (PRCS)

As an auxiliary agency, the PRCS supports and participates in the relief efforts of public authorities. PRCS performs work in the following areas: assessment of relief needs, rescue and first aid, provision of shelter, food, and clothing, and evacuations.

While most PRCS activities are limited to disaster relief, the organization also assists in the formulation of national, regional, and local disaster plans. Liaison is maintained between the Society and the national, district, and local government relief bodies, as well as with the League of Red Cross Societies.

Pakistan Red Crescent Society  
169 Sawwar Road  
Rawalpindi

### 3.3 Warning Systems

Daily meteorological data is relayed to the Meteorological Office in Karachi from the weather station at Lahore Airport. The Pakistan Air Force has 3-cm radar units at Sargodha and Cherat, however, these have

very limited applications to flood forecasting. In the upper catchment areas, meteorological data is relayed from Karachi and Peshawar and is used to forecast rainfall levels. During the 1973 flood, NASA provided Pakistan with satellite images of southern Punjab Province, including aerial mapping, to determine the extent of the flooding and assess hydrological conditions of the major river systems. These techniques have enabled decision makers to monitor canals for breaks and leakages and to distinguish standing water and saturated soils from barren land.

The Provincial Flood Center at Lahore issues warnings to districts threatened by imminent floods. A panel of officers from the following Departments direct the Center's operations: Irrigation, Meteorology, Revenue and Information, and Railways and Highways. The Relief Commissioner of each province must approve a flood warning before it is issued. Once a district receives a warning, the Deputy Commissioner establishes a Flood Information Center. The Center, and the police, employ wireless and telephone systems to warn the population at the sub-divisional level. Special messengers transmit disaster warnings to the sector level. If electronic communications are interrupted at the village level, a drum roll or announcement from a mosque loudspeaker is broadcast to warn the population. The Pakistan Broadcasting Corporation also broadcasts at the direction of the Provincial Relief Commissioners; however, according to some reports only 10-15% of threatened families are informed of imminent floods.

#### 3.4 Grain Storage and Supplies

Quality control problems and the lack of storage facilities preclude most farmers from holding grain stocks for a long period of time. Grain within the private marketing system is stored on family farms generally in containers made of woven plant material plastered with mud or wooden boxes. On larger farms grain is stored in separate rooms in the farm house which is composed of mud and straw, or brick. Wheat can usually be stored for no more than 3 months due to poorly constructed storage facilities which do not provide adequate protection against the weather and pest infestation.

Foodgrains are also stored by arthis (foodgrain merchants), wholesalers, provincial food departments, and cooperatives. Arthis and wholesalers usually do not store grain for more than 10 days, and pay little attention to the quality of the storage facilities which are usually small houses made of brick or rock wall with capacities of up to 200 MT.

As of 1981, the Provincial Food Departments owned storage warehouses, bin storage, and silos at nearly 400 locations with a combined capacity of 1.9 million MT. (Punjab-1,167,000 MT; Sind-502,000 MT, NWFP-159,000 MT, and Baluchistan-72,000 MT.) The GOP plans to construct an additional 300,000 MT of storage space for food security purposes.

As of 1981, the Pakistan Agricultural Storage and Services Corporation (PASSCO) maintained warehouse space with a total capacity of 303,000 MT; of this 271,000 MT was in Punjab, with another 50,000 MT under construction. The most common structures are house-type godowns with capacities ranging from 500 MT to 16,000 MT. Reinforced concrete domes with a 1,500 MT capacity have recently been introduced. The provincial food departments also own bin storage units of concrete or brick and 42,000 MT silos. However, total storage capacity is inadequate for storing current wheat volume.

The Rice Export Corporation (RECP) of Pakistan owns almost 700,000 MT of storage space near Karachi with an additional 200,000 MT space under construction. In the Punjab, RECP operates seven rice mills with a combined storage capacity of 39,000 MT.

Diet: Flour from sorghum, millet, or maize is used to make flat unleavened bread which is baked on a griddle and forms the basis of most of the population's diet. Wheat is substituted by those who cannot afford the other grains. Rice, either plain or as pilaf, is also widely consumed.

Cooking oils include ghee (butter oil), hydrogenated vegetable oil (cottonseed and soybean), and rapeseed oil.

A wide range of vegetables is consumed: spinach, rapeseed/mustard greens, cauliflower, carrot, radish, turnip, eggplant, squash, pumpkin, gourds, potatoes, okra, green peas, tomatoes, cucumber, garlic, onion, chillies, and green coriander leaf. Fruits include mangos, guavas, bananas, oranges, dates, jujubes, watermelons, and cantaloupes.

Milk products are derived from buffalos, cow, sheep, and goats. Fresh mutton (domestic), fowl, and beef are prepared in a curry. Beverages include milk, buttermilk, and tea boiled with milk and sugar.

### 3.5 Medical Resources

Emergency health care is provided by the Ministry of Health and its Provincial Health Departments, the Red Crescent, the Army Medical Corps, the Institute for Social Security, and private entities. The Ministry of Health oversees health sector planning, the compilation of statistics, and inter-provincial coordination. Emergency health services, however, are administered directly by the Department of Health (DOH) in each province.

The District Health Officer (DHO) is responsible for emergency preparedness. During an emergency the DHO authorizes the establishment of Relief Centers staffed by medical teams. Relief Centers maintain stocks of vaccines, chlorequine, dextrosaline, and basic surgical supplies. The Centers can usually handle blood transfusions and surgery. In addition,

emergency hospital units are often set up in schools and municipal buildings. The DHO is also responsible for ambulance service, the formation of mobile medical teams, and purification of drinking water.

Health services provided by the Institute for Social Security are financed through contributions and most facilities are located in urban areas. Similarly, semi-public organizations such as the railways and water development authority offer in and outpatient care primarily in urban areas. Private sector health services consist of both western-style practitioners and traditional unani (Greek) and ayurvedic (Indian) practices.

In response to the September 1981 earthquake which struck northern Pakistan, the Army conducted evacuations, established field hospitals, and provided relief supplies to the affected population.

Hospitals in Pakistan can be classified into three categories: specialized hospitals in urban centers, general hospitals at the district and tehsil headquarters, and rural health centers. Most specialized hospitals have modern equipment and ample surgical facilities. The general hospitals have 100 to 350 beds and provide specialized care in surgery, obstetrics, gynecology, and pediatrics. General hospitals at the tehsil level have widely varying services and staffs, although most have surgical, pediatric, and X-ray facilities. Less than two thirds of all general hospitals have any ambulance equipment. Rural health centers are being expanded through the Basic Health Services Program, a nationwide effort to improve preventive and curative health care in remote areas. Each rural health center has at least two physicians, four to eight medical technicians, a dispenser, and lab assistants. At least four satellite units staffed by technicians are linked to the center. There are also a small number of charity hospitals as well as clinics operated by voluntary agencies. The Department of Health operates 132 of the 200 hospitals in the Punjab. The remainder are managed by municipal and private entities. DOH hospitals obtain drugs and other supplies from the Central Medical Store Depot at Lahore or locally. Each sector has at least one dispensary and many have mobile dispensaries. See also section 3.10, U.S. Voluntary Agencies.

The Red Crescent operates Disaster Relief Stores in each province. Supplies include cloth, cotton, clothing, shoes, first aid bags, and medical kits. During disasters the Red Crescent assembles Mobile Relief Units consisting of one doctor, one lady health visitor, one dispenser, one store assistant, three first aiders and numerous trained volunteers.

Both public and private hospitals lack sufficient operating room facilities, transportation equipment, stretchers, wheel chairs, minilap kits, theater equipment, surgical supplies, and suction and resuscitation equipment. At district and tehsil headquarters hospitals, there are shortages of doctors, nurses, and paramedical personnel. Nearly 40% of the hospital doctor positions are vacant.

Health Facilities and Beds by Province (1981)

<u>Province</u>	<u>Hospitals</u>	<u>Dispensaries</u>	<u>Total # of Beds</u>
Punjab	236	1,287	21,371
Sind	191	1,232	15,072
N.W.F.P.	138	624	7,578
Baluchistan	35	335	2,174
Total	600	3,478	46,195

Source: Statistics Pocket-Book of Pakistan, 1981.

Medical Personnel (1981)

Registered doctors	26,668
Nurses	9,872
Lady health visitors	2,171
Medical assistants *	809
Dentists	999
Pharmacists *	1,245
Dispensers	17,370
Midwives *	4,103
Assistant midwives *	3,606
Physical therapists *	157
Medical laboratory technicians *	94
Sanitary inspectors *	1,775
Malaria field officers *	698
Para-medical personnel *	22,024

\* 1977 Data, World Health Statistics Annual - WHO, 1978.

Source: Economic Survey of Pakistan, 1981-82.

3.6 Transportation Resources

Railway: Pakistan Railways (PR) is the main carrier of both freight and passenger traffic. Run by the central government, PR has nearly 8,800 km of track of which more than 90% is broad gauge. Rehabilitation and modernization of the system is currently under way to improve operational efficiency.

The system connects most of the major cities throughout the country, and also has connections to Iran, India, and Afghanistan. The busiest line runs from Karachi along the Indus River through Lahore, Hyderabad, Sukkur, Bahawalpur, and on to Islamabad, and Peshawar. Spurs from Hyderabad and Lahore connect with the Indian Railroad. At Sukkur another

line runs west to Quetta where it divides: one line continues to the Afghani border, another runs north to Fort Sandeman, and a third crosses the northern part of Baluchistan Province into Iran. Portions of the rail system have been electrified.

Motor roads and vehicles: Pakistan's roads total 40,000 km of which over 60% have bituminous surfacing. Nearly half the paved roads are in the Punjab. Most of the remaining roads are gravel surfaced with an additional 40,000-60,000 km of earth roads providing access to the rural areas during the dry season. Although the road network covers most urban and industrial centers, many of the paved roads are narrow and structurally weak.

The roads covered under the national highway system are a 1,735 km stretch connecting Karachi with Lahore, Peshawar, and Tarkham; a 834 km highway linking Karachi with Kalat, Quetta, and Chamman; a 410 km highway from Rohri to Quetta through Sukkur, Jacobabad, Sibi, and Quetta; and a 555 km highway running from D.I. Khan to Sandeman and Quetta.

Most trucks are privately owned. The eight-ton capacity Bedford truck is the standard vehicle and is assembled in Pakistan; domestically assembled three-quarter ton trucks are also popular. The typical bus is a 50-seater Bedford, although 10-seater mini-buses are becoming increasingly popular in urban areas. Most bus services are privately owned although there are four large provincial bus corporations.

The Transportation Service in the Office of the Relief Commissioner in each province is responsible for the allocation and efficient utilization of motor vehicles. The Service maintains an inventory of all available vehicles, earth moving machinery, scrapers, and bulldozers.

Following the 1973 floods, provisions to efficiently requisition motor vehicles were promulgated. If a "Dangerous High Flood" warning is issued, each potentially affected sector is required to provide one Jeep/pick-up and two trucks to evacuate the population.

Aviation: Pakistan has over 100 airports of which 69 have permanent surface runways.

ISLAMABAD/Chankala

Runway Characteristics

<u>Location</u>	<u>Designation</u>	<u>Class</u>	<u>Pavement Strength</u>	<u>Fuel/Octane</u>
<u>Coordinates</u> 33° 37' 02"N 73° 37' 57"E	12	A	LEN 85	80,100 JAI

Remarks: alternate aerodromes - DELHI, KABUL, KARACHI, LAHORE PESHAWAR

No aids information available.

KARACHI/Intl Tel: 48-03-61

Runway Characteristics

<u>Location</u> <u>Coordinates</u>	<u>Designation</u> <u>Type</u>	<u>Class</u>	<u>Pavement</u> <u>Strength</u>	<u>Fuel/</u> <u>Octane</u>
24° 54' 05"N 67° 09' 00"E	07/25R PA1	A	3520	100/JA1

Remarks: alternate aerodromes - AHMAHADAB, BOMBAY, DELHI, DOHA, DUBAI, ISLAMABAD, LAHORE, NAWABSHAH

Aids: ILC, PA, SA, VA, PWY, TE, B, DES, CLM, THR, TDZ, SST, FXD, TWY

LAHORE/Lahore Tel: 37-03-50

Runway Characteristics

<u>Location</u> <u>Coordinates</u>	<u>Designation</u>	<u>Class</u>	<u>Pavement</u> <u>Strength</u>	<u>Fuel/</u> <u>Octane</u>
31° 31' 17"N 74° 24' 09"E	18/3 PA1	B	2200	100,JA1

Remarks: alternate aerodromes - AMBITSAR, DELHI, ISLAMABAD, KARACHI, NAWABSHAH, PESHAWAR

Aids: ILS, NDB/L, PA, SA, VA, RWY, TE, B, DES, CLM, THR, TDZ, SST, TXD, TWY

NAWABSHAH/Nawabshah

Runway Characteristics

<u>Location</u> <u>Coordinates</u>	<u>Designation</u>	<u>Class</u>	<u>Pavement</u> <u>Strength</u>	<u>Fuel/</u> <u>Octane</u>
26° 15' N 68° 22' E	02/20 INST	A	2134	80,100 JA1

Remarks: alternate aerodromes - KARACHI, LAHORE

Aids: NDB/L, DES, CLM, THR, FXD, TWY

## PESHAWAR/Peshawar

Runway Characteristics

<u>Location</u> <u>Coordinates</u>	<u>Designation</u>	<u>Class</u>	<u>Pavement</u> <u>Strength</u>	<u>Fuel/</u> <u>Octane</u>
34° 00' 11"N 71° 30' 21"E	17/35 NINST	B	1650	JAI

Remarks: alternate aerodromes - KARACHI, LAHORE

Aids: NDB/L, DES, CLM, THR, FXD, TWY

KeyAbbreviations

INSTR	Instrument Approach Runway
N-INSTR	Non-Instrument Runway
PA1	Precision Approach Runway Category I
PA2	Precision Approach Runway Category II
PA3	Precision Approach Runway Category III
RS	International Scheduled Air Transport, Regular Use
RNS	International Non-Scheduled Air Transport, Regular Use
RG	International General Aviation, Regular Use
AS	International Scheduled Air Transport, Alternate Use

Radio Aids

ILS	Instrument Landing System
DME	Distance Measuring Equipment
VOR	Very High Frequency Omni-Directional Radio Range
NDB/L	Non-Directional Beacon or Locator

Lighting Aids

PA	Precision Approach Lighting System
SA	Simple Approach Lighting System
VA	Visual Approach Slope Indicator System
AV	Abbreviated Visual Approach Slope Indicator System
RWY	Runway Edge, Threshold, and Runway End Lighting
CLL	Runway Center Line Lighting
TDZ	Runway Touchdown Zone Lighting
TE	Taxiway Edge Lighting
TC	Taxiway Center Line Lighting
STB	Stop Bars
B	Aerodrome or Identification Beacon

Marking Aids

DES	Runway Designation Marking
CLM	Runway Center Line Marking
THR	Runway Threshold Marking
TDZ	Runway Touchdown Marking
SST	Runway Sidestripe Marking
FXD	Fixed Distance Marking
TWY	Taxiway Center Line Marking
HLD	Taxiway Holding Position Marking

Runway Surface and Length

H	Hard Surface (numbers = ft. in hundreds)
S	Non-Hard Surface (numbers = ft. in hundreds)

Additional Lighting

L1	Portable Runway Lights (electrical)
L2	Boundary Lights
L3	Runway Flood Lights
L4	Low Intensity Runway Lights
L5	Low Intensity Approach Lights
L6	High Intensity Runway Lights
L7	High Intensity Approach Lights
L8	Sequenced Flashing Lights
L9	Visual Approach Slope Indicator (VASI)

Domestic Airlines and Aircraft

Pakistan International Airlines Corp.  
 PIA Building  
 Karachi Airport  
 Karachi  
 Tel: 41-20-11  
 Cable: PAKINTAIR

U.S. Offices:  
 545 Fifth Avenue  
 New York, NY 10017  
 Tel: (212) 370-9150  
 Cable: PAKINTAIR

1027 17th St., N.W.  
 Washington, D.C. 20036  
 Tel: (202) 296-1775

Fleet: 4 B747B, 3 DC-10-30, 6 B707, 3 B720, 9 F-27 Fokker  
 Friendships, 4 Airbus A-300B

## Pakistan Air Force

Fleet: 11 B-57B, 17 Mirage 111 EP, 38 Mirage 5 RIDP, 140 MiG-19/  
 F-6, 40 F-86F/Sabre 6, 10 Mirage 111 RP, 14 C-130 B/ES, 1  
 L-100, 1 Falcon 20, 1F-27, 1 Super King Air, 1 Bonanza,  
 4 Super Frelons, 14 Alouette 111, 1 Puma, 12 Bell 47G.

Pakistan Army  
Army Headquarters  
Rawalpindi

Fleet: 30 Saab Supporters, 12 Mi-8, 35 Pumas, 30 Alouette  
111, 12 UH-1, 15 Bell 47G.

### 3.7 Energy Sources

GOP seeks to reduce dependence on imported oil, which represents 35% of the country's energy consumption, by developing natural gas and hydro-power resources. Natural gas now accounts for over 50% of domestic energy production with an estimated 15.9 trillion cubic of recoverable reserves. The hydroelectric potential is estimated at 20,000 MW, however, its development is hampered by the rugged terrain and fluctuating rainfall levels.

Non-commercial energy resources are providing approximately 40% of Pakistan's requirements. In the mountainous areas of Punjab and NWFP, firewood is consumed in large quantities because no alternative source exists. GOP is testing the use of animal dung for biogas, geothermal, and solar application. One hundred demonstration plants have been constructed.

### 3.8 US Mission Disaster Plan

According to the 1976 U.S. Mission Disaster Plan, the Mission will defer to the United Nations Development Program Office in the event of a major disaster. The Plan provides a general description of disaster management in Pakistan and defines the potential roles of A.I.D. staff members. In a disaster situation, the Mission Disaster Relief Officer would evaluate the necessity for U.S. assistance, maintain contact with the GOP Emergency Relief Cell, communicate with other donors, and brief the Ambassador.

The USAID program in Pakistan is focused on strengthening the country's foreign exchange and balance of payments positions. Several development projects are important components of this effort. They include: an agriculture production, distribution, and storage project, technical assistance in the management of irrigation systems, energy analysis, and malaria control. In addition, training and financial analysis is being provided as part of a primary health care project. For additional details, consult the most recent Country Development Strategy Statement for Pakistan..

3.9 International Organizations

The local office of the United Nations Development Program (UNDP) serves as an intermediary between foreign donors and the Government of Pakistan. UNDP distributes reports on disaster situations to donors and issues appeals for assistance to foreign countries.

United Nations Development Program (UNDP)  
Block No. 2, Enclave A Shopping Centre  
Ramna 5, Islamabad  
Tel: 28461

World Health Organization (WHO)  
UN Building  
Ramna 5  
P.O.B. 1013  
Islamabad  
Tel: 22316

UNICEF  
58 Khayban-1-Iqbad  
E 7/2 P.O.B. 1063  
Islamabad  
Tel: 25142/35

World Food Program (WFP)  
87th Street Ramnar 6/3  
P.O.B. 1051  
Islamabad  
Tel: 20961

International Committee of the Red Cross  
440 Bazar Road  
Ramna 6/4  
Tel: 22681

3.10 U.S. Voluntary Agencies

Afghan Border Crusade  
c/o Free Evangelical Church  
Shamganj, Mardan, NWFP  
Operates a dispensary at Kohat and a clinic near Oghi.

Agricultural Development Council  
P.O.B. 3120  
Bulber Colony Post Office  
Lahore  
Conducts research in agricultural economics and farming mechanization under a Ford Foundation grant.

**Associated Reformed Presbyterian Church**

Nancy Fulwood Hospital

Sahiwal

Provides food and medicine to flood victims, operates a 140-bed hospital at Sahiwal offering programs in tuberculosis control, and manages a food production program in the Sahiwal district.

**CARE**

P.O.B. 1250

Islamabad

P.O.B. 268

Peshawar

Assists Afghan refugees, construction of houses, wells, etc.

**Catholic Relief Services**

P.O.B. 7401

Karachi 3

Tel: 514587

Provides medical supplies to local hospitals, conducts relief and rehabilitation programs for Afghan refugees, rural road construction.

**Church World Service**

P.O.B. 7743

Karachi

In cooperation with the Christian Council of Pakistan, CWS provides medicine, clothing, shelter to Afghan refugees; medicine to over 100 health institutions.

**Conservation Baptist Foreign Mission Society**

Shikarpur Christian Hospital

Shikarpur, Sind

Operates a hospital at Shikarpur.

**Direct Relief Foundation**

P.O.B. 1319

Santa Barbara, CA 93102

Tel: (805) 966-9149

Provides medical supplies and equipment to Afghan refugees.

**Evangelical Alliance Mission**

98-D, Satellite Town

Chandni Chowk, Rawalpindi

Operates a primary school at Abottabad and some dispensaries at Mushirabad and Oghi.

**The Ford Foundation**

No. 2 Street 61

Shalimar 7

P.O.B. 1043

Islamabad

Provides grants for food, family planning, etc; about a dozen cars at US Mission disposal.

**International Missions**

Mohalla Qureshi

Leiah District

Operates a clinic in Janpur, D.I. Khan District.

**International Rescue Committee, Inc.**

GPO 504

Peshawar

Provides curative and preventive health care for Afghan refugees; 4 mobile teams.

**Medical Mission Sisters (S.C.M.M.)**

St. Theresa's Hospital

Mirpurkhas, Sind

Operates a 225-bed hospital in Karachi, trains hospital and village health workers.

**Mill Hill Missionaries**

Bishop's House

Church Road

Rawalpindi

Tel: 62297

Assists in operating hospitals at Rawalpindi, Gujrat, and Sargodha.

**The Salvation Army World Service**

P.O. Box 242

Lahore 4

Tel: 53422

Provides medical services through medical welfare centers in Faisalabad, Hyderabad, Jhang, Karachi, Lahore, Shantinagar, and Thal.

**The United Presbyterian Church**

6 Empress Road

Lahore 5

Provides support to a 135-bed hospital at Sialkhot, a 150-bed hospital at Taxila, and a 250-bed hospital in Lahore.

**World Medical Relief, Inc.**

11745 Twelfth Street

Detroit, MI 48206

Tel: (313) 866-5322

Distributes donated drugs, medical supplies, and equipment to Afghan refugees; supplies food supplements.

3.11 Local Relief Organizations

There are 1,400 registered voluntary agencies in Pakistan. Eight provide assistance on a national scale; the remainder limit their operations to the district or provincial level. A list of the major welfare agencies follows:

Pakistan Association of the Blind  
56, Abdullah Haroon Road  
Karachi  
Tel: 78492

Pakistan Council for Child Welfare  
Room No. 5, Block No. 56/6  
Pakistan Secretariat, Karachi

Pakistan Girl Guides Association  
5 Habibullah Road  
Lahore

Pakistan Boy Scouts Association  
Amin House  
Mauli Tamizuddin Klan Road  
Karachi

All Pakistan Women's Association  
67/B Garden Road  
Karachi

National Federation for the Welfare of the Blind  
36/6 Love Lane  
Garden East  
Karachi

Pakistan Red Crescent  
National HQ Dr.  
Dawood Pota Road Res.

### 3.12 Disasters and the Development Process

For Pakistan the issue of development and disasters is most relevant in terms of flooding. Each year the recurrence of floods in the Indus River Basin hinders economic performance. The annual dislocation to household income and local economies is staggering. Agricultural and industrial activity becomes paralyzed for about 60 days each year preventing many residents from working. The resulting decline in personal income reduces consumer demand with an adverse effect on the entire economy. Moreover, the hoarding of vital supplies and mushrooming of the black market contributes to inflationary pressures.

Rehabilitation expenditures represent an additional opportunity cost to the regional economy. Inhabitants of river bank settlements spend about 10% of their annual income on the repair and reconstruction of dwellings. And about 5% of income is devoted to land reclamation because of water logging and topsoil erosion. Thus, the pattern of disruptions to commercial activity in the flood-prone areas of Punjab and Sind provinces represents a diversion of resources, and a major constraint to the development process.

Inadequate maintenance of Pakistan's irrigation infrastructure is actually increasing flood vulnerability. Canals and surface drains clogged with sediment and debris are not being cleaned. This is reducing the channel water carrying capacity at a time when the demand for irrigation water exceeds the design capacity of canals. Furthermore, flood protection bunds, particularly those constructed with manual donkey techniques, are rarely rehabilitated following flood damage. The increasing frequency of bund failures is having a significant impact on regional development. The uncertainty of water supplies is surely an impediment to increased agricultural production. In addition, increased bund vulnerability has affected cropping patterns. In Baluchistan, the irrigation infrastructure along with rail and motor road construction is obstructing the terrain's natural drainage, thus enhancing flood potential in the province.

Deforestation and its adverse environmental consequences represents another area where developmental issues pertain to disaster potential. The reform of human practices which are causing deforestation in high-land areas must be undertaken in the context of overall water management and energy policies as well as forestry development for commercial use. In other words, reductions in firewood consumption for home use and cooking should be coordinated with, inter alia, conservation programs, watershed projects and alternative energy schemes. The latter is related to the GOP's goals of reducing costly oil imports through substitution with domestic energy resources. Hence, the developmental objectives of national forestry and energy policies should be coordinated with efforts to reduce deforestation and alleviate disastrous soil erosion and flooding.

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St. Lucia  
St. Vincent  
Trinidad and Tobago  
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CENTRAL/SOUTH AMERICA

Bolivia  
Chile  
Costa Rica  
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El Salvador  
Guatemala  
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Nicaragua  
Peru

INDIAN OCEAN

Island Countries of the  
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The Comoros  
Madagascar  
Maldives  
Mauritius  
Reunion  
Seychelles