
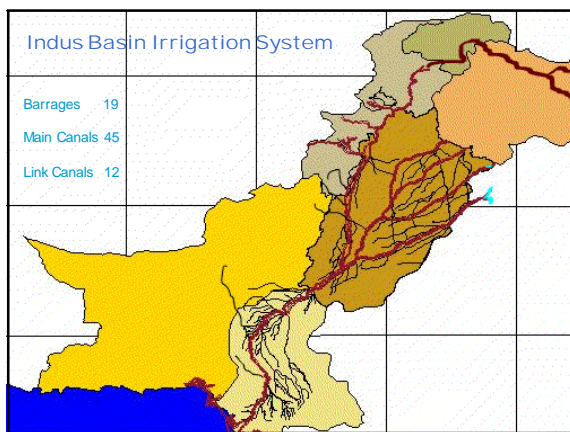
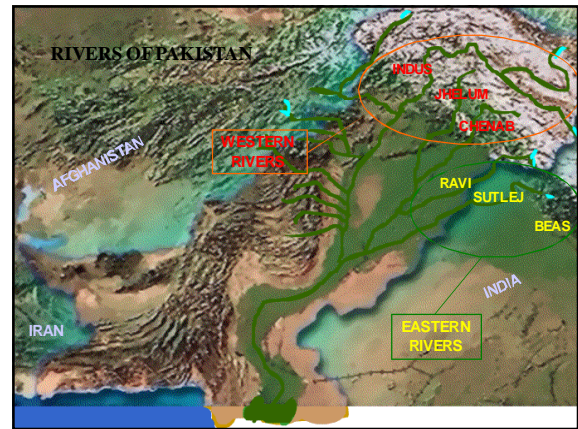


**South-Asian Regional Workshop
on
Climate Change And Disaster Risk Management**



**“Water Management
For
Mitigating Floods & Droughts”**

Prepared By:
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COUNTRY PROFILE

- Geographical Area of Pakistan: 796,101 square kilometers
- Current Population: 160 million people
- Agriculture contribution in GDP: 25%
- Agriculture contribution in employment: 47%
- Foreign Exchange Earnings (Agriculture): Above 60%
- Principal Crops: Wheat, Rice, Cotton, Sugar-cane, Oilseed, Grams & Pulses
- Large Rivers Head-works: 19 Nos.
- Independent Irrigation Canal System: 45 Nos. (64,000 Kms)
- Large Dams with height 15m and above: 138 Nos. (Including 03 Super Storage Reservoirs)
- River Discharges in Summer: 3,000-34,000 Cusec (100,000-1,200,000 Cusec)
- Area currently served by Irrigation System: 17 million Hectares (42 million acres)

Existing Irrigation/Flood Protection Network

The Irrigation System Of Pakistan Is The Largest Integrated Irrigation Network In The World, Serving 42.0 Million Acres Of Contiguous Cultivated Land. The System Is Fed By The Waters Of The Indus River And Its Tributaries.

Salient Features Of Irrigation Network

Structure	No.
Major Storage Reservoirs	03
Barrages	19
Inter-river Link Canals	12
Independent Irrigation Canal Commands	45

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Federal Flood Commission

- Prior to 1976, the Provincial Governments were responsible for the planning and execution of flood protection works;
- Disastrous floods of 1973 and 1976 resulted in heavy losses indicating that existing flood protection facilities and planning were inadequate to provide effective protective measures for the country;
- Consequently in January 1977 it was decided to establish Federal Flood Commission for integrated flood management on country-wide basis.

Functions Of Federal Flood Commission

- I) Preparation Of National Flood Protection Plans
- ii) Approval Of Flood Control Schemes Prepared By Provincial Governments And Concerned Federal Agencies
- iii) Review Of Flood Damages To Public Sector Infrastructure And Review Of Plans For Restoration And Reconstruction Works
- iv) Measures For Improvements In Flood Forecasting And Warning System
- v) Standardization Of Designs And Specifications For Flood Protection Works
- vi) Evaluation And Monitoring Relating To Progress Of Implementation Of The National Flood Protection Plan (nfpp)
- vii) Preparation Of A Research Program For Flood Control And Protection
- viii) Recommendations Regarding Principles Of Regulation Of Reservoirs For Flood Control

NOTE: Responsibility Of Implementation Rests With The Provinces

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Composition Of Federal Flood Commission

- Chief Engineering Adviser/Chairman Federal Flood Commission **Chairman**
- Chief (Water), P & D Division **Member**
- Joint Secretary (Roads), M/O Communications **Member**
- Member (Water), WAPDA **Member**
- Director General, PMD **Member**
- Member (Civil) Engineering, Pakistan Railways **Member**
- Four Provincial Irrigation Secretaries **Members**
- FATA, AJK, Northern Areas & NDMA **Co-opted Members**

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Existing Flood Protection Facilities (Structural)

Province	Embankment (KM)	Spurs (No.)
Punjab	3,332	493
Sindh	2,422	46
NWFP	352	178
Balochistan	597	643
Total:	6,703	1,360

Existing Flood Protection Facilities (Non-Structural)

- 10-CM QPM Weather Radar System at Sialkot, Mangla & Lahore.
- 5 CM Weather Radars at Karachi, Rahim Yar Khan, D.L.Khan and Islamabad;
- 89-HF Radio Communication sets for effective data transmission;
- Meteoroburst Telecommunication System for improved flood gauging & telemetry;

National Flood Protection Plan-I (1978-87)

Normal Annual Development Program

- Cost Rs 1,730 million
- No. of Project 350 (in all the four Provinces)
- Funding Agency 100% by GOP

National Flood Protection Plan-II (1988-97)

Normal Annual Development Program

- Cost Rs 2,541 million
- No. of Schemes Completed 170
- Funding Agency 100% by GOP

Flood Protection Sector Project-I (FPSP-I)

- Cost Rs 4,860 million
- No. of schemes completed 257
- Foreign funding (ADB) US \$ 131.07 million (80% ADB, 20 % GOP)

**National Flood Protection Plan-III
(1998-2007)**

- **1. Normal Annual Development Program:**
 - -Cost actually spent Rs. 3,415 million
 - -No. of Flood Protection Schemes 362
 - (In four provinces, AJ & K, FAT A, ICT and NA)
- **2. Second Flood Protection Sector Project:**
 - -Cost actually spent) Rs. 4,165 million
 - -No. of Flood Protection Schemes 101
- **3. Flood Forecasting & Warning System for Lai Nullah Basin in Islamabad-Rawalpindi:**
 - -Cost actually spent Rs. 348 million
 - -Funding -Japanese Grand -in-Aid Rs. 337 million
 - -GOP share Rs. 11.00 million

**National Flood Protection Plan-IV
(2008-2017)**

S. No.	Agency/Province	Estimated Cost (Rs in billion)
I.	Punjab	11.250
	Sindh	7.750
	NWFP	2.750
	Balochistan	2.000
	FATA	0.750
	Northern Areas	0.250
II.	AJ&K	0.250
	WAPDA	0.586
III.	PMD	2.200
	FFC, Capacity Building, Consultancy Services	2.214
Total:		30.000

**The Policy Towards
Water Resources Management**

- WATER MANAGEMENT PLAN
- WATER CONSERVATION
- PROTECTION OF INFRASTRUCTURE AND LANDS FROM WATER LOGGING, SALINITY AND FLOODS
- INSTITUTIONAL REFORMS

Water Management Plan

1. CONSTRUCTION OF NEW STORAGES
2. CONSTRUCTION OF NEW CANALS, DISTRIBUTORIES & MINORS WHERE EVER NECESSARY
3. SYSTEM IMPROVEMENT
 - i) Modernization of Barrages
 - ii) Rehabilitation and Remodelling Irrigation System
 - iii) Lining of Canals
 - iv) Institutional Strengthening and Capacity Building
4. DRAINAGE OF IRRIGATED LANDS
5. EFFECTIVE FLOOD CONTROL SYSTEM

**Major Projects in Planning & Implementation
(Dams)**

- Akhori
- Diامر-Basha
- Kurram Tangi
- Munda
- Satpara
- Mirani
- Sabakzai

**Major Projects in Planning & Implementation
(Canals/Drainage Systems)**

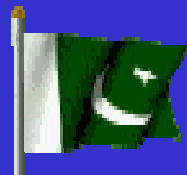
- Kachhi
- Raineer
- Greater Thal
- Lining of existing canals
- Lining of existing distributaries
- Construction of right bank outfall drainage system in lower Indus basin

WATER CONSERVATION/INCREASING THE CROP YIELD

- Proper demonstration of successful pilot projects related to the increase in crop yield & judicious use of water for the information of farmers / growers
- Formation of crop zones
- Rationalizing water allowances keeping in view of the present practices.
- Promoting new technologies/innovations
- Proper use of ground water and its monitoring
- Updating of ground water management act

INSTITUTIONAL REFORMS

- Conversion of existing Provincial Irrigation departments into Authorities (PIDAs)
- Formation of Area Water Boards
- Formation of Farmer's Organizations
- Formation of Water Council & National Water Policy
- Proper use of ground water and its monitoring
- Updating of ground Water Management Act
- Improvements in Water Audit Systems
- Capacity building of Indus River System Authority (IRSA)



Thank You