BRIEF ON ORGANIZATION OF
CHIEF ENGINEERING ADVISER / CHAIRMAN
FEDERAL FLOOD COMMISSION

In the late forties, a Central Engineering Authority was constituted with vast powers to deal with all water, power and allied engineering matters at the national level. It was also the Executing Body for the execution of several projects. In 1959, after the creation of Water and Power Development Authority (WAPDA), re-organization was done and a reduced organization at the federal level was retained for the primary purpose of providing advisory services, and it was re-designated as the Chief Engineering Adviser's Office. In January 1977, a Federal Flood Commission (FFC) was established for integrated flood management at national level and the Chief Engineering Adviser was also made the Chairman of FFC. Apart from these functions, the Government of Pakistan, in 1987, also placed a Dams Safety Council in the CEA's organization to conduct inspection of existing dams and work out plans for new dams.

Presently, following cells are working in the Office of Chief Engineering Adviser/ Chairman Federal Flood Commission:

Civil Engineering Cell

1. To examine the conceptual, pre-feasibility, feasibility reports and PC-I's of water sector projects prepared by WAPDA, Provincial Irrigation Departments and other agencies, and furnish comments to the Ministry of Water & Power.

2. Expert advice and assistance to all Federal Ministries and Provincial Governments, as well as WAPDA, on any engineering matters as are referred to it.

3. Render advice on international disputes arising out of the works constructed or likely to be constructed in neighboring countries having repercussion on the river flows of Pakistan.

4. Exchange of technical data and general liaison with national and international organizations, including the International Commission on Irrigation and Drainage (ICID), in matters related to irrigation, drainage, and flood control. The Cell also works as the Secretariat of Pakistan National Committee of ICID (PANCID).

5. To attend Advisory Committee meetings of IRSA to resolve water related issues and to ensure that operation of irrigation system by provinces and of Hydel stations (Tarbela and Mangla Dams) by WAPDA, is performed through consensus and in accordance with the Government decisions taken from time to time.

6. To attend to National Assembly and Senate matters.

Power Engineering Cell

1. To evaluate Power Sector Projects prepared by WAPDA, NTDC, GENCOs, DISCOs, PPIB & AEDB and render expert and technical advice to the Ministry including

    - Hydel, Thermal and non-conventional (solar, wind power etc.) generation projects
    - Transmission Lines and Grid Station Projects
    - Power Distribution Network Projects
    - Rural Electrification Projects

2. To monitor the implementation of projects by reviewing monthly progress reports and physical progress as well

3. To monitor and evaluate system operation of PEPCO/WAPDA and KESC on daily basis and suggest improvements in operational procedure

4. To coordinate and monitor generation development activities, like feasibility studies of hydropower, thermal and renewable power projects & panel of experts with Private Power and Infrastructure Board (PPIB) and Alternate Energy Development Board (AEDB)

5. To render advice on matters related to NEPRA regarding tariff determinations of GENCOs, IPPs, NTDC, DISCOs, etc.

6. Coordination with NEPRA for generation, transmission and distribution Licenses and render expects advice to the Ministry

7. To represent Ministry of Water and Power regarding cross-border electricity projects with Iran, Central Asian States, India and SAARC countries

8. Expert / technical advice is rendered on policy related matters referred to by the Ministry from time to time

9. To verify DISCOs monthly claims with GoP regarding Tariff Differential Subsidy on behalf of Ministry of Water and Power

Dams Safety Council

1. To carry out periodic inspections of dams and advise WAPDA regarding repairs and maintenance of dams and reservoirs

2. To review plans of new dams and monitor the implementation of such projects

3. To review the plans and specification for enlargement, modifications, major repairs, revival or otherwise of dams/reservoirs

4. To supply technical data and general liaison with national and international organization, including international commission on large dams (ICOLD)

5. Pakistan is a member of the International Commission on Large Dam (ICOLD). The council works as the Secretariat of Pakistan National Committee on Large Dams (PANCOLD)

Flood Cell

1. Preparation of National Flood Protection Plans.

2. Approval of Flood Control Schemes prepared by Provincial Governments and concerned federal agencies.

3. Review of flood damages to flood protection infrastructure and review of plans for restoration and reconstruction works.

4. Measures for improvements in Flood Forecasting and Warning System.

5. Standardization of designs and specifications for Flood Protection Works.

6. Evaluation and monitoring relating to progress of implementation of the National Flood Protection Plan (NFPP).

7. Preparation of a research programme for Flood Control and Protection.

8. Recommendations regarding principles of regulation of reservoir for flood control.

Management and Administration Cell

1. General services management

2. Administrative Coordination of Trainings (both local as well as foreign)

3. Annual budgeting of office and development projects, utilization, control and audit.

4. Maintenance of project accounts, processing of consultancy services bills, internal inspection of accounts and financial monitoring of development projects.

ACHIEVEMENTS

1. 1988-Flood / Rain Damages Restoration Project

i.	Cost	Rs 1926.00 million
ii.	No. of irrigation and flood projects restored	2,028
iii.	Foreign Funding (ADB)	US$ 200 million

2. Flood/Rain Damages Restoration Report (FDRP) (1992-94)

1992-94 Flood/Rain Damages Restoration Project FDRP)

▪ Total expenditure incurred	Rs 6659.22 million
▪ No. of irrigation and flood projects restored	1980
▪ Foreign Funding (IDA, EU, KFW & ADB)	US $ 193 million

3. Master Feasibility Studies for Flood Management of Hill Torrents of Pakistan (1998)

The preparation of Master Feasibility of Hill Torrents of Pakistan was assigned under Contract between Federal Flood Commission (FFC), Ministry of Water & Power, Government of Pakistan and National Engineering Services Pakistan Limited (NESPAK) signed on 11th June 1995. The primary objective of the study was to provide a basic framework for orderly and integrated development of land and water resources of hill torrents of Pakistan.

4. National Drainage Programme (NDP)(2000-2004)

1. National Water Policy

2. Water Rights in Selected Canal Commands

3. Gypsum Pricing, Marketing and Distribution

4. Study on Promoting Private Investment in Drainage

5. Exploitation and Regulation of Fresh Ground Water (FGIN)

6. Revenue Option and Prospects for WAPDA's Water Wing

7. Efficacy of Past Drainage Investments.

5. Formulation of National Water Sector Strategy (2002)

The Water Sector Strategy was developed through the Water Resources Strategy Study, initiated in July, 2001 and executed by the Ministry of Water and Power, Government of Pakistan, through the office of the Chief Engineering Adviser / Chairman Federal Flood Commission in close association with federal and provincial Working Groups. The outcome is a five volume document, referred to as a whole as the National Water Sector Strategy.

The objective of the Study is to provide an updated, comprehensive strategy and a framework for the water sector within which competing demands for water and scarce financial resources can be assessed and service delivery improved. The Strategy provides guidance on investment planning in, and management of, the water sector.

6. Preparation of Draft National Water Policy (2005)

At present Pakistan is facing with a number of challenges in the water sector. These include emerging water shortages, water logging and salinity, flood management, inadequacy of water for drinking and sanitation, quality of water, drought management, impact of climate change on water resources, and a host of other issues. Financing of water sector projects and institutional reforms for water sector management are also very important areas of concern.

To address the above issues in a holistic and integrated manner a draft National Water Policy was prepared in 2005 after consulting all the stakeholders. The draft policy is presently being updated and would shortly be processed for approval of the Cabinet.

7. Kotri Studies to check sea water intrusion (2005)

In order to ascertain the minimum quantum of Indus flows below Kotri, for planning additional storages, following studies were taken up:

i. Study-I: Study on Water Escapages below Kotri Barrage to check Seawater Intrusion

ii. Study-II: Study on Water Escapages Downstream of the Kotri Barrage to address Environmental Concerns

iii. Study-III: Environmental Concerns of all the Four Provinces (Excluding the areas covered in studies I & II)

8. National Flood Protection Plan-I (1978-88):

Details of flood protection schemes executed through various programme / projects are given as under;

- **Normal/ Emergent Flood Programme:**

  - Expenditure incurred: Rs 1729.75 million
  - No. of flood protection schemes completed in the four Provinces, AJ & K, FATA & NA (now G-B): 311
  - Source of Funding: 100% by GOP

Under NFPP-I, emphasis was mainly given on the implementation of structural flood protection measures. Pakistan Meteorological Department (PMD) and WAPDA carried out improvements / expansion in existing Flood Telemetry Network and Flood Forecasting & Warning System.

9. National Flood Protection Plan-II (1988-98):

Details of flood protection schemes/activities carried out through various programme/projects are given as under ;

- **Normal / Emergent Flood Programme:**
  - Expenditure incurred — Rs 805.33 million
  - No. of Schemes executed — 170
  - Source of funding — 100% by GOP
- **Flood Protection Sector Project-I:**
  - Expenditure incurred — Rs 4735.29 million
  - No. of flood protection schemes executed — 256
  - Co-financed by GOP & ADB — ADB=80%
GOP = 20%
- **Prime Minister's River Management Programme 1994-1996**
  - Expenditure incurred — Rs. 613.38 million
  - No. of schemes executed (in Sindh & Punjab) — 10
  - Source of Funding — 100% by GOP

Under NFPP-II, the following activities were undertaken for improvement of Country's existing Flood Forecasting & Warning System;

- Procurement & installation of Meteoroburst Telecommunication System (Phase-I) including one Master Station and 24 remote site stations.
- Installation of 10-CM Quantitative Precipitation Measurement (QPM) Weather Radar for Flood Forecasting Division (FFD) Lahore.
- Pre-feasibilities studies for four barrages for increasing their design discharge capacity to carry increased flood flows in view of 1992 floods.
- Preparation of Flood Plain Maps of Indus River (3-reaches).
- Establishment of National Flood Forecasting Bureau (NFFB) now FFD, Lahore.

10. National Flood Protection Plan – III (1998-2008):

Details of flood protection schemes / activities carried out through various programme / projects are given as under;

- **Normal / Emergent Flood Program:**
  - Expenditure incurred — Rs 4192.35 million

- No. of flood protection schemes executed in four Provinces, AJ&K, FATA, ICT and NA (Now G-B) — 362
- Source of Funding — 100% by GOP

➢ **Second Flood Protection Sector Project:**

- Expenditure incurred — Rs 4,165 million
- No. of Flood Protection Schemes executed — 101
- Source of Funding — 80% by ADB, 20% by GOP
- Flood Forecasting & Warning System — Rs 432.123 million

The major activities undertaken for improvement of country's existing Flood Forecasting & warning System include;

- Procurement & installation of 24 No. HF-Radio Sets, also some coverage to Kabul River & Swat River.
- Procurement & installation of 20 additional remote stations under existing Meteoroburst Telecommunication System (Phase-II);
- Upgradation of 10-CM Quantitative Precipitation Measurement Weather Radar installed in the premises of FFD, Lahore;
- Upgradation of 5.36-CM Sialkot Weather Radar into 10-CM Quantitative Precipitation Measurement Weather Radar;
- Procurement & installation of new 10-CM Quantitative Precipitation Measurement Weather Radar at Mangla;
- Development of initial/1st version of Computer Based Early Warning System through NESPAK, PMD & Delft Hydraulics, Flood Early Warning System;
- Expansion of Flood Plain Mapping activity covering remaining reaches of River Indus, alongwith rivers Jhelum, Chenab, Ravi, Sutlej etc.
- Bathymetric Survey and flow managements in the Indus River and its major tributaries (i.e. Sutlej, Ravi, Chenab and Jhelum) for improvements in the discharge rating curves and to collect data for FEWS Model & Flood Plain Mapping Activity.

11. Establishment of Flood Forecasting & Warning System for Lai Nullah Basin in Islamabad & Rawalpindi:

Expenditure incurred: Rs 348 million

- Source of Funding;
  - *Japanese Grand –in-Aid* — Rs 337 million
  - *GOP share* — Rs 11.00 million
- Facilities provided include:
  - Two No. Telemetry rainfall gauging stations at Golra, Islamabad and Bokra, Islamabad;

- Two No. water level gauging stations at Kattarian Bridge, Rawalpindi and Gawalmandi Bridge, Rawalpindi;
- Master control station in PMD, Islamabad;
- Two monitoring stations at FFC and TMA/Rescue-1122-Rawalpindi respectively;
- Executive Warning Control room in Rawalpindi Fire Brigade , and
- Nine (9) No. warning posts at various locations.

12. Summary of GOP Investment on Flood Protection Works

The summary of federal investment on flood protection works since 1978 to June 2011 is given as follows:

Summary of Federal Investment on Flood Protection Works

Flood Plans/ Programs	Location	No. of schemes	Expenditure (Rs Million)
NFPP-I (1978-88)			
Normal/Emergent Flood Programme	Countrywide	311	1,729.75
NFPP-II (1988-98)			
Normal/Emergent Flood Programme	Countrywide	170	805.33
First Flood Protection Sector Project (FPSP-I)	Four Provinces	256	4,735.29
Prime Minister's River Management Programme (1994-96)	Province of Punjab & Sindh	10	613.38
1988-Flood Damage Restoration Project	Four Provinces	2028	1,926.00
1992-Flood Damage Restoration Project	Countrywide	1980	6,659.22
NFPP-III (1998-2008)			
Normal/Emergent Flood Programme	Countrywide	362	4,192.35
Second Flood Protection Sector Project FPSP-II (1998-2007)	Four Provinces	101	4,165.00
Special Grant through President/Chief Executive Directive (2000-2002)	Gilgit-Baltistan	21	92.80
Lai Nullah Flood Forecasting & Warning System *through*	Distt. Rawalpindi (Punjab	-	348.00

Japanese Grant	Province)		
Normal/Emergent Flood Programme (2008-12)	All over the country	104	1,169.00
	Grand Total	**5343**	**27003.12**

13. GTZ assisted Feasibility Studies for Hydel Projects

Sr. No.	Project	Installed Capacity (MW)	Location
1.	Basho HPP	40	On Basho Lungma (Nullah) near Basho Village
2.	Phandar HPP	80	On Ghizer river near Phandar Lake.
3.	Harpo HPP	34.5	About 75 Km North-West of Skardu Town.
4.	Reshun Gol With facility for extension	2.8 4.2	Chitral Valley
5.	Battal Khwar HPP	8.1	Swat Valley
6.	Summar Gah	28	Indus Kohistan
7.	Shishi Gah	2	Chitral Valley
8.	Golen Gol	106	Chitral Valley
9.	Daral Khwar	35	Swat Valley
10.	Khan Khwar	72	Indus Valley
11.	Duber Khwar	130	Indus Kohistan
12.	Ranolia	11	Indus Kohistan
13.	Matiltan	85	Swat Valley
14.	Allai Khwar	163	Indus Valley
15.	Neelum-Jhelum	969	AJ&K
16.	Keyal Khwar	51	Indus Kohistan
17.	Dolyan	425	Astor Valley NA
18.	Naltar-III	22	Gilgit District NA
19.	Basho-II	23	Skardu District NA
20.	Harpo-II	41	Skardu District NA
21.	Chashma	184	Barrage on Indus
22.	Jinnah	96	Barrage on Indus
23.	Taunsa	144	Barrage on Indus
24.	Guddu	35	Barrage on Indus

25.	Chashma-Jhelum	40	Link Canal Tail
26.	Rohri	12	Feeder Canal