### WATER

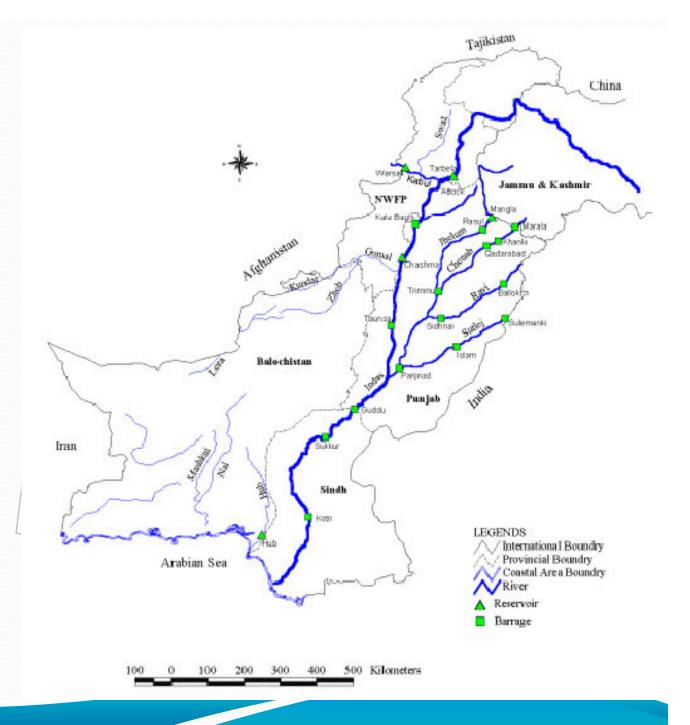
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### SOURCES OF WATER

- Surface water
- ✓ Indus basin ( annually 141-146 maf
- Closed basin Kharan desert(4.5 maf of water)
- Makran coastal basin (0.78 maf of water)
- Ground water (60-65 maf of water )

#### Three major reservoirs

- Terbela dam reservoir
- Mangla dam reservoir
- Chashma barragereservoir



### WATER USERS

Pakistans population 179.2 million









#### TYPES OF WATER BODIES













# Administrative Control over Water

• Water is a provincial subject (Constitution of Pakistan)

Exceptions:
 WAPDA; &
 Council of Common Interest
 Trans-boundary water sharing
 (IRSA & Water Accord)

### • Irrigation Departments/Irrigation & Drainage Authorities (Provincial Government)

Control over all the rivers, canals, drains, streams, hill torrents, public springs, natural lakes, reservoirs and underground water resources within the Province

#### Local Level

**Development authorities-** Control over ground water **Local Government-** power to regulate public watercourses with the sanction of provincial government

## Policies for Water Conservation

#### Environment Policy 2005-

- Water quality monitoring
- Water treatment
- Rainwater harvesting
- Artificial recharge of ground water
- Metering of water consumption
- Water conservation Act
- Integrated watershed management
- Sustainable freshwater flows into marine ecosystem
- Cleanup and up gradation quality of water bodies

#### Draft National water Policy

- Integrated planning of water resources
- Water rights and allocation
- Economic and financial management of water
- Stakeholder participation
- Flood and drought management
- Drainage and reclamation
- Water quality
- Wetlands and ecology
- Information management and research

#### Draft Wetlands Policy

- Addressing the threats to wetland
- Creating and implementing a regulatory framework for the Conservation and sustainable use of wetlands
- Coordination btw different players
- Promotion of wetland research and education
- Building capacity for sustainable wetland management
- Promoting understanding on Wetland conservation and wise use
- Securing financing mechanism for sustainable management of wetlands

## Water Pollution Control Laws

#### **PEPA**

- ☐ Sets standards for municipal and industrial liquid waste and effluent
- ☐ Requires ambient water standards
- ☐ Administration Actions

Environment Protection Order (immediate stoppage, controlling of discharge, restoration and removal) and administrative penalties Provincial environmental Agency/departments

☐ Tribunal

Closures of factory, 2 yrs imprisonment, Rs. 1/5 million additionally Rs. 100,000 per day.

Restoration of the environment

Payment of Damages

#### **Canal Drainage Act/PIDA:**

- ☐ Prohibits corruption and fouling of water
- ☐ Permission required to discharge any effluent including any solid or liquid matter from industrial, municipal or any other source into river, canal and drainage works. Drainage charges to be paid
- ☐ fine of Rs. 3000 and/or imprisonment of 3 months
- ☐ Provincial Irrigation Drainage Authority
- ☐ Divisional canal office/Magistrates

#### **NWFP River Protection Ordinance 2002**

- ☐ Same prohibition as PEPA
- ☐ Additionally prohibits the disposal of solid and hazardous waste into rivers and tributaries
- ☐ 6 month imprisonment and Rs500,000 penalty
- ☐ Tehsil Municipal officer

#### Forest Act 1927

- ☐ Poisoning of water is prohibited
- ☐ 6 months imprisonment and or fine of Rs. 500

#### **NWFP Forest Ordinance 2002**

- ☐ Prohibition on pollution of water in Reserved, Protected, Guzara, forests and wasteland in anyway
- □ 2 years of imprisonment and/or Rs. 50,000
- ☐ Forest Officers/ Magistrates

#### **Provincial Wild life**

(Protection, Preservation, Conservation and management )Act, 1974

- ☐ Polluting of water is forbidden in Wild life sanctuary, Wild Life Breeding farms and National Parks.
- □ 5 years and/or Rs. 30,000

#### Fisheries Act, 1897

- ☐ Prohibition on poisoning of water
- ☐ Fine of Rs. 100
- ☐ Police officer without any order from magistrate

#### Punjab Fisheries Ordinance, 1961

- ☐ Prohibition on poisoning of water
- $\square$  2 years and /or Rs. 10,000 fine
- ☐ Police officer without any order from magistrate

#### **Local Government Act 2013**

- ☐ Discharge of any dangerous chemical, hazardous or offensive article in any drain, sewer or public watercourse.
- ☐ Failure of industrial or commercial concerns to provide adequate and safe disposal of effluent
- ☐ Imprisonment of 7 years and/or with fine of Rs. 500,000/-

#### Pakistan Penal Code

☐ Prohibition of fouling of Public springs and reservoirs

☐ Minor punishments

## Sustainable Use of Water

## Baluchistan Ground Water Rights Administration Ordinance, 1978

- ☐ Provincial Water Boards will lay down policies for conserving and developing the ground water resources
- ☐ Rules and Regulations for ground water resources and administer water rights
- ☐ Monitoring of withdrawals of groundwater from tube wells, determine safe yield Permission for extraction will only be given if it does not cause depletion of perennial stream
- □ 1 year imprisonment or/and fine

#### **WAPDA:**

- ☐ Power to prepare plan for development and utilization of water resources
- □ Power to prepare schemes for provinces for irrigation, water-supply, drainage, flood control and prevention of waterlogging

#### **Canal & Drainage Act:**

☐ Supply of water on rates set by Government ☐ Water charge for unauthorized use of water ☐ Charges when water runs to waste ☐ Power to stop supply of water when watercourse is not maintained as to prevent wasteful escape of water ☐ Duration of supply of water till the maturity of the crop ☐ Preparation of drainage work schemes for proper irrigation, protection from floods, ☐ Management of subsoil water to protect the aquifer, ☐ Penalties- 15000/3000 fine and/or imprisonment one year/3 months for interfering or increasing the supply of water; unauthorized use of water; responsible for waste of water by neglecting maintenance of watercourse;

#### **PIDAs:**

- □ policies for the water resources sector to improve and achieve effective, economical and efficient utilization, preservation and improvement of such water resources by the water users of the Province on a sustainable basis.
- ☐ To plan, design, construct and improve the irrigation, drainage, storage reservoirs and flood control system with a view to ensure optimal utilization of the water resources of the Province on an equitable and efficient basis.

□ policies, studies and research programmes to be made with a view to develop and manage water resources, solve and prevent water logging and salinity, and to develop irrigated agriculture in the Province.

conduct studies with a view to regularly analyze and evaluate the impact of the operations/policies of authority on the ecology and environment to establish the various available options for the minimization of the adverse impact of such operations and policies, if any, and to adopt the optimal options for further action.

□ gauging surface waters, monitoring of groundwater table and quality of water and the compilation of data relevant
 □ To operate and maintain the irrigation tube-wells, drainage, storage reservoirs and flood control infrastructure including hill torrent control and development works for irrigation of adjoining lands including watershed management practices in catchment areas.

### Sindh Water Management Ordinance of 2002:

- ☐ Strategy statement for integrated water management; flood protection; prevention of seawater intrusions; wetlands management
- ☐ Delivery of water for irrigation, industry, wetlands and minimum discharge towards Indus delta to prevent seawater intrusions
- ☐ Improvements in the irrigation, drainage, flood protection infrastructure, storage reservoirs
- ☐ Research for integrated water management
- ☐ Conduct studies to understand the impact of SIDA policies and operations on the ecology, environment including wetlands

## Land Use Effects and Water Management

## Provincial Environmental Protection Act & Pakistan Environmental Protection Agency (Review Of IEE And EIA) Regulations, 2000

- ☐ Requires all projects causing adverse environmental effect to prepare and file IEEs or EIA
- ☐ Declare environmentally sensitive areas and requiring proponents to file EIAs in notified areas
- ☐ Fine of Rs 500,000

#### **NWFP River Protection Ordinance, 2002**

☐ General Prohibition: no construction within 200ft of rivers or their tributaries ☐ Prepare land use and zoning plan ☐ Provincial Control Area 1500ft from 200ft where construction activities according to land use and zoning plan only ■ Building/construction control in catchment area ☐ 6 months imprisonment or/and fine of Rs500,000 ☐ Authorized officer may call for the assistance of police.

#### Provincial Wild Life Laws of the 1974

- ☐ The Provincial Government can notify protected areas-Wildlife Sanctuary; Wildlife breeding farm; National part and; Game reserve ☐ Varying degree of protection ☐ Public entry is prohibited; exploitation of forest forbidden; felling of trees forbidden; cultivation of land forbidden; damaging any structure forbidden □ Exceptions- Government can lift the restrictions; in a national park access for recreation, education and research is allowed and certain constructions for this purpose are also allowed;
- ☐ **Penalties-** 5 years imprisonment and/or Rs 30000 fine

#### Forest Act, 1927

#### Protected areas in Forest Laws-

- ☐ Reserved forest; Prohibited acts- Fresh clearing and cultivation; felling or damage to trees;
- ☐ Protected forest; regulated acts- Fresh clearing and cultivation; felling or damage to trees;
- ☐ Punishment- 6 months imprisonment ant/or 500 rupees fine

#### **Protection of Forests for special purposes:**

- ☐ Against floods; preservation of soil; protection of land against erosion; maintenance of water-supply in springs, rivers and tanks
- ☐ What the government can regulate- clearing up of land for cultivation; clearing up vegetation
- ☐ In case of willful neglect of the owner of the land the Government can acquire such land or assume it management applying provisions of reserved forest.

#### **NWFP Forest Ordinance, 2002**

- □ Reserved forests/Protected Forest
   □ Additional prohibitions- construction of building, shed, road or infrastructure;
   □ Enhanced Punishments- 2 years imprisonment and /or
- ☐ Enhanced Punishments- 2 years imprisonment and/or fine of Rs. 50000
- ☐ Protection of wastelands for protection against floods; conservation of soil; protection of catchment basins, banks and beds of rivers, streams, torrents and ravines; maintenance of water-supply in springs, rivers and tanks and reservoirs;
- ☐ Government can take control of the protected wasteland and may acquire it for public purpose

#### **WAPDA:**

- ☐ Power to undertake anti-erosion operations including reforestation
- ☐ Restrict clearing or breaking up of land in any catchment area of any river
- ☐ Can acquire land for the above purposes

#### **PIDA**

- ☐ To issue such directions and take all such steps as may reasonably be necessary for the prevention and removal of encroachments and unauthorized construction along or on the properties of the Authority.
- ☐ To undertake anti-erosion operations including conservation of forests and reafforestation and with a view to achieve this purpose, to restrict or prohibit by general or special order the clearing or breaking up of land in the catchment areas of any rivers, hill torrents and other streams.

