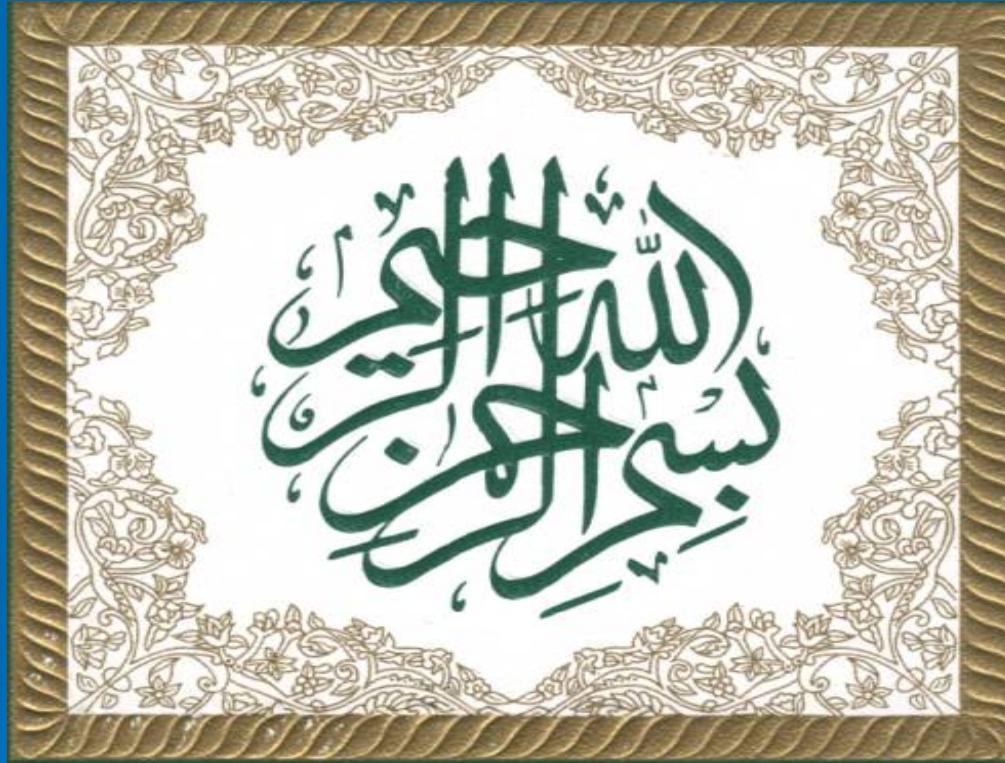




SMALL DAMS IN PUNJAB

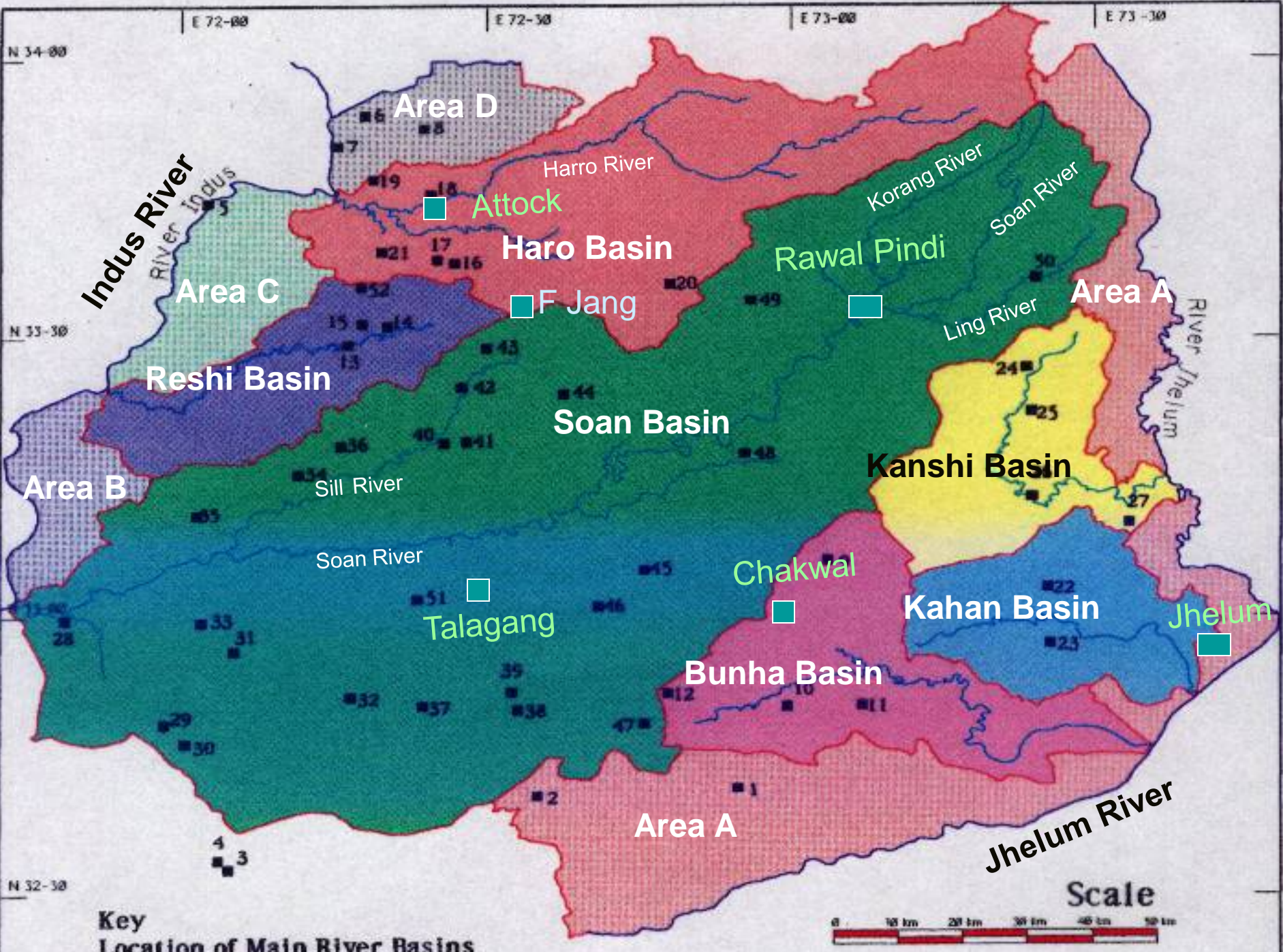
ISSUES & FUTURE PROSPECTS

**SMALL DAMS ORGANIZATION
ISLAMABAD**



POTHOHAR REGION BACKGROUND

- Pothohar region consist of 4 No. of districts namely Rawalpindi, Attock, Chakwal, Jhelum.
- Total Area of Pothohar region is 5.55 million acres.
- Presently cultivated area is 35-45%.
- Population of Pothohar is 8.5 million.
- Rural Population is 70%.
- Area equipped with irrigation system is 11%.
- Rainfall intensity during monsoon is 60-70%.
- Total runoff is 4.32 billion cubic meters (3.5 MAF).
- Total tapped water by Small Dams is 15%.



E 72-00 E 72-30 E 73-00 E 73-30

N 34-00

N 33-30

N 32-30

Key
Location of Main River Basins



BASIN IN POTOHAR AREA

1- SOAN BASIN

- Soan basin is the largest basin in the pothohar plateau and it drains much of the water of Pothohar. It starts near a small village Bun in the foothills of Patriata and Murree. Soan River is the tributary of Indus River.
- The Soan basin consists of the area of District Rawalpindi (Tehsil Muree and Rawalpindi) and District Attock (Tehsil Fateh Jang and Pindi Gheb).
- The stream reaches Kalabagh proposed Dam Site close to Pirpiyahi where it falls into the Indus River

2- HARO BASIN

- The Haro basin consist of Haro River which is tributary of Indus River.
- The Haro basain consists of Tehsil administration area of Hasnabdal and Hazro of District Attock and Tehsil administration area of Taxila of Rawalpindi District.
- The Haro River joins Indus River near Ghazi - Barotha Reservoir.

BASIN IN PHOTOHAR AREA

3- KANSHI BASIN

- Kanshi basin is the catchment of the Mangla Dam and mainly consists of Kanshi River which is tributary of Jhelum River.
- The Kanshi basin is in District Rawalpindi covering Kahuta, Kallar Sydein and Gujar Khan Tehsil administration area. The Khansi River ultimately falls into the reservoir of Mangla Dam.

4- RESHI BASIN

- Resh Nullah is the main stream of Reshi Basin. It is tributary of Indus River.
- The Reshi basin is in District Attock, covering Tehsil Jand administrative area and some portion of Pindi Gheb , Fateh Jang area.

5- KAHAN BASIN

- Kahan basin mainly consists of Kahan River which starts from the village Gurah Uttam Singh of Jhelum Districts.
- The Kahan River outfalls in Jhelum River near village Naugran of District Jhelum.

6- BUNHA BASIN

- Bunha basin maily consists of Bunha River, which starts from Saral Chakwal District and then enters Jhelum District and falls in River Jhelum near Darapur.

BACK GROUND OF SMALL DAMS ORGANIZATION

- Preliminary investigation in the Potohar plateau for dams was started by Bund Circle of I & P Deptt: Punjab in 1954 but no dam was constructed till 1961.
- In 1961 West Pakistan Agriculture Development Corporation (ADC) was made responsible for construction of dams.
- In 1973 the responsibility of development of Barani Areas was given again to I & P Deptt: Punjab, since then Small Dams Org: is working on development of water resources in Potohar plateau.

OBJECTIVES OF SMALL DAMS ORGANIZATION

To provide agriculture and drinking water in pothohar area by tapping maximum runoff in catchment areas by constructing and operating small dams.

MAIN ACTIVITIES OF SMALL DAMS ORGANIZATION

- ❑ **Feasibility studies of small dam sites**
- ❑ **Construction of small dams**
- ❑ **Operation and maintenance of small dams**
- ❑ **Development of command areas**

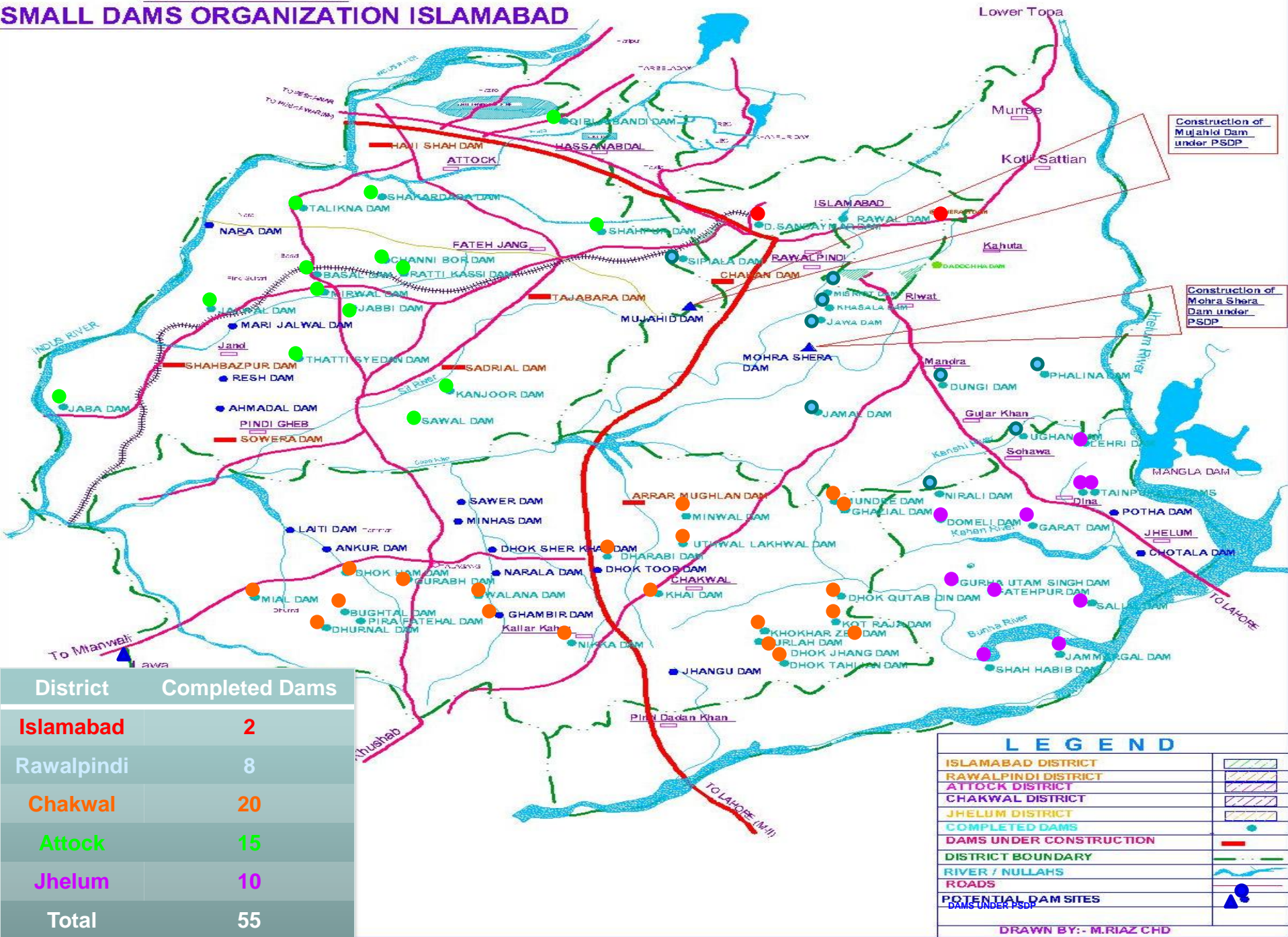
SOCIO ECONOMIC IMPACT

- Assured supply of water throughout the year
- Switch-over from traditional crops to high value crops like orchards, vegetables etc.
- Sufficient growth of fodder for development of livestock farming leading to production of meat, milk etc.
- Flood mitigation and soil conservation
- Poverty alleviation by increasing farm incomes
- Fulfillment of drinking and domestic water requirements of nearby villages
- Checking migration of rural population to avoid burden on cities
- Improvement of general environment of area and health of people
- Recharging of aquifer
- Time saving in fetching water from far-flung areas
- Promotion of fish culture.
- Promotion of recreational / tourism activities

DISTRICT-WISE NO. OF DAMS

DISTRICT	COMPLETED DAMS
ISLAMABAD	<u>2</u>
RAWALPINDI	<u>8</u>
ATTOCK	<u>15</u>
CHAKWAL	<u>20</u>
JHELUM	<u>10</u>
TOTAL	55

INDEX PLAN SMALL DAMS ORGANIZATION ISLAMABAD



Construction of Mujahid Dam under PSDP

Construction of Mohra Shera Dam under PSDP

LEGEND	
ISLAMABAD DISTRICT	
RAWALPINDI DISTRICT	
ATTOCK DISTRICT	
CHAKWAL DISTRICT	
JHELUM DISTRICT	
COMPLETED DAMS	
DAMS UNDER CONSTRUCTION	
DISTRICT BOUNDARY	
RIVER / NULLAH	
ROADS	
POTENTIAL DAM SITES	
DAMS UNDER PSDP	

District	Completed Dams
Islamabad	2
Rawalpindi	8
Chakwal	20
Attock	15
Jhelum	10
Total	55

DRAWN BY: - M. RIAZ CHD

PROJECTS UNDER CONSTRUCTION



DAMS UNDER CONSTRUCTION

Sr #	Scheme	District	Gross Storage Capacity (Aft)	C.C.A (Acre)	Channel Discharge (Cfs.)
1	<u>Arrar Mughlan Dam</u>	Chakwal	5300	1800	13
2	<u>Chahan Dam</u>	RWP	27386	12000	45
3	<u>Haji Shah Dam</u>	Attock	2200	1520	15
4	<u>Sowrra Dam</u>	Attock	4200	2200	21
5	<u>Pandori Dam</u>	Jhelum	3795	1500	10
6	<u>Taja Bara Dam</u>	Attock	2250	1300	12.25
7	<u>Sadrial Dam</u>	Attock	2750	325	7.75
8	<u>Shahbaz pur Dam</u>	Attock	5000	1260	12.00

PROJECTS UNDER PSDP



DAMS APPROVED UNDER PSDP

Sr. No	Name of Dam Site	District	Approved Cost (Rs. In Million)	Amended cost (Million)	Gross Storage Capacity (Aft)	CCA Water Supply (Acre)
1.	Mujahid Dam	RWP	512.183	701.253	7200	1400
2.	Mohra Shera Dam	RWP	552.946	701.933	11800	4000
3.	Lawa Dam	Chakwal	421.533	-	11300	1800
4.	Jamalwal Dam	Chakwal	284.651	-	4100	700
5	Cherah Dam	ISlamabad	5307.22	-	24750	15 MGD

DAM SITES PROPOSED FOR CONSTRUCTION



DAM SITES PROPOSED FOR CONSTRUCTION

Sr. No.	Dam Site	District	Status
1	<u>Mahota</u>	RWP	Feasibility Study Completed
2	<u>Padhrala</u>	Jhelum (Dina)	Feasibility Study Completed
3	<u>Bakrala</u>	Jhelum (Sohawah)	PC-I Prepared
4	<u>Sihal Khinger</u>	RWP (Gujar Khan)	PC-I Prepared
5	<u>Tamman</u>	Chakwal (Talagang)	PC-I Prepared

NEW POTENTIAL DAM SITES IDENTIFIED



NEW POTENTIAL DAM SITES

S.#	Name of Site	Tehsil	District
1	<u>Mari Jalwal</u>	Jand	Attock
2	<u>Nara Dam</u>	Jand	Attock
3	<u>Nalahad Dam</u>	Pindi Gheb	Attock
4	<u>Ahmadal Dam</u>	Pindi Gheb	Attock
5	<u>Potha Dam</u>	Dina	Jhelum
6	<u>Chotala Dam</u>	Jhelum	Jhelum
7	<u>Sabral Dam</u>	Khushab	Khushab
8	<u>Jabba Din Dam</u>	Mianwali	Mianwali
9	<u>Laiti Dam</u>	Talagang	Chakwal
10	<u>Dhok Sher Khan Dam</u>	Talagang	Chakwal
11	<u>Narala Dam</u>	Talagang	Chakwal
12	<u>Ankur Dam</u>	Talagang	Chakwal
13	<u>Minhas</u>	Chakwal	Chakwal
14	<u>Jhangu Dam</u>	Chakwal	Chakwal
15	<u>Dhok Toor Dam</u>	Chakwal	Chakwal
16	<u>Ghambir</u>	Chakwal	Chakwal
17	<u>Sawer Dam</u>	Chakwal	Chakwal
18	<u>Mundee Dam</u>	Chakwal	Chakwal

ISSUES & PROSPECTS



site selection:

- Availability and suitability of command area,
- Hydrological conditions of catchment area,
- Topographic conditions,
- Geological/geotechnical conditions,
- Availability of construction material,
- Size of reservoir

Issues influencing Before & After Construction:

- **Rainfall intensity**
 - Normal, high & low rainfall impacts
 - Rainfall pattern in winter
 - Carry over dams

- **Sedimentation**
 - Estimation at design stage
 - Measurements after construction
 - Hydrographic survey
 - Water shed management

- **Command area Development**
 - Topography of the area
 - Land holding pattern
 - Land leveling
 - High efficiency irrigation system
 - Water course development
 - Concept of lift irrigation
 - Cash crops

➤ **Water User's Association**

- At irrigation channel level
- At water course level

➤ **Social Mobilization of Farmers / Community**

- Shifting of income source / land resource management
- Agriculture extension services
- Crops compatibility with soil, area characteristics, income, water availability suggestion and development of practical models

➤ **Department Links**

- Before & after construction
- Links departments (Irrigation, Agriculture, OFWM, Revenue, Soil conservation, Fisheries, Public health, Environment, NGO's)
- Role of Fisheries department
- Role of Public health department

Issues Of SDO:

➤ O & M

- Non availability of funds
- Limited funds
- Release of available funds
- Emergency funds
- Man power shortage

➤ Design wing

- Non existence
- Regular irrigation staff availability
- Laboratory setup

➤ Dam safety Concept, Application and Setup

- Non existence
- Regular irrigation staff availability
- Dams instrumentation
- Regular inspections, inputs, guidance suggestions

FUTURE PROSPECTS



➤ Site identifications

➤ Funding source

- Annual Development Program (Punjab Government)
- PSDP (Federal Government)
- World Bank Funding (Pothohar Climate Smart Irrigated Agriculture Program Project)
- China Co-operation (PPP mode Projects)

Pothohar Climate Smart Irrigated Agriculture Program Project (World Bank Funded Project)

A. Rehabilitation of Existing Irrigation Infrastructure (USD 60M)

Rehabilitation of Existing Irrigation Infrastructure (USD 15M): There are 28 command areas proposed for rehabilitation under this activity. Such rehabilitation include, but not limited to, repair of water reservoir body, protective work conveyance system and cross drainage work, installment of metering system for supply and demand management.

Upgrading Existing Irrigation Infrastructure (USD 45M): There are 14 locations in which water reservoir capacity need be increased to accommodate more water and the demand to expand cultivable areas.

B. Development of New Irrigation Infrastructure (USD 115M)

Development of Major Water Reservoirs (USD 65M): There 6 locations with considerable catchment areas and promising command areas with highly fertile soil. Additional 3-5% of total runoff in Pothohar will be captured by the proposed water storage schemes.

Development of Mini Water Reservoirs—Tanks and Ponds (USD 50M): There are 5000 locations designated for such schemes. These mini water harvesting schemes could capture 1.5-2 % of total runoff in the region.

Pothohar Climate Smart Irrigated Agriculture Program Project (World Bank Funded Project)

C. Agriculture Improvement (USD 50M)

Development of Existing and New Command Area (USD 30M): This will include the use of laser land leveling techniques as well as the deployment of drip and sprinkler systems.

High Efficiency Agriculture (USD 20M): This activity will include establishment of water users association and strengthening extension services to guide on crop patterns and assist farmers to implement best management practices.

D. Project Management, Technical Assistance and Capacity Building (USD 30M)

Project implementation responsibilities will rest with OFWM Directorate of Agriculture Department, Irrigation Department and Agency for Barani Area Development(ABAD). An anchoring project management unit will be established to coordinate implementation across the three departments under this component.

THANK YOU

