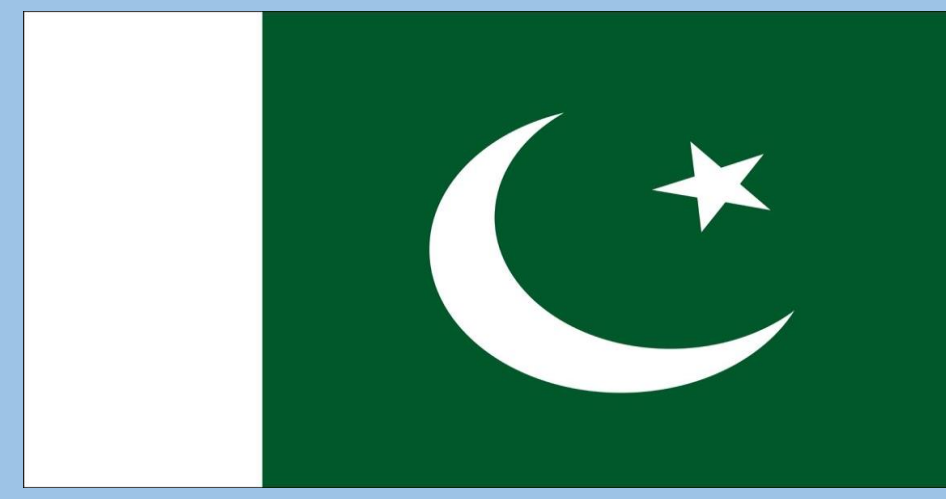




MUHAMMAD IBRAHIM



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BSc. Civil Engineering
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Government of Punjab, Pakistan**



1. Pakistan Water Sector and Environment:

- Pakistan is an agricultural country and its irrigation system relies heavily on availability of fresh surface water.
- Around 90 percent of agricultural output (which accounts for more than a quarter of the Gross Domestic Product, and more than half of all employment) is entirely dependent on irrigation.
- Pakistan has the world largest continuous irrigation system with three major storage reservoirs, 19 barrages, 12 link canals, 46 main canals and thousands of hydraulic structures.
- Tremendous hydel potential of more than 60,000 MW. However, only 11% of the hydroelectric potential has been harnessed so far.
- Pakistan is among the countries most vulnerable to climate change and global warming. The melting of glaciers in the Himalayas, threatening the volumetric flow rate of many of the most important rivers of Pakistan. In Pakistan, such effects are projected to impact millions of lives.
- The country has faced several severe floods in recent years e.g. 2010 (20 million people directly affected), 2014.

2. Job Description:

Being an Assistant Executive Engineer in Punjab Irrigation Department I have been posted at two different Sub-Divisions:

2.1 Canal Sub - Division Tasks and Duties:

- Deputy Project Manager of different canal lining schemes.
- Responsible for operation and maintenance of canals and hydraulic structures located in the Sub-Division.

2.2 Barrage Sub- Division:Tasks and Duties:

- Life time experience of working as Deputy Project Manager on Mega project “Construction of New Khanki Barrage”
 - ✓ Located at 900 ft downstream of old barrage
 - ✓ Cost 203 million US Dollar
- Responsible for operation and maintenance of barrage.
- Responsible for regulation of the river and canals in accordance with the regulation rules.
- To study weather forecasts or warnings and make a beneficial use of them in programming the regulation.
- To issue flood warnings to all concerned in case of flood.
- Responsible for maintenance of River Training Structures located in the Sub-Division.
- Responsible for conducting Annual River and Canal Surveys.

2.2.1 Reasons for Construction of New Khanki Barrage

- Aging effect
- Capacity constraint exceeding 10 times
- Lack of effective control on river regulation
- Inefficient and insufficient physical communication between the two banks of the Chenab river
- Mixture of several design & construction techniques

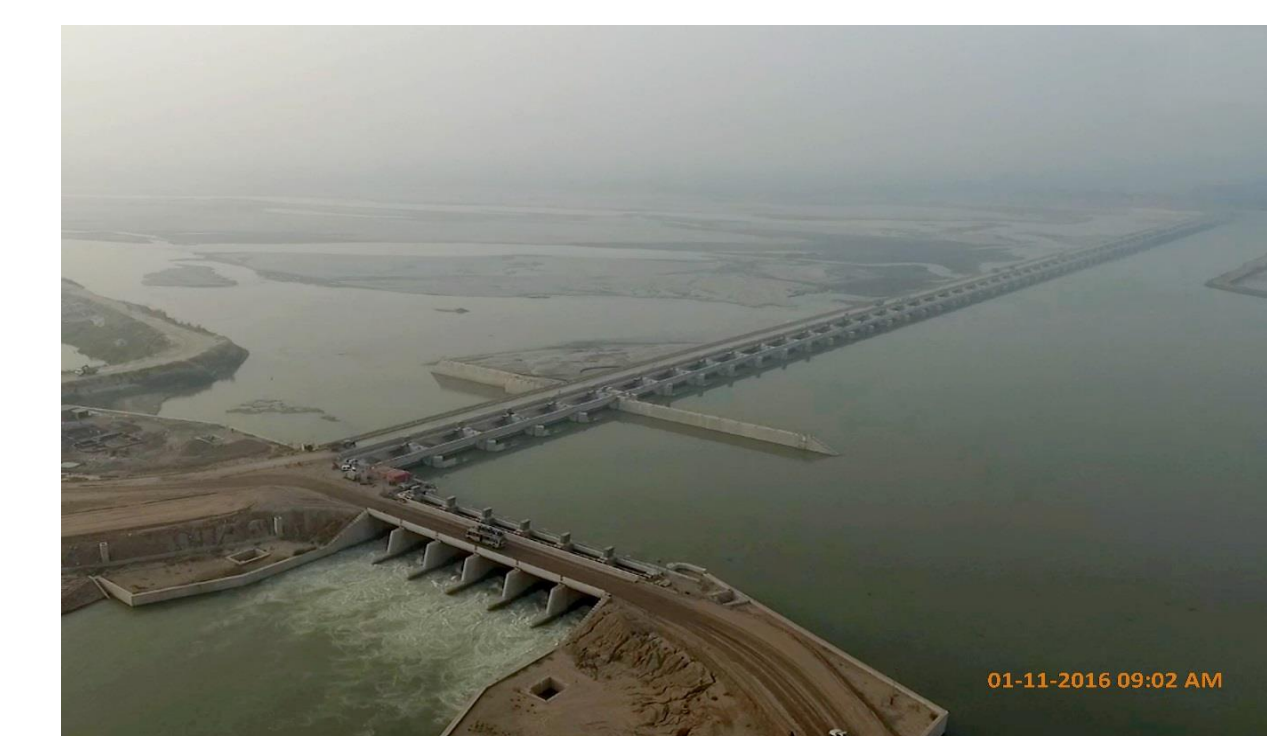
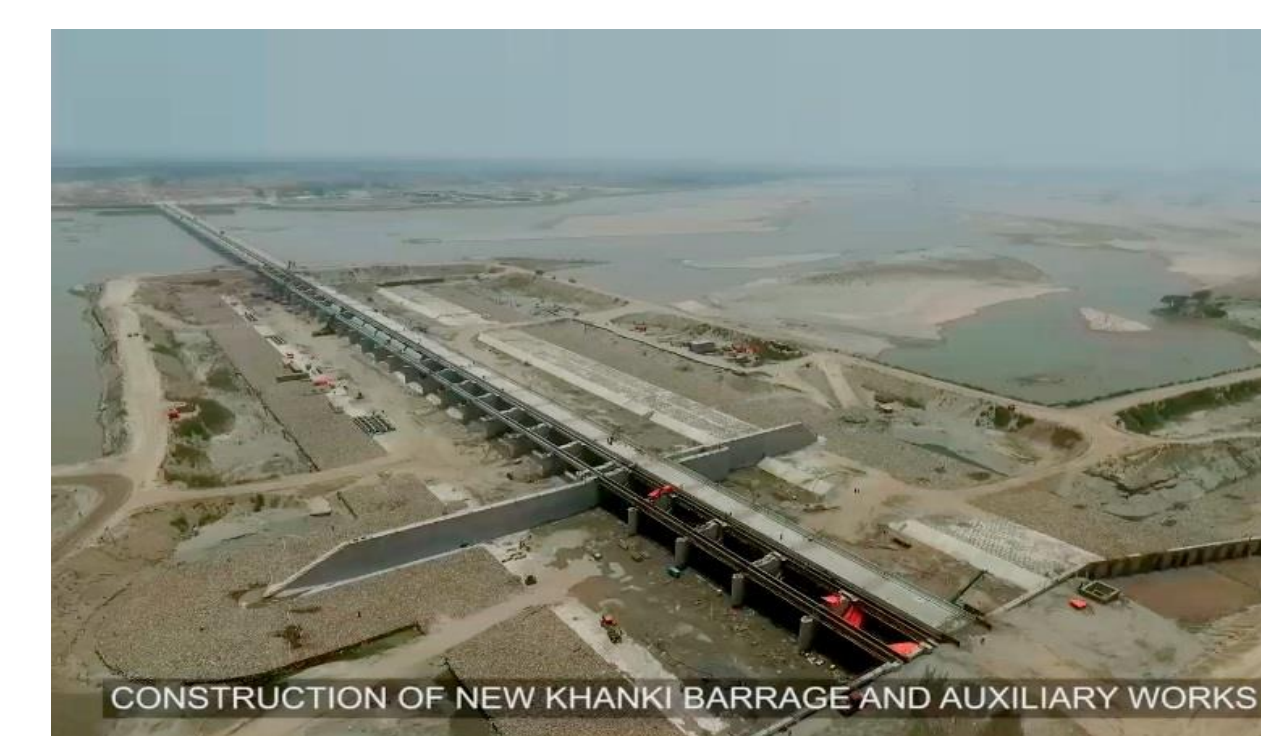


Fig.1 View of Old Barrage

Fig.2 View of New Barrage

3. Why I Choose Hydroinformatics?

- Pakistan is a country which has a huge potential of water resources but unfortunately the existing system is outdated and it needs an extensive rehabilitation to maximise its efficiency.
- To become a good professional and expert in water issues I decided to go for higher studies in hydroinformatics because this is an advanced tool of modelling and application of Information technology in water sector.
- Hydroinformatics was new for me and for my country and it will help to enhance my capabilities in modelling and Decision Support Systems.

4. How I Will Use The Knowledge Gained In The Program Back In My Own Country?

- Energy crisis, floods in monsoon season and acute shortage of water in winter season are the major problems of Pakistan in water sector.
- The knowledge that I will gain here will be used in tackling the above mentioned problems and use of concepts of hydro informatics in performing different scenario analysis for proper management of water resources by using different modelling techniques that will help to take important decisions.

The knowledge that I will gain from this short course will help:

- In understanding the use of modern techniques and knowledge in solving problems related to water using Everglades and other significant restoration projects as case studies.
- To get an idea about the communication and transfer of knowledge among different participating organizations.

5. Research I Would Like To Do In The Future

- Decision making and operational response for critical flood situations by using a central control database.
- Flood routing for the mighty Indus River, Pakistan.
- Sediment Transport Modelling.
- Real Time Control of Hydraulic Structures.

References:

- Dr. Nazir Ahmad, —Water Resources of Pakistan, Miraj Uddin Press, Lahore September 1993.
- F. U. Qureshi1, B. Akintuğ2-Hydropower Potential in Pakistan , 11th International Congress in Advances in Civil Engineering-ACE 2014, At Istanbul, Turkey