U.S. - Pakistan
Center for Advanced Studies in Water

ICT INTEGRATION FOR SUSTAINABLE WATER MANAGEMENT

1 Smart Canal Flow Monitoring For Efficient Irrigation Management

U.S.-Pakistan Center for Advanced Studies in Water in collaboration with LUMS has developed and installed a Sensor – 1st of its kind in Sindh at Jamrao West Branch 30th mile, Nara Canal.

The project develops a dynamic database of water availability flowing at various locations of the secondary canal which is helping water managers provide equal distribution of surface water among shareholders. The database is to be used to establish a shared understanding of the importance of water scarcity, enable improved utilization of groundwater and control of water logging and salinity at the head of the canal. The project also provides a platform to demonstrate the possibility to use real-time water observations to develop algorithms and policies to enhance the reliability of water supply throughout the command areas.

The project is helping Irrigation Department in monitoring and management of the canals towards achieving SDG 6.4, i.e. "By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.

This project is aimed at advancing cost-effective, adaptive smart technology solutions which include real-time sensors coupled with hydraulic models and an end-user mobile application. The mobile application provides the opportunity to build the database for canal discharges as well as help the user to make evidence-based decisions. This modern technology and the data analytics project is providing support to the Sindh Irrigation & Drainage Authority (SIDA) to observe water flow and usage conditions at various locations of the selected distributary/minor.

Project Team

Lead: Prof. Dr. Abdul Latif Qureshi
Co-Lead: Mr. Waqas Ahmed
Project Team of Scholars:
Sabeen Manzoor, Tahir Abbas, Tariq Aziz and Mehtab
Technical Assistance: Dr. M. Abubakar (LUMS Lahore) and Dr. Steve Burian (University of Utah USA).

Partnering Universities

MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY JAMSHORO, PAKISTAN

THE UNIVERSITY OF UTAH

U.S. - Pakistan
Centers for Advanced Studies in Water

2 Smart groundwater monitoring for sustainable groundwater extraction

U.S-Pakistan Center for Advanced Studies in Water, MUET in collaboration with Higher Education Commission Pakistan is implementing a project for automatic monitoring of underground water at Dad Irrigation Division in the vicinity of Nawabshah. The project will be completed in July 2020.

The project aims to provide authentic data of continuous monitoring of underground water for maintaining standard threshold water level. The projects will help to control the over drafting, water logging and salinity in agricultural fields. The project includes installation of meters which will support to understand how fast the groundwater is depleting due to pumping. The project creates a smart network grid of water level monitoring sensors coupled with real time modelling framework that can help operators to regulate the ground water levels in Sindh. One of the goal of the project is to transition of conventional ground water monitoring to automated ground water monitoring coupled with prediction model.

The project is a step forward to establish a mechanism for monitoring wells placed at several locations which will provide an overall picture of groundwater levels in a particular area which will help in making informed decision-making for groundwater management.

The project includes four phases:

- Development of a sub-regional gridded model
- Deployment of the data loggers on the optimal locations.
- Near real time monitoring
- Model prediction

Lastly, the project also aims to establish a ground water monitoring unit at Mehran University to assist and facilitate Irrigation related organizations for managing groundwater levels.

The project also helps to establish 2 delineate zones for drinking and irrigation water quality. The researchers are closely working with farmers who get data for Excellency, suitability and unsuitability of fields through automatic loggers fixed to take measurement on set time.

Project Team

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