Universities for Water Network (UWN) Meeting

Panjwani-Hisaar Water Institute (PHWI)
NED University of Engineering and Technology, Karachi

Thursday, October 30, 2025

BACKGROUND

The Universities for Water Network (UWN) was initiated by Hisaar Foundation, one of three partners in the Public Private Partnership that has established Panjwani-Hisaar Water Institute (PHWI). This network is the outcome of intent by academia to build a universities' network on water with the view to develop the knowledge and skill base on water such that an appropriate professional cadre can be produced to meet Pakistan's long-term requirements in the water and related sectors.

The vision of the Universities for Water network is to develop the knowledge and skill base for water sectors, as well as water related disciplines, degrees, departments-that will be required by Pakistan in the next 100 years. The sectors of cooperation include:

- Water science and technology
- Water engineering
- Water economics, social and behavioral sciences
- Hydrology, geography, climate and earth sciences
- Environment and conservation
- Floods and droughts

This initiative is very unique in that it is not a donor funded project. Universities mutually agreed to hold meetings at universities by rotation such that the host institution organizes some meetings and any attached seminars/workshop.

PARTICIPANTS

The eight meeting of the Universities for Water Network (UWN) was held at Panjwani-Hisaar Water Institute (PHWI) at NED University, on October 30, 2025 (see Annex-1 for UWN meeting program). The meeting was attended by 10 universities/research centers, including two from Bangladesh:

1. Institute of Water Modelling (IWM), Dhaka, Bangladesh
2. Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh
3. Sindh Agriculture University Tandojam, Sindh
4. University of Southern Punjab, Multan, Punjab
5. Dawood University of Engineering and Technology, Karachi, Sindh
6. USPCAS-W, Mehran University of Engineering and Technology, Jamshoro, Sindh
7. Sardar Bhadur Khan Women University, Quetta, Balochistan
8. Quaid-e-Azam University, Islamabad
9. University of Karachi, Sindh
10. Pakistan Agriculture Research Council (PARC) Islamabad

The following faculty members from NED University were joined the meeting:

1. Prof. Dr. Noman Ahmed, Pro Vice Chancellor, NED University
2. Ms. Simi Kamal, Advisor, Panjwani-Hisaar Water Institute
3. Prof. Dr. Abdul Jabbar Sangi, Chairman, Department of Civil Engineering
4. Prof. Dr. Abdual Ghaffar, Assistant Professor, Department of Environmental Engineering
5. Haris Akram Bhatti, Assistant Professor, Panjwani-Hisaar Water Institute
6. Kausar Hashmi, Manager, Panjwani-Hisaar Water Institute

In addition, Dr. Pervaiz Amir, Former Director, Global Water Partnership (GWP) was participated in the meeting. Representatives from Hisaar Foundation Mr. Zohair Ashir and Mr. Wasif Rashir were also attend this meeting (see Annex-2 for List of participants).

MEETINGS PROCEEDINGS

- **Welcome and Introduction of Participants**

Prof. Dr. Noman Ahmed, Pro Vice Chancellor of NED University and Acting Director of PHWI presided over the meeting. The meeting commenced with the recitation from the Holy Quran and introduction of participants.

- **Briefing on PHWI by Prof. Dr. Noman Ahmed**

Prof. Dr. Noman Ahmed Pro Vice Chancellor and Acting Director of PHWI, NED University gave briefing on Panjwani-Hisaar Water Institute (PHWI) establishment and said that the Panjwani-Hisaar Water Institute (PHWI) is a collaborative effort of NED University, Panjwani Charitable Foundation (PCF) and Hisaar Foundation (HF). He further said that PHWI is designed to play a pivotal role in new ways of thinking about water, developing theory and practice, doing applied research, and undertaking scientific investigations in the age of rapid climate change and environmental degradation. PHWI academic activities and future action plan was also presented this brief (for detailed presentation on PHWI see Annex-3).


- **Presentation on UWN by Ms. Simi Kamal**

Ms. Simi Kamal, Advisor PHWI, NED University presented the Universities for Water Network updates and informed participants Why was Universities for Water Network (UWN) created and about the role of member universities of UWN. She further explained participants the vision behind the UWN and said that the Universities for Water network is to develop the knowledge and skill base for water sectors, as well as water related disciplines, degrees, departments-that will be required by Pakistan in the next 100 years (for detailed presentation on PHWI & UWN see Annex-3).

- **MoU Signing with USP and SAU**

The activities related to UWN commenced the day before at the 7th Karachi International Conference (KIWC) where the Vice Chancellor of NED University Karachi and the Vice Chancellor of South Punjab University (SPU), Multan signed an MOU to bring SPU into the UWN network. Today the Vice Chancellor of Sindh Agriculture University, Tandojam and Pro VC of NED signed a similar MOU with PHWI.

- **Presentations by Members Universities**

In the meeting today 10 universities/research centers made presentations on the water related teaching and research at their universities and research centers, including two from Bangladesh (for detail see UWN member's presentations in Annex-4).

Institute of Water Modelling (IWM) and Institute of Water and Flood Management (IWFM) Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh keen to collaborate with Panjwani-Hisaar Water Institute (PHWI) on research and development projects in water and relevant sectors. They also invited PHWI-NEDUET to visit their institute/university.

FACILITY TOUR

The UWN meeting ended on the tour of Panjwani-Hisaar Water Institute building and its facilities.

OUTCOMES

Added two new universities in the UWN network:

- University of Southern Punjab, Multan, Punjab
- Sindh Agriculture University, Tandojam, Sindh

Following areas of collaboration were identified for joint research with IWM and IWFM-BUET:

- Transboundary
- Flood Management
- Water Quality

Requested COMSTECH to support visit of PHWI faculty members to Institute of Water Modelling (IWM) and Institute of Water and Flood Management (IWFM), Bangladesh University of Engineering and Technology (BUET), Dhaka.

The next two meetings (plus seminars) will be hosted by University Southern Punjab in Multan and the Mehran University of Engineering and Technology in Jamshoro.

LIST OF ANNEXES

ANNEX-1 UWN MEETING PROGRAMME

ANNEX-2 LIST OF PARTICIPANTS

ANNEX-3 PRESENTATIONS OF PHWI AND UWN

ANNEX-4 PRESENTATIONS OF UWN MEMBER UNIVERSITIES

1. Presentation of Institute of Water Modeling (IWM), Dhakka, Bangladesh
2. Presentation of Bangladesh University of Engineering and Technology, Dhakka
3. Presentation of Sardar Bahadur Khan Women's University, Quetta
4. Presentation of USPCAS-W, Mehran University of Engineering and Technology, Jamshoro
5. Presentation of University of Southern Punjab, Multan
6. Presentation of Quaid I Azam University, Islamabad
7. Presentation of University of Karachi

ANNEX-1 UWN MEETING PROGRAMME

Universities for Water Network (UWN) Meeting

Panjwani-Hisaar Water Institute (PHWI)
NED University of Engineering and Technology, Karachi

REVISED PROGRAMME

Thursday, October 30, 2025

10:00 AM	Introduction of participants
10:10 AM	Welcome Remarks
10:15 AM	Briefing on Panjwani-Hisaar Water Institute (PHWI)
10:30 AM	Why was Universities for Water Network (UWN) Created and Role of Member Universities of UWN
10:45 AM	Signing of MoU with Sindh Agriculture University, Tandojam
12:15 PM	Discussion on Water Related Courses, Trainings and Research (Each member university of UWN will be requested to speak 10 minutes about the work of their Institution)
12: 20 PM	Planning for Next two Full Meetings of UWN
12:30 PM	Concluding Remarks and Vote of Thanks
12:45 PM	Tour of PHWI building and its facilities
01:00 PM	LUNCH

ANNEX-2 LIST OF PARTICIPANTS

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soniamurshed@gmail.com; sonia@iwfm.buet.ac.bd

Dr. Pervaiz Amir
Global Water Partnership (GWP)
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Dr Altaf Siyal
Vice Chancellor
Sindh Agriculture University Tandojam, Sindh
0335-3340405

Prof. Dr. Muhammad Mukhtar
Rector, University of Southern Punjab,
Multan & Amp; Secretary Bog
Multan
0334-6859830

Prof. Dr. Ghulamullah Maitlo
Dean, Faculty of IMEE, DUET
0333-0300214
Dean.imee@duet.edu.pk

Prof. Dr. Noman Ahmed
PVC NED University & Acting Director PHWI

Prof. Dr Kamran Ansari
Director & Professor
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0336-8378743, 0341-3835604

Dr Arjumand Zaidi
USPCAS-W
MUET Jamshoro

Dr. Nelofer Jamil
Assistant Professor
Department of Environmental Sciences
Sardar Bhadur Khan Women University, Quetta

Dr. Abida Farooqi
Assistant Professor,
Dept of Environmental Sciences, Faculty of Biological Sciences
Quaid-e-Azam University
Islamabad

Shehla Batool
Dept of Environmental Sciences, Faculty of Biological Sciences
Quaid-e-Azam University
Islamabad

Dr. Lubna Ghazal
Assistant Professor
Department of Geography, University of Karachi

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University of Karachi
0300-2224277

Farzana Saleem
Former PSO
PARC Islamabad
0300-8237145

Prof. Dr. Abdul Jabbar Snagi
Chairman, Dpt of Civil
NED University
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Haris Akram Bhatti
Assistant Professor
Panjwnai-Hisaar Water Institute
NED University

Wasif Rashid
Hisaar Foundation
0344-4608063

Zohair Ashir
Hisaar Foundation and
PHWI-NED University

Simi Kamal
Hisaar Foundation and
PHWI-NED University

Kausar Hashmi
Manager
PHWI-NED University

ANNEX-3 PRESENTATIONS OF PHWI AND UWN

Panjwani-Hisaar Water Institute

Universities for Water Network (UWN)

Meeting No.8, Oct 30, 2025

1

Panjwani-Hisaar Water Institute

Rationale for Establishing PHWI

- Interdisciplinary
- Multidisciplinary
- Integrating different streams
  - Science and technology
  - Engineering
  - Economics, social and behavioral sciences
  - Hydrology, geography, climate and earth sciences
- Water research, education and training

3

Panjwani-Hisaar Water Institute

Public – Private Partnership

Hisaar Foundation

A citizen-driven foundation for water, food and livelihood security formed in 2003, based in Karachi that aims to be a solution provider through policy, academia & research and its projects and programmes

NED University of Engineering & Technology

A center of excellence, established in 1921, in higher education and scientific research with the aim of teaching and producing engineering graduates

Panjwani Charitable Foundation

A charitable trust established in the year 1989 with the primary objective of supporting the cause of health and education and committed to the cause of human uplift and betterment

TRIPARTITE AGREEMENT GOVERNS THE RELATIONSHIP BETWEEN THE THREE ENTITIES SIGNED IN 2018

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Panjwani-Hisaar Water Institute

Executive Board Members of PHWI

Prof. Dr. Mumammad Tufail
Vice Chancellor NED

Prof. Dr. Noman Ahmed
Pro-VC NED & Acting Director PHWI

Dr. Sarosh H Lodi
Former VC NED & Patron PHWI

Ms. Nadira Panjwani
Founder Panjwani Charitable Foundation

Ms. Simi Kamal
CEO Hisaar Foundation & Advisor PHWI

Prof. Dr. M. Iqbal Choudhary
Coordinator General COMSTECH

Mr. Zohair Ashir
Governor Hisaar Foundation

Prof. Dr. Abdul Jabbar Sangi
Chairperson Dept. of Civil Engg. NED

Panjwani-Hisaar Water Institute

Vision

An institute of excellence in higher learning with **focus on interdisciplinary and multidisciplinary studies** and behavior change to safeguard and secure Pakistan's water resources and develop global water leadership

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Panjwani-Hisaar Water Institute

Mission

- Build intellectual and robust scientific research approaches towards water education, knowledge and skills
- Develop partnerships with all levels of government, agriculture, industries, communities and water-user groups
- Engage with government institutions on national and provincial policies and strategies
- Change the mindsets of students, stakeholders and society regarding water use, conservation and stewardship of water
- Develop mechanisms for the dissemination of information emanating from research and practice
- Develop appropriate governance systems to support the achievement of vision and goals

Panjwani-Hisaar Water Institute

Laboratories

1. Coastal & Riverine Hydraulics --- First in Pakistan
2. Ecology & Remediation --- First in Pakistan
3. Water Quality Testing
4. Water Data Analytics and Modelling
5. Water Psychology and Behavioral Sciences --- First of its kind in the world

The five labs will work in tandem with research function, generate new knowledge and data on water and provide services

Panjwani-Hisaar Water Institute

PHWI Academic Activities

Masters Degrees

- Climate Change Management (Masters of Engineering Management)
- Urban Water Management (Masters of Engineering Management)
- Coastal and Water Resources Engineering (Masters of Engineering)

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Panjwani-Hisaar Water Institute

Courses for Bachelors Degrees

PHWI faculty is conducting undergraduate modules taught at different departments of the NED University:

A- Fluid Mechanics

B- Hydraulics and Water Resources

C- Advanced Hydraulics and Water Resources

D- Urban Hydrology

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Panjwani-Hisaar Water Institute

Certification Courses

All individual modules of the masters courses offered by PHWI can be taken as standalone courses for certification. These credits can be subsequently transferred towards a full masters degree under NED rules.

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Panjwani-Hisaar Water Institute

Short Courses

PHWI has conducted numerous short courses , seminars, workshops and events. The last one was on Water Law held in July 2024

The following 5 short courses are in the pipeline.

1. AI in Water Resources Management
2. Building Leadership in the Water Sector
3. Water Law
4. Hydrology and Water Balance
5. Strategic Planning in the Water Sector

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Panjwani-Hisaar Water Institute

Masters Research Projects (List)

No.	Roll No.	Student Name	Topic
1	WI-07/2024	Irfan Ali	Climate Change Policy and Its Implementation in Pakistan
2	WI-06/2024	Maliha Abbas	Developing a Climate Resilient Strategy to Model and Predict Heat Waves in the Urban Areas of Karachi
3	WI-04/2024	Muhammad Asadullah	Assessing the Effect of Global Warming on Temperature Variations in Karachi
4	WI-05/2024	Zaheer Ahmed	Evaluating Climate and Socioeconomic Impacts of Transitioning to Low-Carbon Energy Systems: Harnessing Crop Residue for Carbon Emission Reduction
5	WI-01/2024	Mahrukh Ansar	Integration of Building Information Modelling with WaterGEMS to Visualize Water Hammer Dynamics in Water Distribution Network
6	WI-02/2024	Sadia Ahmad	Enhancing Drinking Water availability in Educational Institutions Through Rainwater Harvesting
7	WI-01/2024-25	Wajiha Fatima	Quantifying the Climate Change impacts on Hydrological Extremes in the Indus Delta
8	WI-04/2024-25	Danyal Ahmed	Hydro-Ecological Impact Assessment of Malir Expressway Development on the River Ecosystem
9	WI-05/2024-25	Hamza Javed	Assessing the Cooling Effect of Parks on Urban Heat Island

Panjwani-Hisaar Water Institute

Universities For Water Network (UWN)

October 30, 2025

Vision

The vision of the Universities for Water network is to develop the knowledge and skill base for water sectors, as well as water related disciplines, degrees, departments- that will be required by Pakistan in the next 100 years.

Sectors of Cooperation

The sectors of cooperation include:

- Water science and technology
- Water engineering
- Water economics, social and behavioral sciences
- Hydrology, geography, climate and earth sciences
- Environment and conservation
- Floods and droughts

Meetings to Date

- Inaugural meeting at NED University of Engineering and Technology, Karachi on 5th & 6th December 2014
- Second meeting at Mehran University of Engineering and Technology, Jamshoro on 24th & 25th April 2015
- Third meeting at University of Agriculture, Faisalabad on 19th & 20th October 2015
- Forth meeting at University of Karachi, Karachi on 15th & 16th April 2016
- Fifth meeting at LUAWMS, Lasbela on 14th April 2017
- Sixth meeting at LUMS, Lahore on 9th & 10th February 2018
- Seventh meeting at NED, Karachi on 28th & 29th December 2018
- Eight meeting at NED, Karachi on November 29, 2023

- This initiative is very unique in that it is not a donor funded project.
- Universities mutually agreed to hold meetings at universities by rotation such that the host institution organizes some meetings and any attached seminars/workshop and takes care of lodging and meals of other universities of water network people who come.
- The universities that send participants cover their travel and transport expense.

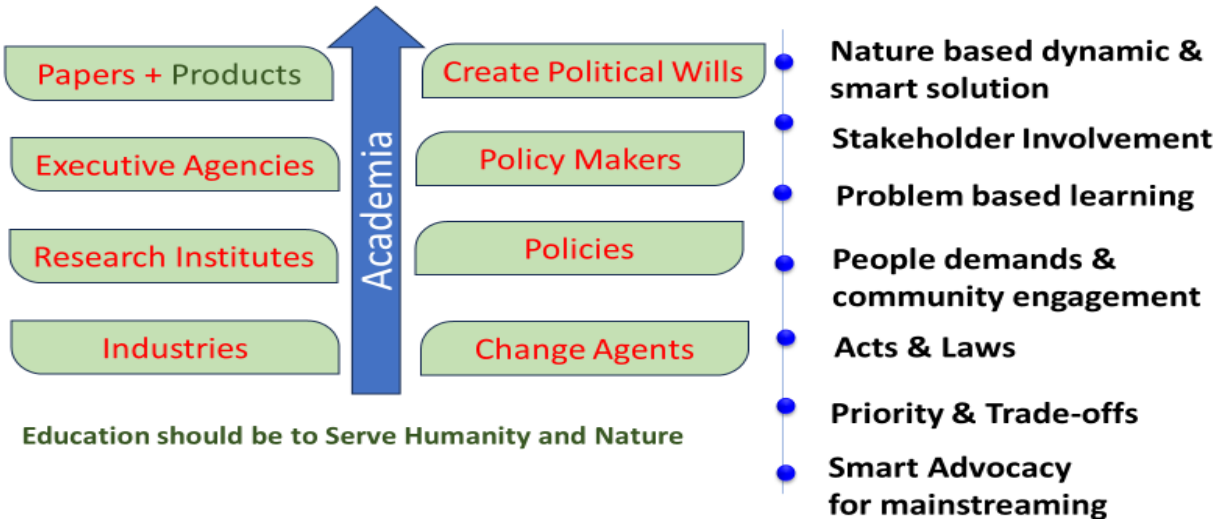
ANNEX-4 PRESENTATIONS OF UWN MEMBER UNIVERSITIES

8. Presentation of Institute of Water Modeling (IWM), Dhakka, Bangladesh

Our Say – To Whom it Concern

- **Create Water Centric Innovation Center**
  where countries can contribute by their unique capacities to solve problems with best shared knowledge and experiences
- **Create accessible database of skills and professionals – including replicable high-impact models**
- **Persistent Network of cooperations for sharing skills and knowledge**
- **MOUs for collaborative Research and Innovation**
  and Sensitize Govt. + Donor + Investors+ Industries + ..

Innovation and solution-based study



Collaborative Innovation to make Change/Adaptation

→ If you have --- give me

→ If I have --- take it

→ If none have it --- lets do it together

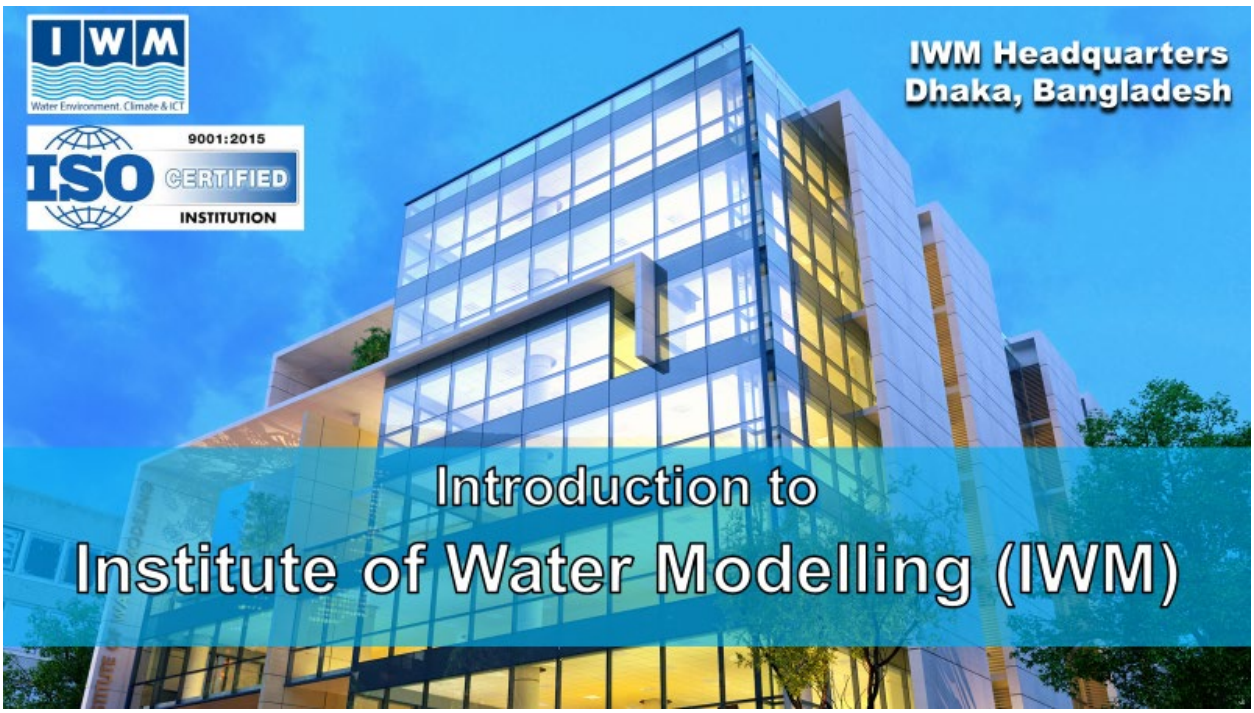
→ If we both have it --- lets take it to higher level

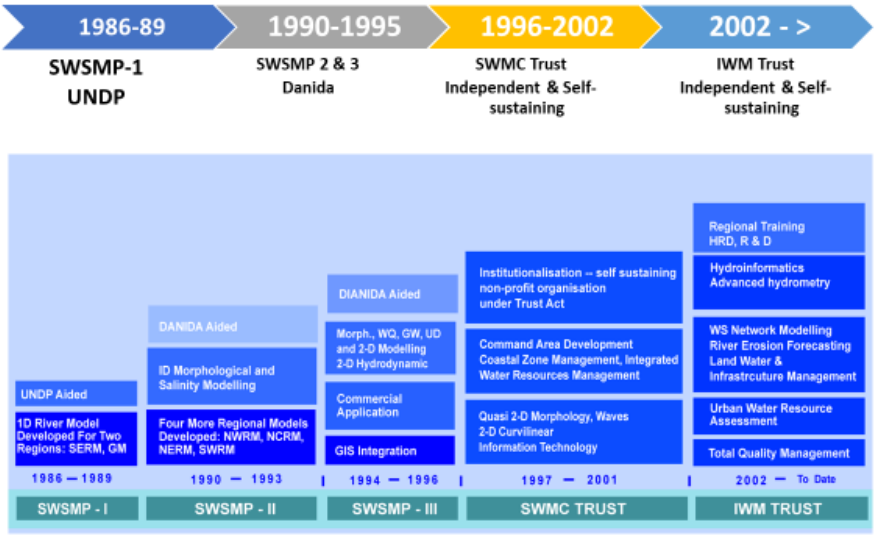
Ex: HEC, PostGIS, etc..

Individual life is short, but generation continues

- **Simple Solution with High Impact**

- **Water Connects us beyond borders—so must our education**


IWM
Water Environment, Climate & ICT
9001:2015
ISO CERTIFIED
INSTITUTION
IWM Headquarters
Dhaka, Bangladesh
Introduction to
Institute of Water Modelling (IWM)


1986-89
SWSMP-1
UNDP
1990-1995
SWSMP 2 & 3
Danida
1996-2002
SWMC Trust
Independent & Self-sustaining
2002 - >
IWM Trust
Independent & Self-sustaining
UNDP Aided
1D River Model Developed For Two Regions: SERM, GM
1986 – 1989
SWSMP - I
DANIDA Aided
ID Morphological and Salinity Modelling
Four More Regional Models Developed: NWRM, NCRM, NERM, SWRM
1990 – 1993
SWSMP - II
DIANIDA Aided
Morph., WQ, GW, UD and 2-D Modelling 2-D Hydrodynamic
Commercial Application
GIS Integration
1994 – 1996
SWSMP - III
Institutionalisation – self sustaining non-profit organisation under Trust Act
Command Area Development Coastal Zone Management, Integrated Water Resources Management
Quasi 2-D Morphology, Waves 2-D Curvilinear Information Technology
1997 – 2001
SWMC TRUST
Regional Training HRD, R & D
Hydroinformatics Advanced hydrometry
WS Network Modelling River Erosion Forecasting Land Water & Infrastrcuture Management
Urban Water Resource Assessment
Total Quality Management
2002 – To Date
IWM TRUST

Features of IWM

- IWM is a Self sustaining, Not-for-profit Trust
- Professionals/staff: 433
- Service Nature: Policy Support, Capacity Building, Research and Innovation, Advisory and Consultancy Services
- Fields of Expertise: Water, Climate, Environment, Engineering, GIS and ICT Solutions
- International Office: Registered in Kuala Lumpur, Malaysia
- International Field Offices: Nepal and India
- Projects: 124 at home and abroad – 54 Clients in 2024-25 →80+ currently running

IWM International Experience

- Central Asia
- Nepal
- India
- Malaysia
- Philippines
- Cambodia
- Sri Lanka
- Turkey
- United States

Major Knowledge Partners of IWM

Major Development Partners

Some of National Partners and Clients

IWM has an extensive network of stakeholders in various sectors.

IWM is connected with all the relevant Government Ministries and Agencies of Bangladesh.

- Ministry of Water Resources
- Ministry of Road Transport and Bridges
- Ministry of Local Government, Rural Development
- Ministry of Finance
- Ministry of Planning
- Ministry of Environment, Forrest and Climate Change
- Ministry of Railway
- Ministry of Agriculture
- Ministry of Land
- Ministry of Housing and Public Works
- Ministry of Shipping
- Ministry of Disaster Management & Relief
- Ministry of Power, Energy and Mineral Resources
- Ministry of Posts, Telecommunications and IT


Training our professionals
Training at NAHRIM, Malaysia
Training & Capacity Building
Training GoB officials
Training to IUT


Joint Research Programmes
Joint research project with Yunnan University, China on "Water Resources Vulnerability and Security Assessment of Yarlung Tsangpo – Brahmaputra Transboundary River Basin"


LABORATORY and EQUIPMENT
FACILITIES


LIBRARY
FACILITIES


DAYCARE
FACILITIES


Bangladesh Country Programme
for Green and Climate Resilient Development
2024-2027
National Water Management Plan
Regional Plans
National Hygiene Promotion Strategy
for
Water Supply and Sanitation Sector in Bangladesh 2012
SUPPORT TO ACCELERATE THE BDP2100
IMPLEMENTATION
March 2014
National Strategy
for
Water Supply and Sanitation 2014
ADB
Policy and Technical Notes
BANGLADESH DELTA PLAN 2100
SUPPORT TO IMPLEMENTATION OF
BANGLADESH DELTA PLAN 2100
SIBDP

Bangladesh Country Programme 2024-2027

for Green and Climate Resilient Development

Accessing the World's largest climate fund GCF

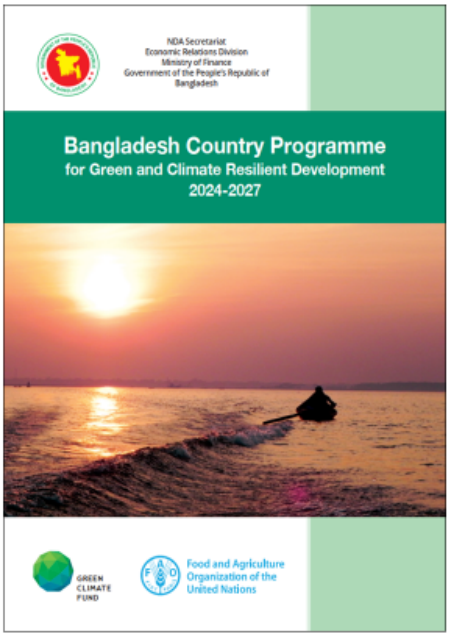
74 Projects USD16.49 billion

Prepared by: IWM
Client: ERD
Funding: FAO

Global Shield
against Climate Risks

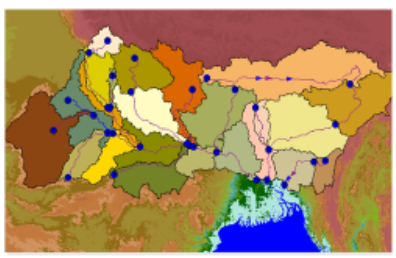
IWM is Support Structure to ERD for implementation of the Climate Global Shield in Bangladesh

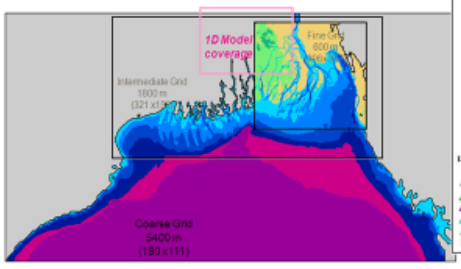
ADP Sector-wise Distribution of Pipeline Projects

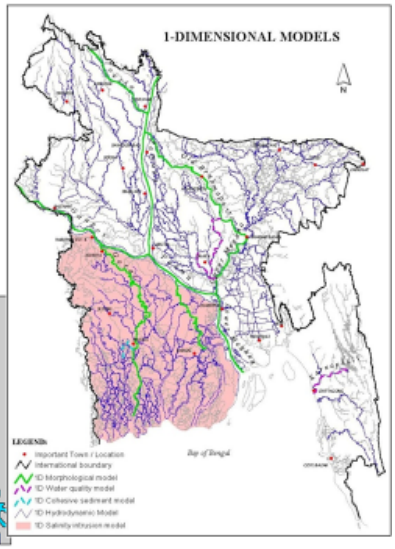


Mathematical Models at IWM

- 1-dimesional hydrodynamic & salinity model of significant river systems of the country
- 1 & 2 dimensional morphological model of major rivers
- 2-dimensional hydrodynamic, morphological & salinity model of Bay of Bengal
- GBM Basins model

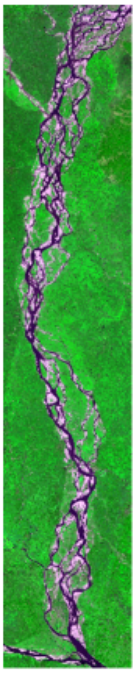


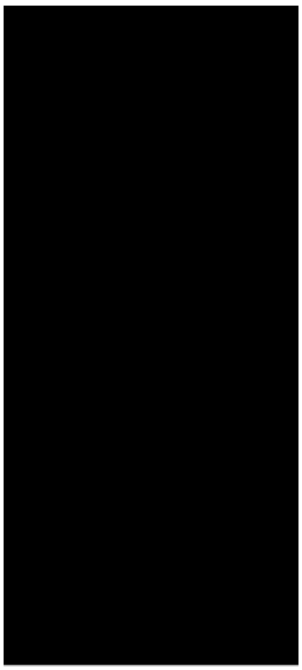




A mathematical model is a computer simulation tool that uses mathematical equations to represent the physical processes occurring in a river system.

These models are essential tools for understanding, predicting, and managing behavior of rivers, groundwater or the sea and its interaction with the surrounding environment.



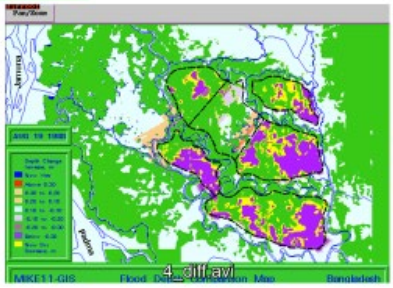


Flood Simulation

Without Project

With Project

Difference



Groundwater Model

- GW movement Model
- SW-GW interaction model
- Water supply management model
- Irrigation management model

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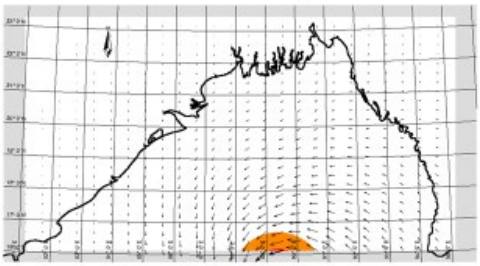
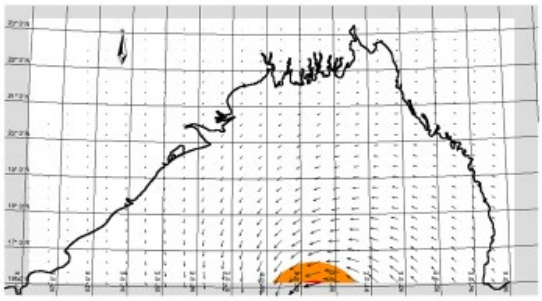
Observed & Simulated Cyclonic Field

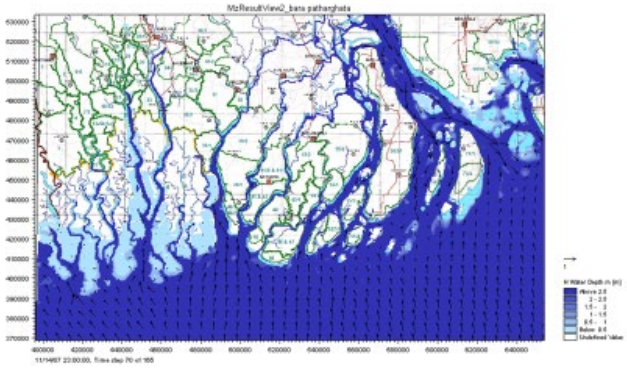
Observed Track (Sidr, 2007)

Simulated Track SIDR, 2007



Cyclone Storm Surge Simulation

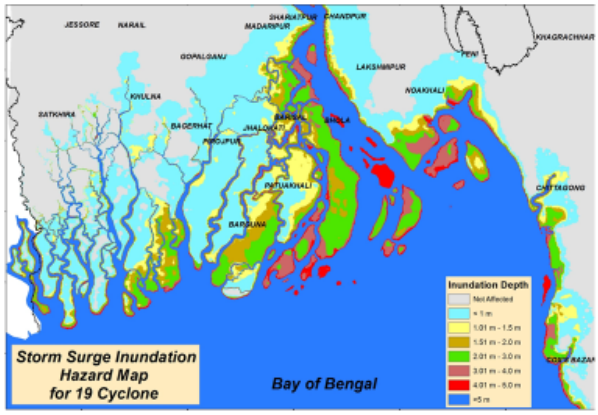




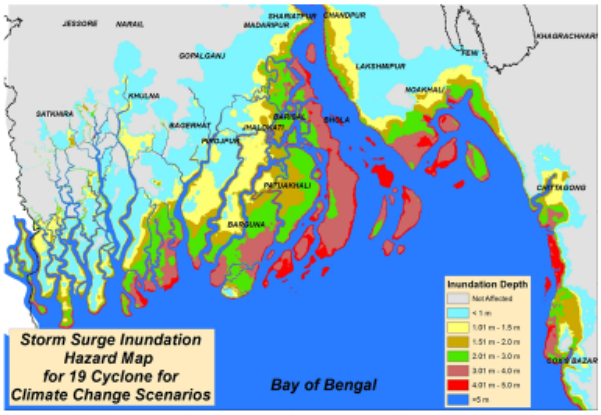
Simulated Track SIDR, 2007

Storm Surge Inundation at Present and in times of Climate Change

Present Scenario

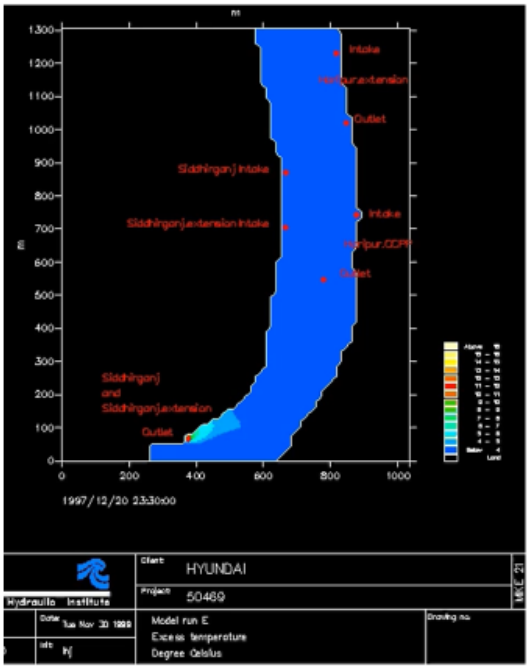


Climate Change Scenario 2050
(RCP 8.5, IPCC 5th Assessment Report)

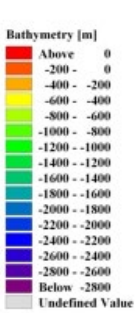


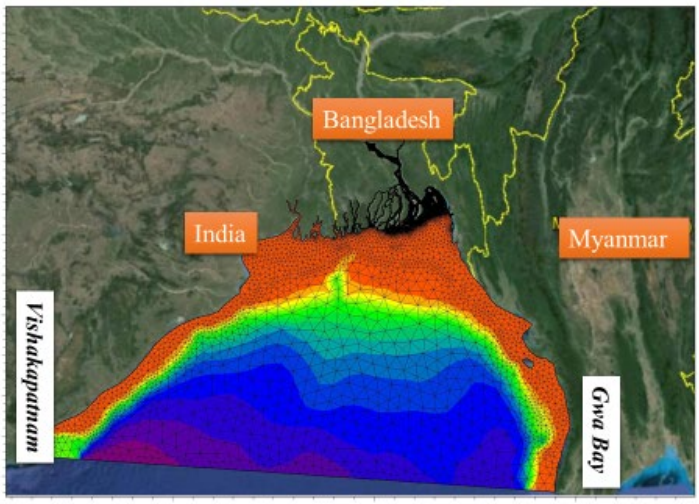
Siddhirganj Powerplant

Hot water outfall



Bay of Bengal Model

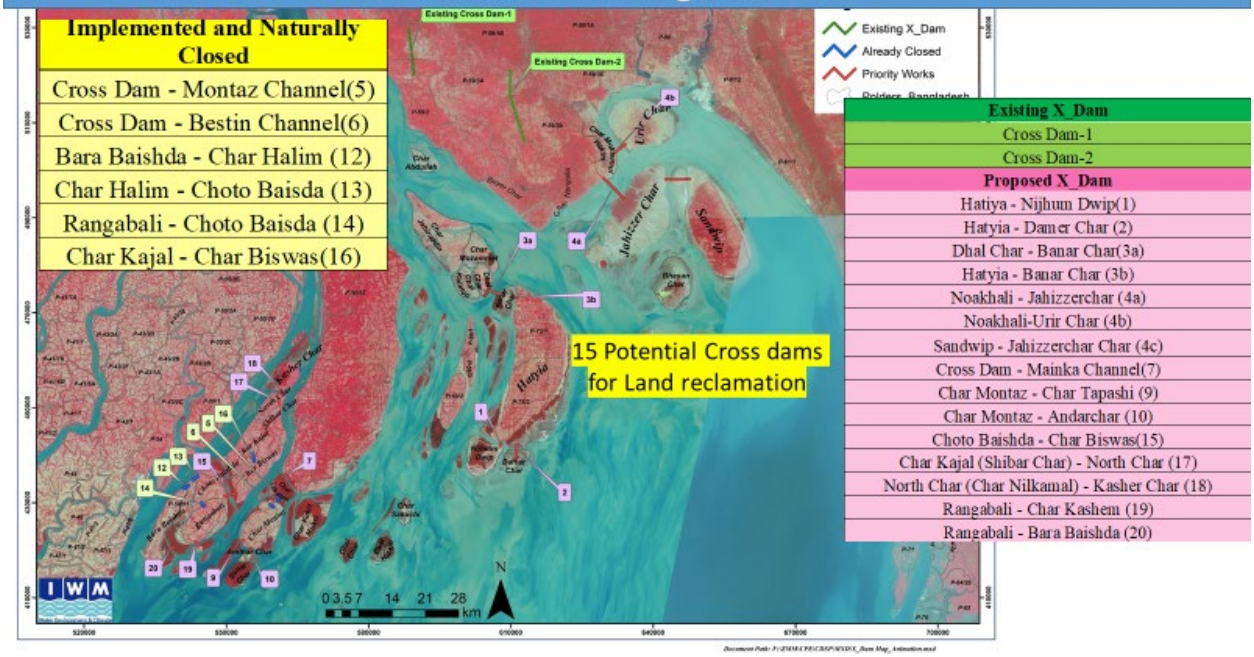


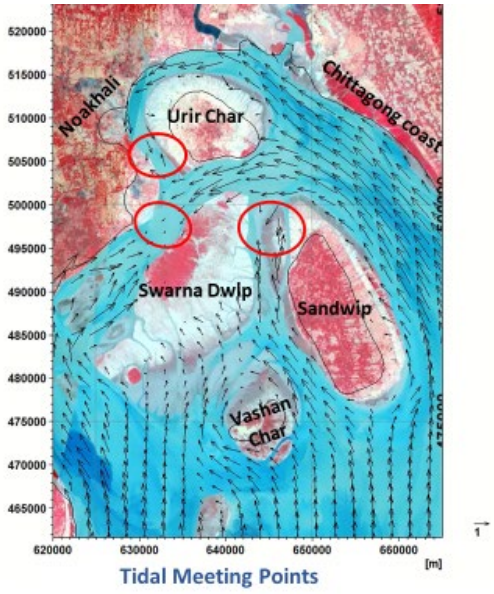


Water Flow Modelling

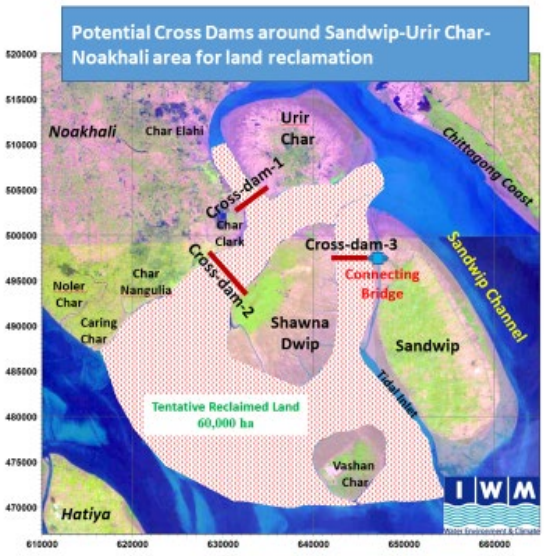
- ***Cyclonic Storm Surge Modelling***
- ***Erosion***
- ***Land Reclamation***
- ***Salinity Modelling***
- ***Climate Change & Seal Level Rise***
- ***EIA (Sediment dispersion due to Dredging)***

Master Plan for Land Reclamation using cross dams

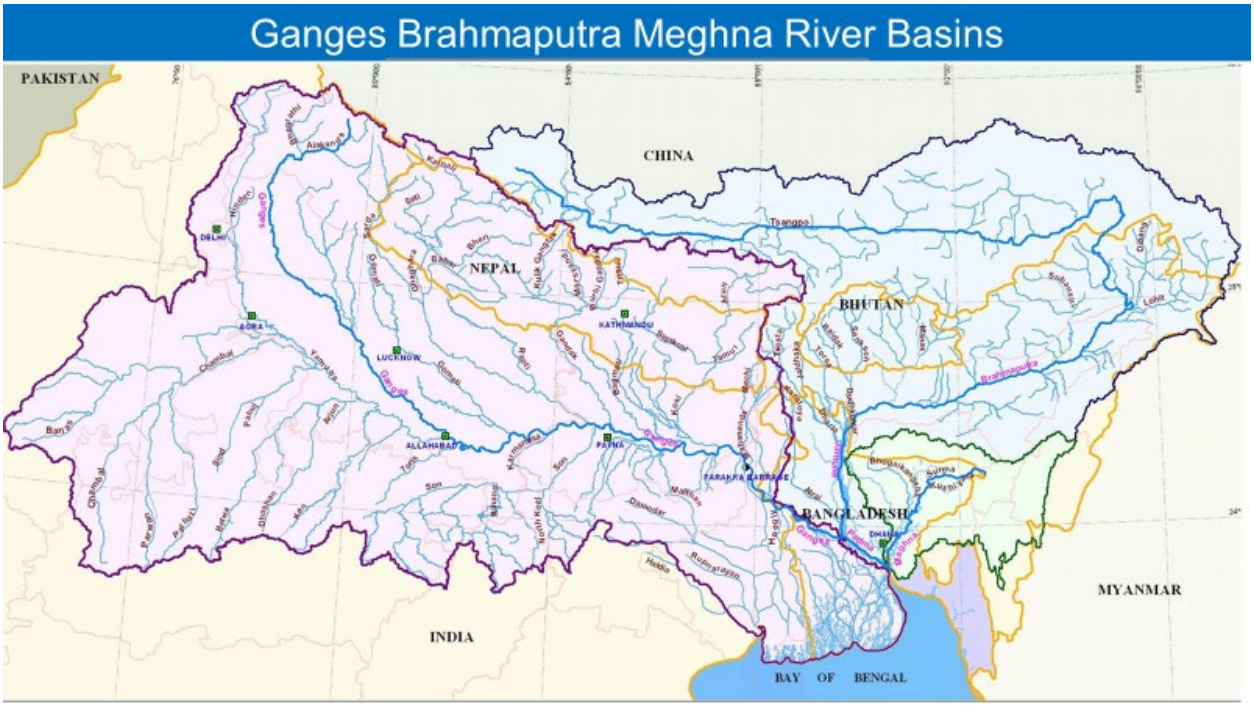




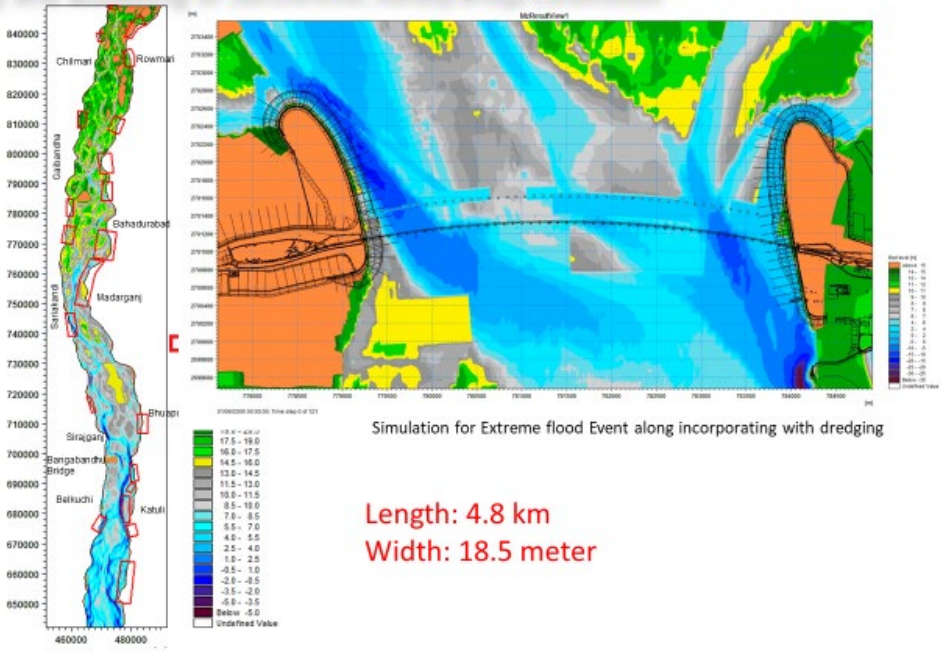
Tidal Meeting Points



Tentative Reclaimable Land

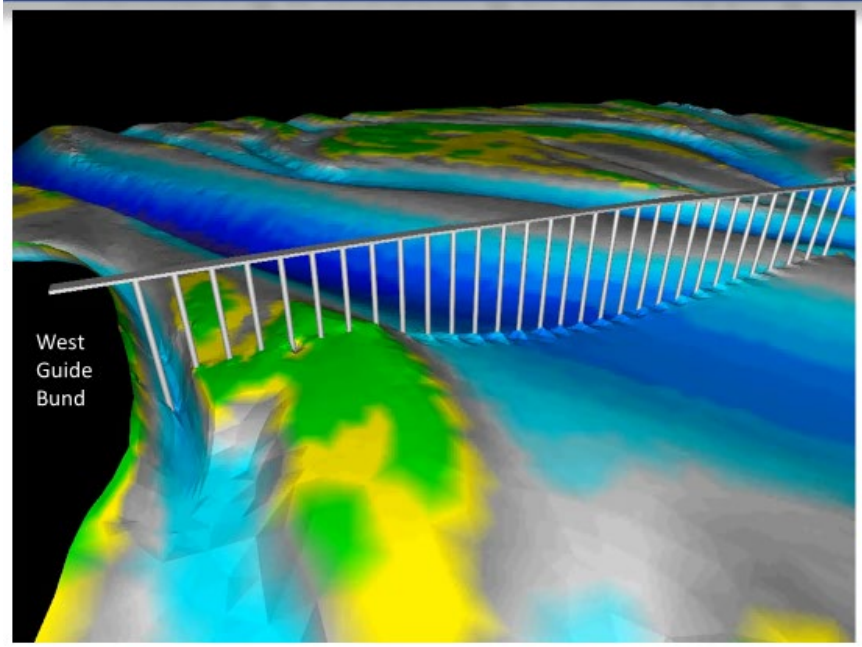


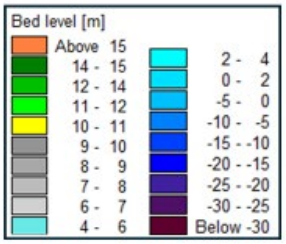
Survey and Modelling of Jamuna River, Railway Bridge Construction

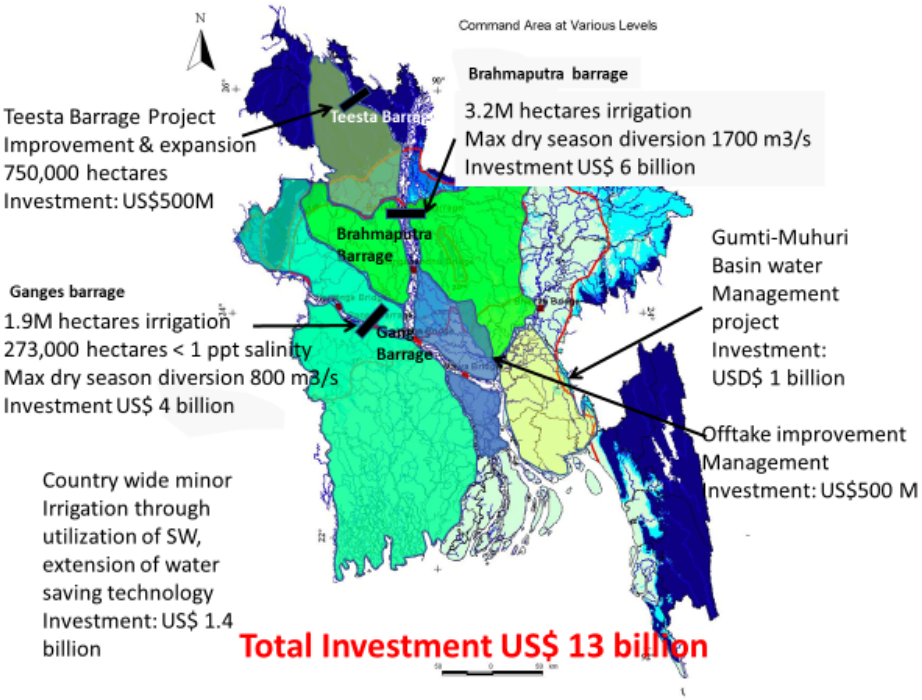


Length: 4.8 km
Width: 18.5 meter

Monitoring & Modelling of risk mapping for Jamuna Bridge







Innovations that make positive change to society and nature

Agriculture – With Less Water & Less Fertilizer

Start Flood Drought Erosion Cyclone Salinity Climate Agri Models Policy Treaty Challenges International

Empowering the Farmers for efficient cropping in Bangladesh

Boro + Aman = +1440 million USD/yr

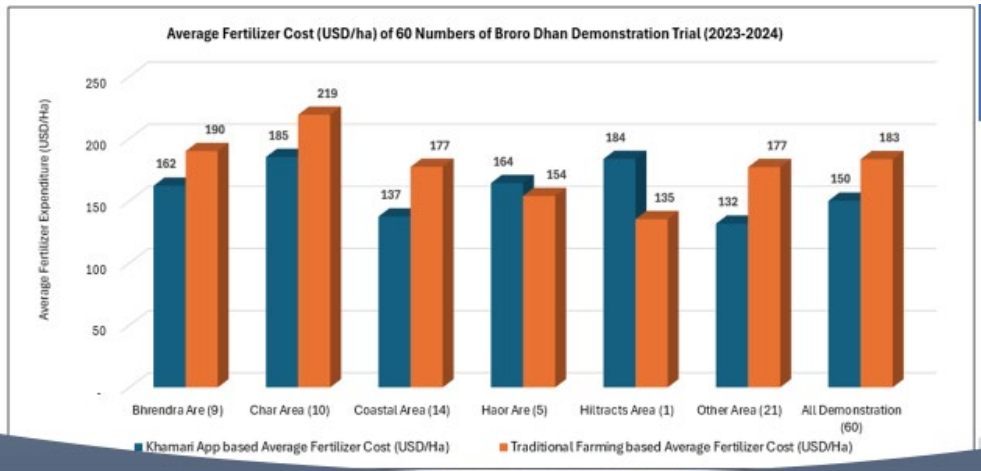
Field Assessment of Khamari Mobile App

The BARC and DAE has conducted 60 Trials & demonstrations

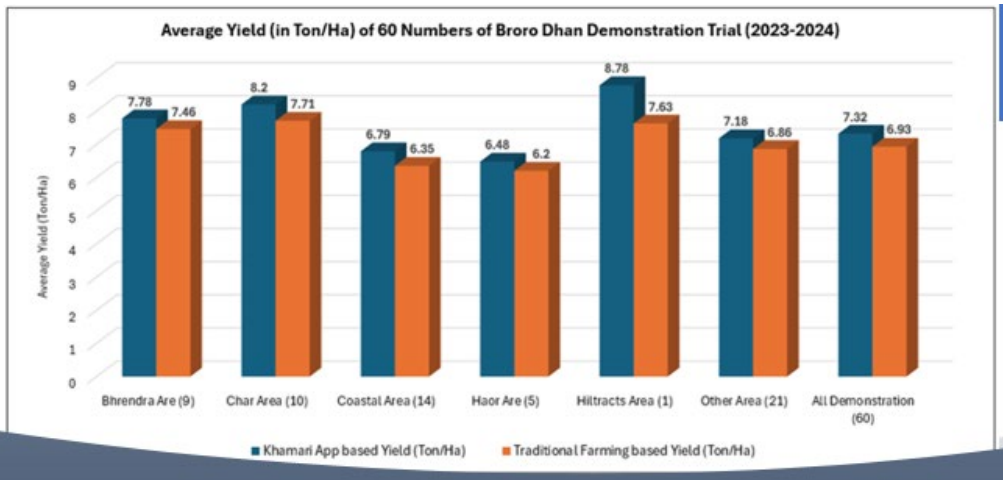
Likely estimate

Impact Items	Rabi Season (Nov-Mar)	Kharif-1 Season (Mar-Jul)	Kharif-2 Season (Jul-Nov)
Fertilizer Use	-13.22%	-27.34%	-34.56%
Production Change	+10.43%	+10.04%	+6.77%

Harvesting from Field Trial Plots



Field Assessment of Khamari Mobile App



Field Assessment of Khamari Mobile App

Financial Benefits : Enhanced Food Security

Aman Crop (all 5.9 M.ha area with Khamari)	Savings from Fertilizer	Tk 27.64 billion
	Cost of increased production	Tk 62.02 billion
	Sub Total	**Tk BDT 89.66 billion → 752 M.Usd**
Boro Crop (all 4.8 M.ha area with Khamari)	Fertilizer Saving + increased production	**Tk 82.05 billion →(USD 688.0 million**
Aman+Boro	**Fertilizer Saving + increased production**	**Tk 171.71 billion → (USD 1440.0 million)**

Environmental Benefit:

Less Fertilizer means increase of soil and water health

Some International Works

SUNGAI LANGAT NAVIGATION DEVELOPMENT, SELANGOR, MALAYSIA

Flood Forecasting and Management in Bihar State, India

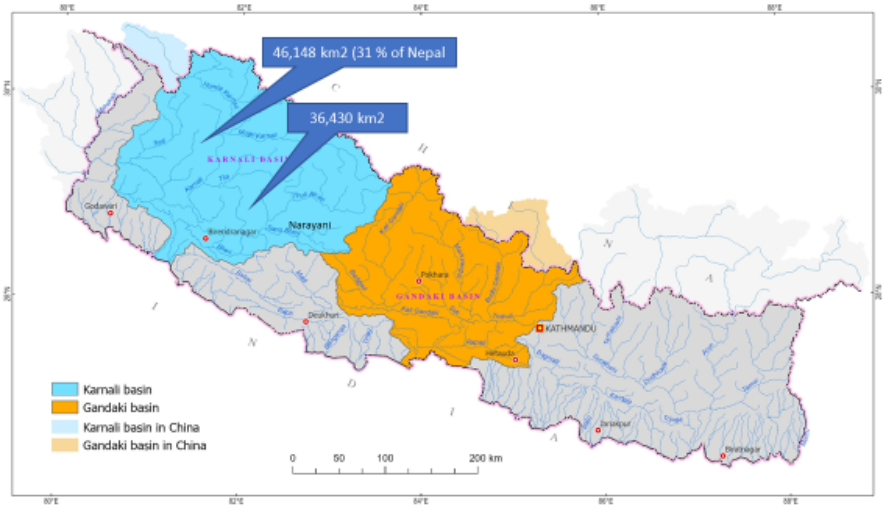
- In 2017, over 15 million people affected.
- 2019, over 8 million people affected in 13 districts.
- Over 8 million people have been affected by the floods in 2020
- Bihar shares 23% of total flood damage in India
- Kosi, the most flood damage area (89% of Bihar)

Sept rain in India on course to be highest in last 102 years

RAIN FURY IN BIHAR, UP KILLS 38

The Government of Bihar has initiated action to establish a Centre for Research and Development on Water Resources and Flood & Sediment Management to reduce Flood Risk

DSS for Flood Forecasting and Early Warning System (FFEWS) in NEPAL



The Department of Hydrology and Meteorology (DHM) has decided to implement the project Flood Forecasting and Early Warning System for **Karnali and Narayani River Basin**

Development Team:

- **Institute of Water Modelling (IWM), Bangladesh**,
- Total Management Services Pvt. Ltd. (TMS), Nepal
- Innovative Engineering Services Pvt. Ltd. (IES), Nepal JV

Duration 36 months, starting from November 2022.

IWM
Water Environment, Climate & ICT

Thank You

9. Presentation of Bangladesh University of Engineering and Technology, Dhakka

Bangladesh University of Engineering and Technology (BUET)

- Bangladesh University of Engineering and Technology (BUET) is a pioneer in engineering education in Bangladesh. The history of BUET dates back to **1876** when the **Dhaka Survey School** was founded. **Later in 1947, it became an engineering college and gained independent university status in 1962.**

- 18 departments under five faculties which are architecture and planning, civil engineering, engineering, electrical and electronic engineering, and mechanical engineering. **Six university-led institutes** also focus on diverse areas of research. BUET has over 600 faculty members and over 10000 undergraduate and graduate students.

Institute of Water and Flood Management (IWFM)

- Bangladesh is predominantly a floodplain country where water is key to socio-economic development and sustainability of the eco-system. Flood, drought, cyclone, river erosion, siltation, and water scarcity in dry season have made water management a challenging task. The gradual degradation of the environment due to human interventions is adding further complexities to water management.
-
- To address these issues, the **Institute of Flood Control and Drainage Research** was established in **1974** and later renamed as the **Institute of Water and Flood Management (IWFM)** in 2002. The Institute pursues research and capacity development in the field of water and flood management that is vital for economic development and social prosperity of the country.

The Institute **offers post graduate degrees** for the professional and fresh graduates in water resources development with the objectives of training and enhancing the knowledge and skills of professionals in planning and management of land and water resources, and widening their perspectives on Integrated Water Resources Management

DEGREES OFFERED

- Water Resources Development (WRD
  - (a) Master of Science in Water Resources Development (WRD) abbreviated as M.Sc. (WRD)
  - (b) Doctor of Philosophy abbreviated as Ph.D.
- Climate Modeling and Risk Management (CMRM)
  - (a) Master of Science in Climate Modeling and Risk Management(CMRM) abbreviated as M.Sc. (CMRM)
  - (b) Doctor of Philosophy abbreviated as Ph.D
- Humanitarian Engineering (HE)
  - (a) Master of Science in Humanitarian Engineering abbreviated as M.Sc. Engg. (HE)
  - (b) Master of Engineering in Humanitarian Engineering abbreviated as M.Engg. (HE).
  - (c) Doctor of Philosophy abbreviated as Ph.D.

IWFM Faculty

❑ Strong engineering/ technical/ interdisciplinary expertise

- ❖Climate modeling
- ❖Hydrological Modeling at Basin Scale
- ❖Groundwater and saline intrusion modeling
- ❖ River and coastal morphodynamics
- ❖ River Training and Bank Protection
- ❖ Coastal Engg., Estuarine and Deltaic Processes
- ❖Coastal hydrodynamic modeling
- ❖River and Wetland Ecosystem Management
- ❖Fate of pollutants in Soil and Water Systems
- ❖ Environmental transport processes
- ❖ Ecosystems and Environment
- ❖ Urban water management
- ❖Agricultural water management
- ❖ Hydro-climatic variability and climate change
- ❖Climate change adaptation
- ❖Hazards, Vulnerability and Resilience

- ❖Participatory & interdisciplinary approaches
- ❖Adaptive Delta Management
- ❖Transboundary River Basin Management
- ❖Risk-based Planning
- ❖ Gender, Water and Society
- ❖Water governance

❑ Interdisciplinary training and research:

- 'IWRM'
- 'Field Research Methodology'
- 'Water and Equity'
- 'Gender and Water'
- 'Water and Ecosystems'
- 'Water and Economics'
- 'Water and Health'
- 'Participatory Field Research Methodology'
- 'Climate Change'
- GIS and RS

Current Research Areas

- ✓ Impact-based forecasting and anticipatory action
- ✓ Climate change impacts/ scenarios
- ✓ Climate change adaptation (contextualization, effectiveness, adaptation deficts, multi-scale, multi-sectors, synergies, tradeoffs)
- ✓ Vulnerability/ risk/ resilience analysis
- ✓ Water security
- ✓ Sediment transport and river morphology
- ✓ Estuarine/ coastal processes
- ✓ River engineering
- ✓ Coastal resilience
- ✓ Strategic delta planning
- ✓ Sustainable and equitable livelihoods (livelihood resilience)
- ✓ Integrated assessment/ systems analysis
- ✓ Coupled natural and human systems modeling

Principal Investigator, Sediment Discontinuity in Ganges River and its Impact on Flooding Patterns
Co-investigator, Anticipatory Action for Health in a Changing Climate
Co-investigator, Center for Climate and Health glObal Research on Disasters (CORD) Co-investigator, Community-led EAs on rapid-onset FF events in North-Eastern Bangladesh
Co-investigator, Improving Water Management in Micro-Watersheds of Southwest Bangladesh through Physical Intervention and Community Participation
Co-investigator, Enhancing Climate Resilience of Coastal Areas of Bangladesh with Nature-Based Solutions

Collaborative Research at IWFM

Major funding agencies:

- ✓ DFID (UK)
- ✓ IDRC (Canada)
- ✓ European Union
- ✓ JST-JICA (Japan)
- ✓ Netherlands Organization for Scientific Research (NWO-WOTRO)
- ✓ Dutch Embassy, Dhaka
- ✓ APN
- ✓ Norwegian Research Council
- ✓ DANIDA
- ✓ USAID
- ✓ UNDP
- ✓ NIH, USA
- ✓ World Bank

Major foreign collaborators:

- ✓ University of Oxford, UK
- ✓ University of Southampton, UK
- ✓ Newcastle University, UK
- ✓ Wageningen University, the Netherlands
- ✓ TU delft, the Netherlands
- ✓ UNESCO-IHE, the Netherlands
- ✓ Kyoto University, Japan
- ✓ Utrecht University, the Netherlands
- ✓ Institute of Global Environmental Strategies (IGES), Japan
- ✓ University of Copenhagen, Denmark
- ✓ University of Bergen, Norway
- ✓ Uni Climate, Norway
- ✓ University of Minnesota, USA
- ✓ International Centre for Climate and Environmental Sciences, China
- ✓ University of Darmstadt, Germany
- ✓ Tufts University, UK

Science-Policy Linkage

Science-policy linkage with government ministries and departments, e.g.

- General Economics Division (GED), Planning Commission
- Ministry of Water Resources
- Bangladesh Water Development Board (BWDB)
- Water Resources Planning Organization
- Ministry of Disaster Management
- Department of Disaster Management
- Ministry of Environment, Forests and Climate Change
- Department of Environment
- Local Government Engineering Department (LGED)
- Roads and Highways Department (RHD)

Contribution to National Level Water Sector

- **National Water Management Plan**
- **National Sustainable Development Strategy**
- Poverty Reduction Strategy Paper
- **Bangladesh Climate Change Strategy and Action Plan**
- Multipurpose Cyclone Shelter Master Plan
- National Adaptation Programme of Action (NAPA)
- Integrated Coastal Zone Management Programme
- UNFCCC (United Nations Framework Convention on Climate Change) 2nd Country Communication
- Hatir Jheel Development Project
- **Sustainable Development Goal- 6**
- **Bangladesh Delta Plan 2100**
- **Support to Implementation of BDP 2100**
- **National Disaster Management Plan (NPDM)**
- **Disaster Impact Assessment (DIA)**
- **Post-Disaster Recovery Strategy**
- Hydro-morphological study for over 200 bridges of LGED and RHD
- Professional capacity building and institutional strengthening

10. Presentation of Sardar Bahadur Khan Women's University, Quetta

SARDAR BAHADUR KHAN WOMEN'S UNIVERSITY

SBK WOMEN'S UNIVERSITY BALOCHISTAN

History & Water related interventions

www.sbkwu.edu.pk

SBKWU

Located on a 40-acre plot of land that was formerly the Sardar Bahadur Khan Santorium. This land was donated by Pakistan Railways and serves as the university's campus.

- Total Area: 40 acres
- Location: Quetta, Balochistan
- Origin of Land: Donated by Pakistan Railways

SBKWU

- Established in 2004
- 5 faculties, 29 departments
- Total Students > 8000
- Department of Environmental Sciences (2007)
- Offering BS, M.Phil. & Ph.D.
- New induction 77 students

SBKWU

Sub-campuses

- Pishin,
- Khuzdar &
- Noushki

Water arrangement

- 3 tube wells
- One is functional only
- QWASA
- Plantation
- Hostels
- Departments

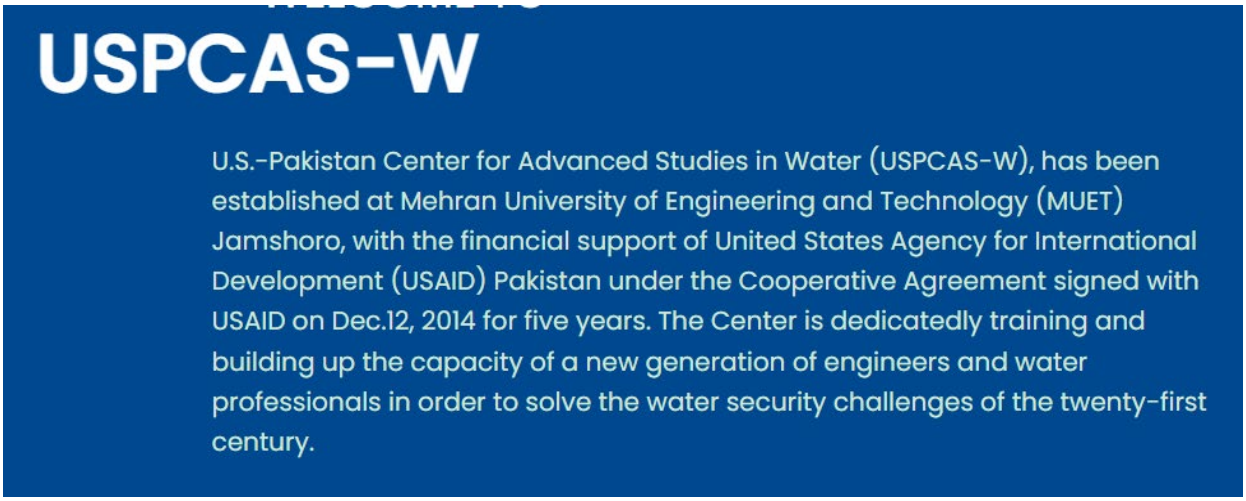
Projects

- Kitchen gardening (Drip irrigation)
- Water audit
- Soil moisture
- Carbon sequestration and foot printing of the area
- Rainwater harvesting

Projects completed

THANK YOU!

11. Presentation of USPCAS-W, Mehran University of Engineering and Technology, Jamshoro



USPCAS-W

U.S.-Pakistan Center for Advanced Studies in Water (USPCAS-W), has been established at Mehran University of Engineering and Technology (MUET) Jamshoro, with the financial support of United States Agency for International Development (USAID) Pakistan under the Cooperative Agreement signed with USAID on Dec.12, 2014 for five years. The Center is dedicatedly training and building up the capacity of a new generation of engineers and water professionals in order to solve the water security challenges of the twenty-first century.

UNIVERSITY OF UTAH

The University of Utah, USA is providing technical assistance to MUET for advancing the development and growth of USPCAS-W and also in strengthening the Center's professional and institutional capacities. The tangible deliverables of the Center include postgraduate degree programs, applied policy research, facilitation of public-private partnerships, and provision of policy advice in a range of water-related disciplines. The main purpose of the applied research component is to deliver relevant and innovative research to meet the needs of industry, civil society and government.

Vision

To establish a world class education and research center dedicated to solving water related problems of Pakistan and to develop strong and productive liaison with local and international organizations aiming to support Pakistan's economic development.

Mission

To train present and future faculty, young scientists, engineers, managers and other stakeholders with state of the art techniques and cutting edge knowledge in the water sector. Through collaboration with academia, government and industry we will pursue applied research solutions to water sector problems and bring about policy reforms aiming to strengthen economy of Pakistan.

Thematic Focus

- Sustainable water management
- Climate change, water and food security
- Environmental sustainability
- Water. Sanitation and health (WaSH)
- Irrigation and drainage
- Groundwater modeling
- Soil and water salinity
- Scio-economic impact
- Capacity building
- Data and info platform

- USPCAS-W in Collaboration with WaterAid Pakistan Hosts Two-Day Training on WASH Asset Mapping and Improving the Water Supply Schemes
- Successful Conclusion to CoE-37 Project: Stakeholders Unite to Safeguard the Indus River's Future, under the CoE-37 project.
- USPCAS-W Hosts Stakeholder Workshop on Community-Led Climate Adaptation, under the CoSEAL Project, funded by the Australian Centre for International Agricultural Research (ACIAR).


WASH Asset Mapping and Improving
For the Staff of Public Health Engineering & Rural Development
Department, Government of Sindh
September 24-25, 2025
Organized By: USPCAS-W, MUET, Jamshoro
In collaboration with: WaterAid Pakistan


Project Completion
Stakeholders Engagement Workshop
Conserving Indus River Water Quality Through Pollution Source Tracking,
Economical Treatment Systems, and Water Circular Economy"
Friday: October 10, 2025

Our Partners

12. Presentation of University of Southern Punjab, Multan

Vision

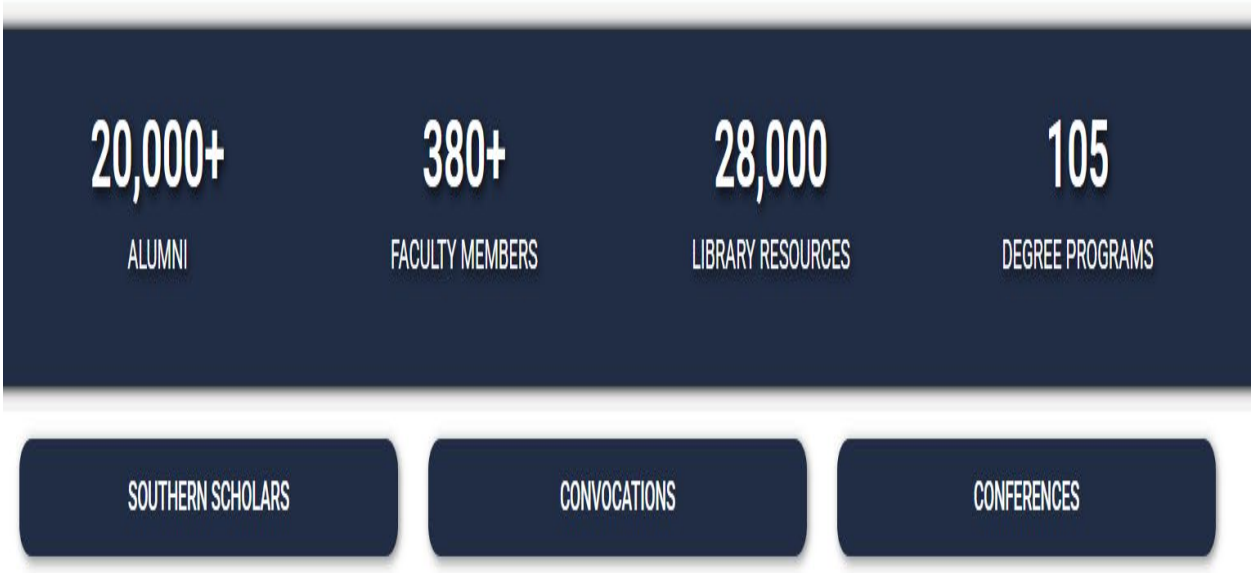
"To become a leading University of learning by creation and dissemination of knowledge for sustainable socio-economic development and technological advancement of the country and the world, at large."

Mission

"The University will produce highly qualified committed individuals who will play a leading role in the sustainable development of the region and the country. The human resource, thus produced will be equipped with the necessary knowledge and skill to act as solution provider for many issues of the region and the country while respecting the ethical values."

Philosophy

We at the Best University in Multan believe that through concerted and strenuous strives, our students shall be able to step forth into the real and highly competitive world with the ability to make a mature judgment based on a clear understanding of concepts and moral values. The ultimate goal, manifesto, and strategy of the Institute of Southern Punjab are to enhance Institutional performance through continuous improvement in teaching, learning, and research.





Cafe Terrace

Our cafe boasts an inviting atmosphere that combines the allure of outdoor dining with the comfort of indoor facilities. Step into our air-conditioned halls, where the pleasant hum of conversations mingles with the aroma of freshly brewed coffee and delectable cuisine. The cafe terrace serve 1000's of students. A canteen committee is responsible to ensure quality, hygiene, and menu selection. Taste buds come alive with vast dining selections. Fast food, lunch, snack bars, baked goods, tea, and coffee can be found at our campus.


Cafe Garden

Welcome to our Cafe Garden, where nature and gastronomy converge to create a delightful dining experience. Nestled amidst lush greenery, our outdoor eating facility offers the best garden atmosphere, Immerse yourself in the tranquility of our garden oasis, where every table is nestled under the shade of ancient trees or surrounded by blooming flora. Whether you're enjoying a leisurely brunch, or a lively gathering with friends, our Cafe Garden provides an idyllic setting for every occasion.

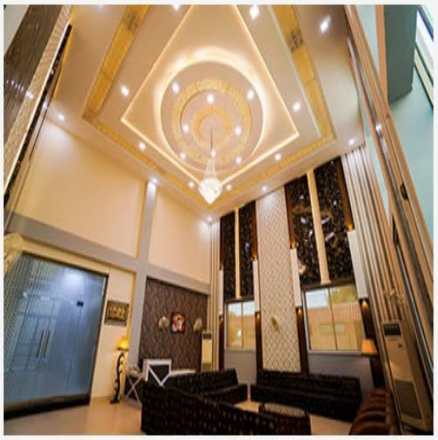


Cafe Lake

Our infrastructure is unparalleled, providing a sophisticated and comfortable setting for students to engage in their studies while enjoying the calming vistas of the lake. The sitting area floats seamlessly on the water, creating an ambiance that is both refreshing and inspiring. Its offers a serene retreat that fosters both focus and relaxation.

USP Women Campus

If you educate a boy, you educate a person, but if you educate a girl, you educate a family (nation) and benefit an entire Community. USP built a state of the art campus for women; Purpose-built classes, an Indoor sports hall, fully equipped computer labs, an auditorium for events or conferences, specialized faculty and staff for students. Providing a safe and secure environment and designated transportation facility.



Day Care

The USP Child Care Center was established in 2019 to provide quality child care to the children of USP employees as well as students. Today, it continues to fulfill its mission of providing quality care and to the children of students, as well as faculty and staff. Children of varying ages are enrolled in the daycare center. At the daycare we understand the need to provide a safe, nurturing, inclusive and stable environment that is innovative, stimulating, and challenging.

Health Care

USP owns an on-campus emergency response center and health clinic on its premises. The facility is equipped for the routine medical needs of the day scholars, faculty, and staff and has an ongoing liaison with several local hospitals for cases that require specialized attention. An on-duty doctor and nurse are always present during campus working hours. This facility is free for current students or employees, in order to use the facility, however, a valid student /staff ID card must be presented.

Masjid

is the house of Allah. It is a place of worship, a spiritual center for the Muslim Community, and a focal point for Islamic activities. For Muslim students, four stories, tremendous and centrally air-conditioned Masque (Jame-a-Masjid Rahmatul-lel-Alemeen) has been constructed with a covered area of 22,000 sq ft. where approximately 2,000 persons can offer their Prayers at a time.

Parking

The Road to Success Is Lined with Many Parking Spaces. University of Southern Punjab is providing quality education to its students as well as providing them all exuberant facilities. USP has marked the largest parking lot in South Punjab for its faculty and students, with the facility to park thousands of motorcycles and hundreds of vehicles.

Staff Lounge

One cannot think well, love well, sleep well if one has not dined well and Food is our common ground, a universal experience. The University of Southern Punjab not only takes care of its students but also believes in taking care of its staff, teachers, and trainers. University of Southern Punjab, Multan is also providing its staff with free food service along with a comfortable environment where humans of USP can enjoy a home-like meal at their workplace.

Security

Safety isn't expensive, it's priceless. University of Southern Punjab Multan is providing excellent security to its students and its campus. Our trained guards are performing their duties round the clock. University of Southern Punjab is keeping a close eye on its students not only with trained guards but also with security cameras and is ready to deal with any difficult situation. Because we have a responsibility to protect you and your children.

USP Girl's Hostel

At USP Hostels we provide safe and secure housing for almost 150+ residents from outside Multan. We try to inculcate a sense of ownership and responsibility through our different activity programs and focus on teaching them how to live with each other irrespective of their race, class, and creed, cultural and ethnic background. Our Hostels are located at the prime location near Chungi no6, with 12 modern villas covering almost 20 kanals, are spacious, and provide the comfort of home. All the meals are served in the dining halls, under the supervision of expert chefs and very active staff. Lush green lawns and walking tracks are maintained where residents can relax during their free time. Currently, USP is offering housing facilities to its female students only. However, we do intend to change that in the future by adding accommodation for our boys.

13. Presentation of Quaid I Azam University, Islamabad

Faculty Members
Department of Environmental Sciences

Prof. Dr. Abida Farooqi
Professor and Chairperson

PhD from Osaka City University, Japan

Research Focus
Leading Hydrogeochemistry Group

twas

Hydro-geochemical studies to understand the mechanism of arsenic and fluoride release, in Punjab Pakistan

Targeting low arsenic and low fluoride aquifers in Punjab

- Blanket testing method was used and A total of 21,397 wells distributed across 372 villages were tested for Arsenic, F, pH, EC, Fe, SO4, Mn, ORP and NO3 at the filed with field kits. The wells were tested in the field from March to November 2016 and from February to October 2017.

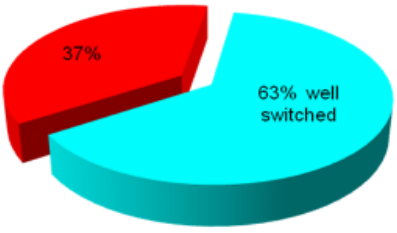
- Overall, 23% of the wells did not meet the WHO guideline of 10 µg/L for As in drinking water. Overall, 7 % of the samples exceeded the Fluoride level of 1.5 mg/L. As pollution was more alarming than F.

Training of local college students for field testing

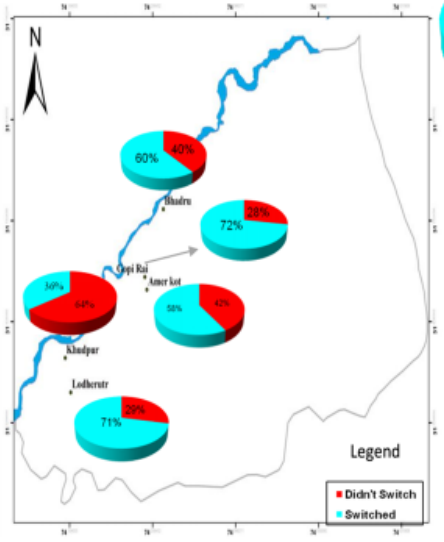
Blanket testing: 21,648 wells tested across the Punjab plains of Pakistan and India

Blanket Sampling Response survey

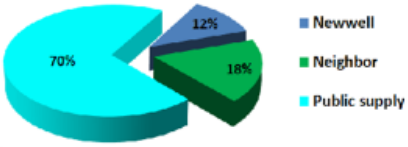
If unsafe!! Have you Switched Well?



Overall switching proportion



Response survey in 5 Villages

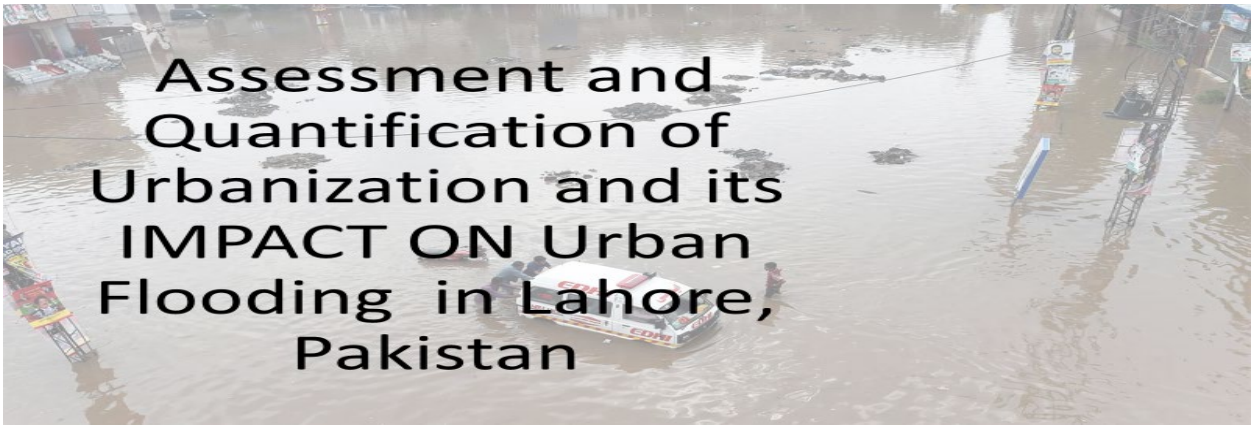


Safe wells are available even in the most affected village

Water Conservation and Mitigation of Arsenic in Rice through Sprinkler Irrigation System

U.S.-Pakistan Centre for Advanced Studies in Water (USPCASW), Mehran University of Engineering Sciences and Technology (MUET), Jamshoro, Sindh, Pakistan

Installation of Hybrid water treatment system in affected areas
This project was granted under social outreach program by HEC



Pakistan's Water Woes: Mitigation Through Environmental And Economic Accounting And Policy Recommendations

Analysis and Prediction of the complex interplay between Land Use Modification and Temperature in Pakistan's Diverse Climatic Zones

Efficacy of mitigation strategies for flood and drought control under climate change scenarios in Punjab, Pakistan using AI/ML models"

Enhancing Water Security through Sustainable Urban Wastewater Reuse for Agriculture in the Semi-Arid Region of Okara Punjab

Monitoring and awareness campaigns in elementary schools located in arsenic- and fluoride-affected areas on the outskirts of Lahore, Pakistan.

MERA PANI": an app to identify safe wells in Pakistan

14. Presentation of University of Karachi

Agricultural Experimental Station Activities

The Department of Agriculture and Agribusiness Management operates an 18-acre Agricultural Experimental Station dedicated to research and demonstration of improved agricultural practices. A key focus area is efficient water utilization, given the ongoing challenge of severe water shortage. Currently, only 4 acres of land are under cultivation, supported by a 2-inch supply line, two reservoirs, two bore wells, and a drip irrigation system.

The drip irrigation system is integrated with a weather station and an AI-trained model optimized for maize and sunflower. The system functions in manual, semi-automated, and fully automated modes, incorporating IoT-based sensors and powered by solar panels. The weather station monitors air quality, particulate matter, and meteorological parameters such as wind speed, temperature, and humidity, facilitating accurate evapotranspiration estimation. This integrated system achieves over 70% water savings, automatically adjusting irrigation based on crop requirements.

The department is also promoting regenerative farming and zero tillage practices. A fruit orchard (urban forest) of 200–300 trees has been established using sub-soil irrigation through deep pipes, with twice-weekly watering. Strip and multiple cropping systems are being practiced alongside precision agriculture techniques.

A Biofloc system has recently been installed, to be incorporated into Integrated Nutrient Management (INM) and integrated farming frameworks. Additional initiatives include kitchen gardening, food scraping, and agri-tourism development.

Furthermore, a Memorandum of Understanding (MoU) has been signed with WaterAid to support Pakistan's progress toward water and sanitation-related Sustainable Development Goals (SDGs). Collaborative efforts focus on research, advocacy, and demonstration of sustainable technologies, including Ecosystem-based Adaptation (EbA), Nature-based Solutions (NBS), Rainwater Harvesting (RWH), Groundwater Recharge (GWR), and Zero Liquid Discharge (ZLD) systems. The department is equipped with specialized research laboratories that strengthen its teaching and research capabilities:

- Post-Harvest Management Lab
- Pesticide Toxicology Lab
- Mushroom Cultivation Lab
- Plant Tissue Culture Lab
- Plant Disease Research Lab
- Insect Rearing Lab
- Molecular Diagnostic Lab