

# Muhammad Tousif Bhatti

Water Resources Management Expert

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## SUMMARY

Dr. Muhammad Tousif Bhatti is a senior water resources management planner and distinguished researcher with over 23 years of professional experience, including 16 years of post-doctoral work in Asia, Australia, the United Kingdom, and the MENA region. A Ph.D. in Water Resources Engineering, Dr. Bhatti has secured over USD 10 million in competitive international research funding as Principal Investigator and contributed to programs exceeding USD 100 million in total. He has held senior roles in major donor-funded programs, including GCF, USAID, World Bank, FCDO, and CGIAR, with thematic expertise spanning regional water resources planning, integrated water resources management (IWRM) plan preparation, hydrological and agriculture system modeling, hydro-informatics, water management and conservation, and climate-resilient tools and technology. His work is grounded in a thorough understanding of water law, inter-provincial water governance frameworks, and the institutional and regulatory environment governing water allocation across shared river basins in Pakistan and beyond.

Dr. Bhatti is currently work for Food and Agriculture Organization of United Nations as Senior Groundwater Management Specialist and contributes to GCF funded project implemented in Pakistan. He has experience of 12 years managing and implementing research-for-development projects in the water sector at the International Water Management Institute (IWMI), a globally recognized international organization. Throughout this career, he has contributed directly to regional IWRM planning processes, facilitated dialogue among water institutions at provincial and national scales, undertaken assignments influencing national policy, and built institutional capacity for transparent and equitable water governance. He has analyzed water law instruments, including the Water Apportionment Accord 1991, as a foundational framework for inter-provincial water-sharing arrangements. His work contributes to addressing climate-resilient water management and governance challenges in the regions of project implementation. He has also delivered impactful expert consultancies in hydro-informatics, hydrological modeling, flood resilience and economic valuation of damages, and nature-based solutions focused on Sindh province.

Water resources development and management involve decisions with significant cost implications. Informed decisions grounded in research, regional planning, and modeling can prevent costly misallocations. Dr. Bhatti advocates the use of technology in making transparent, evidence-based, and institutionally sound water management decisions. Most recently, he served as Deputy Chief of Party for the USAID-supported Water Management for Enhanced Productivity (WMfEP) activity, a seven-year (2018-25) program with a budget of USD 7.4M. This program delivered a suite of regional water management interventions, including IoT-based water accounting, decision support tools for canal operations and water ordering, sediment and hydrological modeling, automated hydrometeorological monitoring (Indus Telemetry), and farmer advisory services. Collectively these outputs constitute a practical regional water resources planning and management system for KP and FATA regions of Pakistan.

Dr. Bhatti has authored 23 journal articles in leading peer-reviewed journals, including over a dozen in Q1-ranked journals, along with 9 books, reports, and approximately 37 contributions to conferences, seminars, and stakeholder dialogues worldwide. He has presented scientific work across five continents and is recognized for his research leadership, policy engagement, and the promotion of technological solutions and digital innovation in water resources planning and management.

Dr. Bhatti's academic career spans over four years as Assistant Professor at the Centre of Excellence in Water Resources Engineering, University of Engineering and Technology, Lahore, where he taught postgraduate courses and led research as Principal Investigator. He also

completed a post-doctoral fellowship at the International Centre of Water for Food Security, Charles Sturt University, Australia, under the Australian Government's prestigious Endeavour Award.

## **OBJECTIVE**

To lead and contribute to strategic water resources planning and integrated water resources management (IWRM) at regional and provincial scales, with a focus on the preparation of regional water resources plans, institutional development of water resource agencies, and application of water law and governance frameworks. Dr. Bhatti aims to foster collaborative, multi-stakeholder planning processes that generate evidence-based water strategies, inform policy and regulatory reform, mentor emerging water professionals, and develop data-driven decision support systems that address complex water challenges across diverse socio-ecological and institutional contexts.

## **SKILLS & ABILITIES**

- **Regional Water Resources Planning and IWRM Framework Development:** Expertise in preparing regional Integrated Water Resources Management (IWRM) plans and strategic water resources plans aligned with provincial and national water policies. Demonstrated ability to structure multi-thematic planning exercises covering water allocation, groundwater management, drought and flood risk, institutional reform, and water pricing across complex river basin systems.
- **Water Law, Governance Institutions, and Institutional Development:** In-depth working knowledge of water law and governance frameworks, including the Water Apportionment Accord 1991, national and provincial water policies, and international frameworks governing transboundary river basins. Proven experience in institutional development of water resource agencies through applied research, stakeholder dialogues, capacity building, and governance reform recommendations. Authored the seminal World Bank report on Pakistan's water security that directly informed national water governance and infrastructure investment priorities.
- **Competitive Research Funding and Project Leadership:** Proven expertise in securing funding, designing, managing, and implementing research-for-development projects in integrated water resources management, climate-resilient agriculture systems, and natural resources management for sustainability.
- **IoT-Based Hydrometeorological Monitoring:** Expertise in setting up and developing hydrometeorological monitoring systems based on the Internet of Things (IoT), including telemetry systems for automated water accounting, canal flow monitoring, and groundwater surveillance.
- **Teaching and Capacity Building:** Demonstrated ability to teach postgraduate courses, design and conduct capacity building and training programs for individuals, including farmers, and institutions, and supervise student research at MSc, MPhil, and PhD levels.
- **Numerical and Hydrological Modelling:** Skills to apply various numerical models to simulate watershed, channel, and water-control structure behaviour, predicting flow, climate, and water quality, soil-plant-water relationships, erosion, and crop water requirements.
- **Optimization Tools for Water and Irrigation Systems:** Skills to use operations research optimization tools for real-world problems in water allocation, canal operations, and irrigation equity.
- **Remote Sensing and Decision Support:** Expertise in processing and statistical validation of remotely sensed data using ground-based and space-borne sensors and applying outputs to develop decision support systems and advisory services.
- **Stakeholder Engagement and Policy Communication:** Ability to translate research findings into policy briefs, stakeholder dialogues, seminars, workshops, and awareness campaigns. Demonstrated record of facilitating inter-provincial and basin-wide dialogues among technically diverse and politically sensitive institutions.

- **Multidisciplinary Team Leadership:** Ability to lead and work in teams diverse in culture, language, technical expertise, and educational backgrounds, across Asia, Australia, and the MENA region.

## **PROFESSIONAL EXPERIENCE (POST DOCTORAL)**

**2026 – Present** Senior Groundwater Management Specialist

### **Food and Agriculture Organization of the United Nations**

Designed, managed, and implemented research-for-development projects contributing to regional water resources planning and IWRM frameworks across Pakistan, Nepal, and the MENA region. Secured funding from USAID, CGIAR, FCDO, and the World Bank. Developed tools, practices, and institutional frameworks to support efficient water management and enhanced productivity in project areas. Led the institutional development and capacity building of water resource agencies in KP, Punjab, and Sindh provinces. Authored technical reports, peer-reviewed papers, and book chapters disseminating findings to policy and practitioner audiences

**2023 – 2026** Regional Researcher (Water Management)

### **International Water Management Institute**

Designed, managed, and implemented research-for-development projects contributing to regional water resources planning and IWRM frameworks across Pakistan, Nepal, and the MENA region. Secured funding from USAID, CGIAR, FCDO, and the World Bank. Developed tools, practices, and institutional frameworks to support efficient water management and enhanced productivity in project areas. Led the institutional development and capacity building of water resource agencies in KP, Punjab, and Sindh provinces. Authored technical reports, peer-reviewed papers, and book chapters disseminating findings to policy and practitioner audiences

**2018 – 2023** Researcher (Water Management)

### **International Water Management Institute**

Secured funding and spearheaded multi-disciplinary project teams as Deputy Chief of Party for the USAID WMfEP activity, contributing to regional water resources planning in KP and FATA regions. Designed and implemented water allocation and governance tools, including digital water rotation and indenting tools for canal operation management. Provided technical inputs to water governance reform processes and authored research papers in reputable peer-reviewed journals. Contributed to institutional development of public-sector water agencies through training programs and technology transfer.

**2017 – 2018** International Consultant

### **International Water Management Institute**

Contributed to a World Bank assignment implementing the Water Security Diagnostics Framework for Pakistan, a comprehensive regional water resources planning and institutional analysis exercise. The outcome was the policy-oriented technical report 'Pakistan: Getting More from Water', published by the World Bank, of which Dr. Bhatti is among the lead authors. This report assessed sector performance, examined water governance institutions and legal frameworks, and provided investment and regulatory reform recommendations covering water allocation, pricing, and infrastructure.

**2014 – 2017** Researcher (Hydrology/Water Management)

### **International Water Management Institute**

Provided technical inputs to multiple research-for-development projects at basin and regional scales, including the DFID-funded Informing Change in the Indus Basin (ICIB) program. Analyzed the Water Apportionment Accord 1991 as a water law instrument and facilitated inter-provincial water-sharing dialogues across all four provinces of Pakistan. Contributed to the development of the Indus Basin Knowledge Platform and to the inception of the Indus Telemetry governance model. Designed and delivered training and capacity-building programs for water professionals and farmers. Published research articles in reputable peer-reviewed international journals.

**2010 – 2014** Assistant Professor

**Centre of Excellence in Water Resources Engineering, University of Engineering and Technology, Lahore**

Taught six postgraduate courses as part of three programs leading to MSc, MPhil, and PhD degrees: Environmental Impact Assessment; Flood Estimation and Control; Irrigation Engineering and Management; Applied Hydrology; Catchment Modeling; and Computer Applications in Water Resources. Supervised 8 MSc/MPhil and 1 PhD student. Led research projects as Principal Investigator in addition to full teaching assignments.

**2010 – 2010** Post-Doctorate Fellow

**Charles Sturt University, Wagga Wagga, NSW, Australia**

Earned the Australian Government's prestigious Endeavour Award for post-doctoral research fellowship. Contributed to scientific studies, developed technical proposals for funding, and strengthened research skills in hydrology and water resources management. The fellowship built collaborative networks across Australia and the Asia-Pacific region.

**2009 – 2010** Hydrologist

**National Development Consultants, Lahore**

Contributed to design studies of multipurpose dam projects of national importance. Applied numerical models for hydrological investigations, including peak flood estimation and reservoir operation. Authored technical reports supporting investment planning decisions in the water infrastructure sector.

**EDUCATION**

**May 2009** Doctor of Philosophy in Water Resources Engineering

**University of Engineering and Technology, Lahore**

Secured PhD fellowship from the Higher Education Commission of Pakistan. Completed a rigorous curriculum in water resources engineering and environmental engineering. The thesis topic was 'Strategic Analysis of Spatial and Temporal Water Quality of River Chenab and its Management'. The research involved substantial fieldwork and application of numerical modeling for hydrodynamics and water quality using the MIKE 11 model. Contributed to addressing water quality deterioration in an urban river context, developed a water quality index for multiple water uses, and proposed treatment requirements across river segments. The thesis and associated journal papers have collectively been cited more than 91 times in scientific literature. Research Supervisor: Prof. Dr. Muhammad Latif.

**Jul 2005** Master of Science in Water Resources Management

**University of Engineering and Technology, Lahore**

Completed a rigorous curriculum in water resources management. The thesis topic was 'Canal Water Distribution and its Impact on Farmer's Income', addressing equitable water allocation across irrigation canal systems, a central challenge in water law and governance in South Asia. Applied the Gini Index to quantify inequity of water distribution and assessed its impact on farmer income. This methodology has since been widely adopted by irrigation researchers. Built on this research in subsequent career by applying optimization tools to minimize water distribution inequity. Research Supervisor: Prof. Dr. Muhammad Latif.

**Mar 2005** Master of Business Administration-IT

**COMSATS Institute of Information Technology, Lahore**

Completed a rigorous curriculum in business management with major in information technology. Learning an MBA benefited me when I started managing large projects. I strongly believe that MBA helped me in developing the competencies needed to manage operations, people, and outcomes. Particularly my interest in IT applications was largely developed during my MBA. I continued to learn contemporary programming languages like Python and used these skills in numerous assignments and research work.

**Dec 2002** Bachelor of Science in Agricultural Engineering

**University of Agriculture Faisalabad**

Completed a rigorous curriculum in agricultural engineering. The graduate courses and laboratories set the technical foundation for a career in water resources engineering and management, with a focus on sustainable water use for food security and agricultural productivity.

### **PROFESSIONAL AFFILIATIONS**

**May 2003** Pakistan Engineering Council

**Professional Engineer and Life Member**

The Pakistan Engineering Council is a statutory body, constituted under the Act of Parliament in 1976, to regulate the engineering profession in Pakistan. Professional Engineer means '*a person who holds an accredited engineering qualification and after obtaining professional experience of five years, whether working privately or in the employment of an engineering public organization, has passed the prescribed engineering practice examination and is registered as such by the Council*'.

**July 2009** Pakistan Engineering Congress

**Member**

The Pakistan Engineering Congress is the oldest professional institution in Pakistan established in 1912 by the British Irrigation, Roads, and Railways Engineers. The core objective of the Congress is to promote the science, profession, and practice of engineering.

**February 2021** Frontiers in Water Resources Management (Journal)

**Review Editor**

Frontiers is a leading research publisher. With 113 journals having an impact factor, Frontier publishers have leading researchers serving as independent editors and reviewers on their editorial boards. I have joined the editorial board of Frontier in Water Resources Management. My inspiration to join the editorial team was Frontier's unique online forum with real-time interactions to ensure rigorous, constructive, and transparent peer review. I actively review manuscripts based on my interest and time availability.

### **LEADERSHIP**

Dr. Bhatti has been entrusted with leading technical teams from early in his career, progressing from managing academic research projects and training programs to directing large, multi-year, donor-funded programs. He has demonstrated the ability to manage multiple projects simultaneously, meet tight deadlines, and maintain the highest standards of quality. He served as Deputy Chief of Party (DCoP) and Component Lead in the USAID-funded Water Management for Enhanced Productivity activity (USD 7.5M, seven years), an assignment that required coordinating a diverse team of specialists, managing donor relations, steering stakeholder consultations across government institutions, and maintaining technical and fiduciary accountability. In recent years he has also led the FCDO-funded project 'Fostering Trust among Pakistan's Water Institutions', a governance-focused assignment that required bold leadership during the COVID-19 pandemic to redesign delivery formats and achieve all committed targets. His leadership approach combines technical depth, institutional awareness, and a strong capacity for collaborative decision-making in politically sensitive environments.

### **CONSULTENCY CONTRIBUTIONS**

**1. Flood Risk Assessment and Proposal of Mitigation Measures for the Right Bank of the Indus River**

- **Key Contributions:** Damage and Risk Assessment with Flood Modeling, Mapping and Risk Modelling, Risk Reduction and Mitigation Assessment, Hazard Mitigation Modelling, Risk



Mapping, Stakeholder Engagement and Collaboration. Contributed to the institutional and technical frameworks required for regional IWRM planning on the Right Bank of the Indus, consistent with SFERP project objectives.

- **Geographic Coverage:** Sindh Province, Pakistan
- **Funded By:** The World Bank, Consultant: Asian Institute of Technology

## **2. Hydrology and Flood Modelling for Recharge Pakistan**

- **Key Contributions:** Conducted hydrologic and hydraulic analysis of proposed project interventions and documented the methodology for use as an evaluative tool through 2031. Simulated flood events of varying magnitudes across focal catchments in Sindh, Balochistan, and Khyber Pakhtunkhwa. Derived quantitative benchmarks for the performance of selected ecosystem-based adaptation (EbA) and green infrastructure interventions, contributing to nature-based water resources planning.
- **Geographic Coverage:** Sindh, Balochistan, and Khyber Pakhtunkhwa, Pakistan
- **Funded By:** Global Climate Fund, Implementing Partner: WWF Pakistan

## **PROJECT CONTRIBUTIONS**

Dr. Bhatti has secured over USD 10 million in competitive international research funding as Principal Investigator or similar leadership role and contributed to programs exceeding USD 63 million in total. He has held senior roles in major donor-funded programs, including USAID, World Bank, FCDO, and CGIAR, with thematic expertise spanning regional water resources planning, IWRM plan preparation, hydrological and agriculture system modeling, automated natural resource monitoring, hydro-informatics, and climate resilience.

### **Transforming the Indus Basin with Climate Resilient Agriculture and Water Management | 2026-present**

- **Funded By:** Green Climate Fund (GCF)
- **Position Held:** Senior Groundwater Management Specialist
- **Geographical Focus:** Pakistan (Sindh and Punjab)
- **Budget:** USD 47.7 million over 9 years (2019-2028)

#### **Project Features**

Transforming agriculture in the Indus Basin by increasing resilience among the most vulnerable farmers and strengthening government capacity to support communities to adapt. Pakistan's vulnerability is linked to its arid to semi-arid climate, as well as its high dependency on a single river system along with snow and glacial meltwater to provide its agricultural water supply. This project will develop the country's capacity to use the information it needs to adapt to the impacts of climate change on agriculture and water management by putting in place state-of-the art technology. It will build farmers' climate resilience through skills, knowledge and technology enhancement activities. It will also create a wider enabling environment for continuous adaptation.

#### **Activities Performed**

Development of Aquifer Management Plans and their implementation, stakeholders' coordination, curriculum development for Farmers Field Schools, input to decision support tool development, field instrumentation for hydrometeorological monitoring

### **Water Management for Enhanced Productivity (WMfEP) | 2018-2025**

- **Funded By:** United States Agency for International Development (USAID)
- **Position Held:** Deputy Chief of Party; Component Lead; Task Lead
- **Geographical Focus:** Pakistan (Khyber Pakhtunkhwa, FATA), Afghanistan

- **Budget:** USD 7.4 million over 7 years (2018-2025)

### **Project Features**

WMfEP is a USAID-supported activity implemented by IWMI in support of USAID's strategic objective to accelerate socio-economic development and political stability in KP and the FATA regions. The project's theory of change centered on delivering improved irrigation water services and agricultural support to farmers, operating within functioning input and output markets, to enable high levels of production and profitability. The project constitutes a regional water resources planning and management program for KP, delivering institutional, technical, and capacity-building interventions across four components, with 66 tasks completed and delivered to stakeholder satisfaction.

### **Regional Water Resources Planning and Institutional Contributions**

WMfEP delivered a comprehensive suite of regional water resources planning outputs for KP. The project established an IoT-based water accounting and audit system (Indus Telemetry), a first-of-its-kind automated water monitoring infrastructure in Pakistan, which now provides real-time data to support evidence-based water allocation decisions. It developed digital decision support tools including a water rotation tool, water indenting tool, and a water information system for canal operations, directly supporting transparent and equitable water governance. The project's Farmer Advisory Service, grounded in 16-day rainfall forecast verification, introduced a practical early-warning and agricultural planning tool that strengthened climate resilience in irrigation management. Watershed management studies and sediment modeling further contributed to the evidence base for regional planning. The governance model developed for Indus Telemetry, co-designed with provincial water institutions, established a replicable institutional arrangement for water accounting that has since been adopted across other programs in Pakistan.

### **Key Outputs**

Seven journal papers and one book chapter published based on work conducted under WMfEP, covering Indus Telemetry, erosion and sediment management, climate extreme outlook, optimized channel routing, weather-based farmer advisory, and satellite-based crop monitoring. Results presented at the 2nd International Conference on Hydrology and Water Resources, Pakistan (2022), and at international forums including WHO Geneva (2024).

### **CGIAR NEXUS Gains Initiative, Work Package 2 | 2023-2024**

- **Funded By:** Consultative Group on International Agricultural Research (CGIAR)
- **Position Held:** Expert/Specialist, Regional Researcher
- **Geographical Focus:** Nepal
- **Budget:** IWMI share USD 48.83 million

### **Project Features**

This CGIAR initiative aimed to improve the integrated management of water, energy, food, land, biodiversity, and forests for sustainable development under climate crisis across Central and West Asia, North Africa, East and Southern Africa, and South Asia. Work Package 2 sought to improve water productivity in Nepal, with specific focus on irrigation management in the Mahakali, Babai, and Rani Jamara Kulariya Irrigation Projects. The initiative also aimed to identify potential locations and instrument deployments for flow monitoring and soil moisture measurement in the Babai irrigation project area, contributing to regional IWRM planning for western Nepal.

### **Activities and Outputs**

Provided agricultural water management expertise including targeted field visits to the Babai Irrigation Project for site identification and technical specification of hydrometeorological and soil monitoring instruments. The monitoring approach was modeled on the Indus Telemetry framework developed under WMfEP in Pakistan. Engaged with farming communities and public-sector stakeholders in Nepal. NEXUS Gains surveyed three irrigation systems in western Nepal and produced interdisciplinary assessments covering socioeconomic, physical, agricultural water

management, gender equality and social inclusion (GESI), and governance dimensions, emphasizing the need for holistic IWRM planning for reliable irrigation water supply.

### **Fostering Trust among Pakistan's Water Institutions | 2020-2021**

- **Funded By:** Foreign, Commonwealth and Development Office (FCDO)
- **Position Held:** Project Lead / Principal Investigator
- **Geographical Focus:** Pakistan (National)
- **Budget:** GBP 149,985 (~USD 204,000)

#### **Project Features**

This project addressed Pakistan's development agenda on inter-provincial water governance, a field directly linked to the application of water law and the institutional development of water resource agencies. The project delivered Inter-Provincial Water Dialogues designed to build the relationships and institutional trust on which any hardware or software water investment must rest. The project worked closely with the Federal Ministry of Science and Technology to foster trust among water institutions by promoting technology-enabled flow measurement and evidence-based dialogue. The project approach explored alternative institutional arrangements and procurement arrangements, including a potential role for the private sector to introduce competition, efficiency, and value for money in water services delivery.

#### **Institutional Development and Water Law Application**

This assignment constitutes a direct example of institutional development of water resource agencies through applied governance reform. The project convened all provincial water institutions and the federal government around contested technical issues that had been identified as root causes of inter-institutional mistrust under the Water Apportionment Accord 1991, Pakistan's primary water law instrument governing inter-provincial water sharing. By demonstrating technological solutions for water accounting and flow monitoring, the project created a shared, evidence-based methodology for validating interprovincial flows, co-developed with all stakeholders and subsequently adopted as a standard method by governing water institutions. Groundwater data archiving and advisory systems were also developed as part of this project. The institutional and technical outcomes influenced national-level investment decisions and demonstrated how technology can operationalize water law commitments.

### **Informing Change in the Indus Basin (ICIB) | 2015-2018**

- **Funded By:** Department for International Development (DfID), UK
- **Position Held:** Researcher / Manager
- **Geographical Focus:** Pakistan, China, Afghanistan, India, Sri Lanka
- **Budget:** GBP 1,340,000 (~USD 2.1M) with a costed extension of GBP 432,668 (~USD 0.58M)

#### **Project Features**

DFID partnered with IWMI to deliver the South Asia Water Governance Program's Indus Basin component. The project informed decision-making on Indus Basin water resources as countries faced the reality of climate change, rapid population growth, urbanization, and increased competition for scarce water. This program constituted a basin-level water resources planning exercise, collating existing knowledge on the Indus Basin and creating structured space for dialogue across international and national boundaries. It addressed the intersection of water law, transboundary governance institutions, and evidence-based planning.

#### **Contributions to Water Law, Governance, and Regional Planning**

Conducted an in-depth analysis of the Water Apportionment Accord 1991, Pakistan's foundational water law instrument, examining 25 years of implementation experience and its implications for inter-provincial water governance. Convened and facilitated inter-provincial water-sharing dialogues



across all four provinces of Pakistan. Collected and analyzed perceptions and opinions of water professionals regarding water law gaps and institutional constraints, leading to research articles and policy-relevant reports. Contributed to the Indus Basin Knowledge Platform, a regional water information system. Initiated the Indus Telemetry governance model in partnership with provincial water institutions, establishing an institutional arrangement for water accounting that has since been scaled across Pakistan. The analysis of 25 years of WAA implementation, published in 2017, contributed to the formulation of Pakistan's National Water Policy in 2018.

#### **Pakistan Water Security Diagnostic | 2017-2018**

- **Funded By:** The World Bank
- **Position Held:** Researcher / Author
- **Geographical Focus:** Pakistan (National)

#### **Project Features and Contributions**

The World Bank contracted IWMI to conduct a national-scale study implementing the World Bank's Water Security Diagnostics Framework for Pakistan. This constitutes one of the most comprehensive regional water resources planning and institutional assessment exercises in Pakistan's recent history. The study examined the balance of economic, social, and environmental outcomes from water management and assessed sector performance across water resource management, water services delivery, and risk mitigation. It analysed governance institutions, legal frameworks, infrastructure, and financing arrangements, and provided detailed policy and regulatory reform recommendations covering water allocation, pricing, groundwater management, and institutional reform of water agencies.

#### **Outputs and Policy Impact**

Led authorship of the seminal World Bank report 'Pakistan: Getting More from Water', which has been downloaded 30,185 times from the World Bank website and cited more than 150 times in scientific literature. The report has directly influenced national-level water policy discourse and investment programming in Pakistan.

#### **Enhanced Engagement in Research on Kabul River Basin | 2016-2018**

- **Funded By:** USGS, Partnership for Enhanced Engagement in Research (PEER)
- **Position Held:** Researcher
- **Geographical Focus:** Pakistan, Afghanistan
- **Budget:** USD 250,000

Contributed climate change projection modeling and hydrological modeling for the transboundary Kabul River basin, informing transboundary water resources planning. The project aimed to establish a model for transboundary cooperation rather than conflict by pairing historical climate and flow data with statistical rainfall-runoff modeling to assess current and future water availability and demand. Learning from this modeling exercise informed subsequent development of a WEAP model for the Kabul River basin using satellite data.

#### **Enhancing Provisioning Ecosystems Services through Farmer Institutions | 2014-2015**

- **Funded By:** CGIAR Water Land and Ecosystems
- **Position Held:** Researcher, Task Lead
- **Geographical Focus:** Pakistan
- **Budget:** USD 250,000

Contributed to the transformation of surface and groundwater management in the Indus Basin Irrigation System to enhance food security, reduce poverty, and adapt to climate change. Developed an evidence-based mechanism for groundwater monitoring and management, addressing the

absence of formal quantification and monitoring systems for groundwater abstraction. Introduced land grading techniques in the Indus Basin Irrigation System for the first time, demonstrating through field experimentation and modeling that precision surface irrigation can achieve high efficiency through improved land preparation, directly informing regional irrigation management planning.

#### **Revitalizing Irrigation in Pakistan | 2014-2015**

- **Funded By:** Embassy of the Kingdom of the Netherlands in Pakistan
- **Position Held:** Researcher, Task Lead
- **Geographical Focus:** Pakistan
- **Budget:** USD 3.75 million to IWMI

Contributed to transformation of surface and groundwater management in the Indus Basin Irrigation System. Applied optimization techniques for canal operations planning to minimize inequity in water distribution, directly contributing to water allocation reform in an operationally challenging irrigation system. Supported farmer organizations by providing digital water distribution monitoring tools to enhance transparency and equity, demonstrating how institutional development of water service entities can be supported through technology. The Canal Operations Planner series (I, II, III) published as peer-reviewed papers presents the optimization methodology and its application to water allocation problems.

#### **Low-Carbon Development in South Asia | 2014**

- **Funded By:** Christian Aid, UK
- **Position Held:** Expert Consultant
- **Geographical Focus:** Pakistan, Bangladesh, Nepal, India

Contributed a Pakistan country case study on renewable energy potential, energy efficiency, and barriers to low-carbon transition, as part of a regional study covering four South Asian countries. Presented results at a regional workshop in Nepal attended by participants from Afghanistan, Bangladesh, India, Nepal, Maldives, Pakistan, Sri Lanka, and Vietnam.

#### **Impact of Climate Change on Water Availability for Community-Managed Irrigation Systems | 2012-2013**

- **Funded By:** South Asian Water Initiative (SAWI) - Abu Dhabi Dialogue Fund / ICIMOD
- **Position Held:** Team Leader
- **Geographical Focus:** Pakistan, Nepal
- **Budget:** USD 101,000

As Team Leader, managed project activities, consultants, and the project team in Pakistan and Nepal. Developed climate and hydrological models for selected areas, generated evidence on climate change patterns, and outlined adaptation strategies for irrigated agricultural systems. Presented results at the 2nd Asia Pacific Water Summit in Chiang Mai, Thailand (May 2013). Published two peer-reviewed journal papers: the first detecting seasonal shifts in rainfall and increasing temperature trends affecting crop water requirements for wheat and cotton; the second presenting evidence of climate change patterns and suitable adaptation strategies for irrigated agriculture in Pakistan.

#### **Developing Institutional Strategy on Knowledge Exchange (DISKE) | 2011-2012**

- **Funded By:** British Council, Pakistan
- **Position Held:** Principal Investigator
- **Geographical Focus:** Pakistan, UK

Secured a British Council grant to develop an Institutional Strategy for Knowledge Exchange between the Centre of Excellence in Water Resources Engineering, UET Lahore, and Newcastle University, UK. Visited the School of Engineering at Newcastle University, collaborating with Professor Chris Kilsby (Professor of Hydrology and Climate Change) and faculty members to develop a knowledge exchange outline across common areas of research interest. Output included a comparative analysis of institutional capabilities and identification of collaboration opportunities and gaps.

### **CERTIFICATIONS, TRAININGS AND SHORTCOURSE**

#### **Endeavour Research Fellowship (Post-Doctorate) | February 2011**

*Australian Government - Completed at Charles Sturt University, Australia*

Internationally competitive, merit-based fellowship providing an opportunity to undertake post-doctoral research at an Australian university. Developed research proposal writing skills, scientific communication abilities, and collaborative networks with researchers across multiple regions and cultures.

#### **Campbell Scientific Inc. CRBasic Datalogger / LoggerNet Training Course | August 2018**

*Campbell Scientific Inc., Logan, Utah, USA*

Completed rigorous in-person training on programming data loggers using LoggerNet programming language. This training was foundational to setting up Pakistan's Indus Telemetry system. Applied these skills extensively in programming data loggers to control sensors, peripherals, and automated data communication.

#### **StreamPro ADCP Training Course | August 2018**

*Teledyne RD Instruments, Poway, California, USA*

Completed in-person training on using StreamPro Acoustic Doppler Current Profiler (ADCP) for flow measurement in open channels. Used this equipment extensively in the field and delivered training to numerous water professionals across Pakistan.

#### **Google Earth Engine for Remote Sensing and GIS | September 2021**

*Udemy (online)*

Completed a structured short course on Google Earth Engine (GEE) applications for remote sensing and GIS. Applied GEE in flood inundation mapping and satellite-based NDVI crop monitoring, with results published in high-impact international journals.

#### **Watershed Planning and Management | December 2019**

*Training Workshop jointly organized by USAID, ICARDA, USDA, and Ministry of Water Resources, GoP, Islamabad*

Covered pond design and watershed management techniques with field demonstrations and expert instruction from USDA specialists.

#### **Stream Flow Measurement using Fluorescent Tracer | September 2010**

*International Centre for Integrated Mountain Development, Islamabad*

Three-day hands-on field training in measuring stream flow using fluorescent tracer methods at a flashy stream near Islamabad.

#### **Design and Evaluation of Pressurized Irrigation Systems | March 2009**

*Centre of Excellence in Water Resources Engineering, UET Lahore (International Training Workshop, 5 days)*

Covered design and evaluation of drip and sprinkler irrigation systems, including evaluation methods and models for pressurized systems.

#### **59th IEC Meeting and 20th Congress of ICID | October 2008**

*International Committee on Irrigation and Drainage, Lahore*

Participated as a young professional and member of the organizing team. Delivered a talk during a working group session and engaged with eminent researchers and professionals from across the globe.

#### **Improved Project Design of Low Head Hydropower Projects | September 2007**

### **TRAINING PROVIDED AS TRAINER**

Dr. Bhatti has been extensively involved in designing and implementing training and capacity-building programs for water professionals and farming communities across Pakistan, Nepal, Jordan, and Uzbekistan. The following table provides a non-exhaustive list of training and capacity-building workshops organized and delivered in the role of Trainer/Instructor.

| <b>Title</b>                                                                                                                 | <b>Date and Venue</b>                        | <b>Participants</b>                                                           | <b>Role</b>           |
|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------------------------------------------------------------|-----------------------|
| Water Indenting Tool for Gomal Zam Irrigation System: Training Workshop and Technology Transfer                              | 26 June 2024, Dera Ismail Khan               | Water professionals from the public sector                                    | Trainer, Organizer    |
| Farmer Field School: Climate Change Awareness and Adaptation Techniques                                                      | 18 Apr 2024 Kot Dolat; 26 Jun 2024 Issa Khan | Farming community                                                             | Trainer               |
| Groundwater Monitoring Training – Data Acquisition and Instrumentation                                                       | 22-23 May 2023, Islamabad                    | Water professionals from the public sector and academia                       | Trainer and Organizer |
| Application of Google Earth Engine in Agriculture and Water Resources Management                                             | 6-8 Feb 2023, Peshawar                       | Water professionals from the public sector and academia                       | Trainer               |
| Using ICT Tools for Digital Chakbandi and Warabandi                                                                          | 01 Aug 2022, Swat                            | Water professionals from the public sector                                    | Trainer and Organizer |
| Capacity Development on River Profiling and Discharge Measurement with ADCP                                                  | 1-3 Mar 2021                                 | Automated Instruments and ADCP applications                                   | Trainer               |
| Gomal Zam Command Area Development Project: Management Database Training                                                     | 22-23 Oct 2021, Islamabad                    | Water professionals from the public sector                                    | Trainer               |
| Capacity Development Workshop – Groundwater Monitoring Network for Khyber Pakhtunkhwa                                        | 5-8 Jul 2021, Islamabad                      | Water professionals from the public sector                                    | Trainer and Organizer |
| Water Innovation Technologies, Mercy Corps                                                                                   | 1-6 Feb 2020, Amman, Jordan                  | Training on Pressure Transducers and application in Queen Rania Pond          | Trainer               |
| Flow Measurement Using ADCP: Hands-on Training                                                                               | 16-19 Sep 2019, Lahore                       | Water professionals from the public and private sector                        | Trainer               |
| National Training Workshop for Mid-Level Water Professionals: Technological Innovations for Water Management in 21st Century | 18-21 Nov 2019, Lahore                       | Particle Image Velocimetry (PIV) and Acoustic Doppler Current Profiler (ADCP) | Trainer               |
| Data Acquisition using Modern Instruments and Flow Measurement Techniques                                                    | 25-26 Oct 2018, Lahore                       | Water professionals from the public sector                                    | Trainer               |
| Data Acquisition using Modern Instruments and Flow Measurement Techniques                                                    | 10-11 Oct 2018, Sukkur                       | Water professionals from the public sector                                    | Trainer               |

|                                                                               |                            |                                            |         |
|-------------------------------------------------------------------------------|----------------------------|--------------------------------------------|---------|
| Training and Field Deployment – Automatic Groundwater Monitoring Instruments  | 11 Apr 2017, Karak         | Water professionals from the public sector | Trainer |
| Capacity Building on Survey of Irrigation Outlets and Laser Grading Equipment | 05-06 Apr 2016, Haroonabad | Technicians in Farmer's Institutions       | Trainer |
| Capacity Building on Groundwater Instruments                                  | 25 Feb 2016, Lahore        | NGOs and private sector professionals      | Trainer |

## JUDGING OTHERS WORK

Based on research work and recognition as an expert in water resources management, climate science, and hydrology, Dr. Bhatti regularly receives requests from international journals to review and referee submitted manuscripts. He joined the editorial team of Frontiers Publishers for the journal Frontiers in Water in September 2023, a multidisciplinary open-access journal dedicated to exploring challenges facing freshwater systems, including demand and supply of water resources, extreme weather events, and climate change. The journal carries an impact factor of 2.6. In his role as Review Editor, he reviews manuscripts referred by associate editors or self-assigned based on areas of research interest.

In addition to peer review, Dr. Bhatti has judged the research work of graduate students supervised during his career as a faculty member, including 1 PhD and 8 MSc/MPhil scholars.

## PUBLICATIONS AND RESEARCH IMPACT

Dr. Bhatti has strong written and verbal communication skills in scientific, technical, and policy contexts. His publication record is evidenced by papers in high-impact, peer-reviewed, international journals. According to his Google Scholar profile, his publications have been cited 904 times in scientific literature. His h-index is 14, and his i10-index is 15. His aggregated impact factor is 67.5.

He has authored 23 journal articles (12 in Q1 and 6 in Q2 ranked journals), 9 books/book chapters/reports published by highly reputed publishers, and 37 contributions to international conferences, seminars, and dialogues.

|                     | All                                                                                                                                             | Since 2021 |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Citations           | 904                                                                                                                                             | 619        |
| h-index             | 14                                                                                                                                              | 13         |
| i10-index           | 15                                                                                                                                              | 14         |
| Google Scholar Link | <a href="https://scholar.google.com/citations?user=UHkqId0AAAAJ&amp;hl=en">https://scholar.google.com/citations?user=UHkqId0AAAAJ&amp;hl=en</a> |            |
| ORCID               | <a href="https://orcid.org/0000-0001-7834-6114">https://orcid.org/0000-0001-7834-6114</a>                                                       |            |

### Journal Articles:

#### *List of Journal Articles*

**Bhatti, M.T.**, Gilani, H., Ashraf, M. et al. Field validation of NDVI to identify crop phenological signatures. Precision Agric (2024). <https://doi.org/10.1007/s11119-024-10165-6>

**Bhatti, M.T.**, Anwar, A.A., Hussain, K. 2023. Characterization and outlook of climatic hazards in an agricultural area of Pakistan. Scientific Reports, 2023, 13:9958. doi: <https://doi.org/10.1038/s41598-023-36909-4>

Ijaz, M. A.; Ashraf, M.; Hamid, S.; Niaz, Y.; Waqas, M. M.; Tariq, M. A. U. R.; Saifullah, M.; *Bhatti, M. T.*; Tahir, A. A.; Ikram, K.; Shafeeqe, M.; Ng, A. W. M. Prediction of Sediment Yield in a Data-Scarce River Catchment at the Sub-Basin Scale Using Gridded Precipitation Datasets. Water 2022, 14 (9), 1480. <https://doi.org/10.3390/w14091480>

- Bhatti, M. T.;** Anwar, A. A. Statistical Verification of 16-Day Rainfall Forecast for a Farmers Advisory Service in Pakistan. *Agricultural and Forest Meteorology* 2022, 317, 108888.  
<https://doi.org/10.1016/j.agrformet.2022.108888>
- Anwar, A. A.; **Bhatti, M. T.** Routing Field Channels through a Tertiary Unit with Heterogeneous Fields. *J. Irrig. Drain Eng.* 2021, 147 (9), 04021040.  
[https://doi.org/10.1061/\(ASCE\)IR.1943-4774.0001592](https://doi.org/10.1061/(ASCE)IR.1943-4774.0001592)
- Bhatti, M. T.;** Ashraf, M.; Anwar, A. A. Soil Erosion and Sediment Load Management Strategies for Sustainable Irrigation in Arid Regions. *Sustainability* 2021, 13 (6), 3547.  
<https://doi.org/10.3390/su13063547>
- Bhatti, M. T.;** Anwar, A. A.; Shah, M. A. A. Revisiting Telemetry in Pakistan's Indus Basin Irrigation System. *Water* 2019, 11 (11), 2315. <https://doi.org/10.3390/w11112315>
- Bhatti, M. T.;** Ahmad, W.; Shah, M. A.; Khattak, M. S. Climate Change Evidence and Community Level Autonomous Adaptation Measures in a Canal Irrigated Agriculture System of Pakistan. *Climate and Development* 2019, 11 (3), 203–211. <https://doi.org/10.1080/17565529.2018.1442803>
- Bhatti, M. T.;** Balkhair, K. S.; Masood, A.; Sarwar, S. Optimized Shifts in Sowing Times of Field Crops to the Projected Climate Changes in an Agro-Climatic Zone of Pakistan. *Experimental Agriculture* 2018, 1–13. <https://doi.org/10.1017/S0014479716000156>
- Azam, M.I., **Bhatti, M.T.**, Xiaotao S, et al. Flood occurrence exploration for ungauged river catchment at Jhelum River basin of Pakistan. *Int J Hydro.* 2018;2(4):520–526.  
DOI: [10.15406/ijh.2018.02.00120](https://doi.org/10.15406/ijh.2018.02.00120)
- Anwar, A. A.; **Bhatti, M. T.** Pakistan's Water Apportionment Accord of 1991: 25 Years and Beyond. *J. Water Resour. Plann. Manage.* 2018, 144 (1), 05017015.  
[https://doi.org/10.1061/\(ASCE\)WR.1943-5452.0000831](https://doi.org/10.1061/(ASCE)WR.1943-5452.0000831)
- Tonny, T. de Vries; Anwar, A.A.; **Bhatti, M.T.** Canal Operations Planner. III: Minimizing Inequity with Delivery Performance Ratio Relaxation. *Journal of Irrigation and Drainage Engineering* 2017, 143 (9). [https://doi.org/10.1061/\(ASCE\)IR.1943-4774.0001218](https://doi.org/10.1061/(ASCE)IR.1943-4774.0001218)
- Bhatti, M. T.;** Anwar, A. A.; Aslam, M. Groundwater Monitoring and Management: Status and Options in Pakistan. *Computers and Electronics in Agriculture* 2017, 135, 143–153.  
<https://doi.org/10.1016/j.compag.2016.12.016>
- Bhatti, M. T.;** Sarwar, M. K.; Tahir, A. A.; Yar, M. Effect of Irrigation Application on Soil and Land Productivity of Wheat under Semi-Arid Environment. *Journal of Agricultural Research* 2017, 14.
- Anwar, A. A.; de Vries, T. T.; **Bhatti, M. T.** Canal Operations Planner. II: Minimizing Inequity. *Journal of Irrigation and Drainage Engineering* 2016, 04016058.  
[https://doi.org/10.1061/\(ASCE\)IR.1943-4774.0001092](https://doi.org/10.1061/(ASCE)IR.1943-4774.0001092)
- Anwar, A. A.; **Bhatti, M. T.;** de Vries, T. T. Canal Operations Planner. I: Maximizing Delivery Performance Ratio. *Journal of Irrigation and Drainage Engineering* 2016,  
[https://doi.org/10.1061/\(ASCE\)IR.1943-4774.0001091](https://doi.org/10.1061/(ASCE)IR.1943-4774.0001091)
- Anwar, A. A.; Ahmad, W.; **Bhatti, M.T.;** Ul Haq, Z. The Potential of Precision Surface Irrigation in the Indus Basin Irrigation System. *Irrigation Science* 2016. <https://doi.org/10.1007/s00271-016-0509-5>
- Sarwar, M. K.; Chaudary, Z. A.; **Bhatti, M. T.;** Khan, D. Evaluation of Air Vents and Ramp Angles on the Performance of Orifice Spillway Aerators. *Journal of Engineering and Applied Sciences* 2016, 35 (1), 9.
- Ashraf, M.; **Bhatti, M. T.;** Shakir, A. S. River Bank Erosion and Channel Evolution in Sand-Bed Braided Reach of River Chenab: Role of Floods during Different Flow Regimes. *Arab J Geosci* 2016, 9 (2), 140. <https://doi.org/10.1007/s12517-015-2114-y>
- Ashraf, M.; **Bhatti, M. T.;** Shakir, A. S.; Tahir, A. A.; Ahmad, A. Sediment Control Interventions and River Flow Dynamics: Impact on Sediment Entry into the Large Canals. *Environmental Earth Sciences* 2015. <https://doi.org/10.1007/s12665-015-4604-3>



Tahir, A. A.; Chevallier, P.; Arnaud, Y.; Ashraf, M.; *Bhatti, M. T.* Snow Cover Trend and Hydrological Characteristics of the Astore River Basin (Western Himalayas) and Its Comparison to the Hunza Basin (Karakoram Region). *Science of The Total Environment* 2015, 505, 748–761.  
<https://doi.org/10.1016/j.scitotenv.2014.10.065>

**Bhatti, M.T.**; Latif, M. Assessment of Water Quality of a River Using an Indexing Approach during the Low-Flow Season. *Irrigation and Drainage* 2011, 60 (1), 103–114. <https://doi.org/10.1002/ird.549>

**Bhatti, M.T.**; Latif, M. Simulation of DO and BOD for River Chenab under Low Flow Condition. *Mehran University Research Journal of Engineering and Technology* 2010, 29 (1), 11–18.

### **Books/ Book Chapters/Technical Reports**

#### *List of Edited Books/Book Chapters*

**Bhatti, M.T.**, Ashraf, M., Nawaz, M., Yasir, M., Hussain, K., Shah, M.A.A., Malik, M.A., Khattak, K., Khan, N.G., Muhammad, Z., (2026). *Indus Telemetry: Revitalizing Surface Water Accounting in Pakistan*. International Water Management Institute, Colombo <https://doi.org/10.5337/2025.246>

**Bhatti, M.T.**, Hussain, K., Ashraf, M., Malik, M.A., Khattak, K., Yasir, M. (2026). *Setting Up Indus Telemetry for Canal Flow Monitoring: A Learning Experience*. International Water Management Institute, Colombo <https://doi.org/10.5337/2025.247>

Sijapati, S.; **Bhatti, M. T.**; Pradhan, N. S. Climate Change Impact on Water Availability, and Farmers' Adaptation Strategies: Case Studies from Pakistan and Nepal. In *Research Insights on Climate and Water in the Hindu Kush Himalayas*; Vaidya, R. A., Sharma, E., Eds.; International Centre for Integrated Mountain Development (ICIMOD): Kathmandu, Nepal, 2014; pp 109–127.  
<https://doi.org/10.53055/ICIMOD.595>

Hashmi, M. Z. U. R.; **Bhatti, M. T.**; Azizi, M. A. 2023. Climate. In Ali Shah, Muhammad Azeem; Lautze, Jonathan; Meelad, A. (Eds.). *Afghanistan–Pakistan shared waters: state of the basins*. Wallingford, UK: CABI. 2023, pp.43-61. doi: <https://doi.org/10.1079/9781800622371.0004>

**Bhatti M.T.**, *Inequity of Water Distribution: Linkages between Canal Water Supply and Income of the Farmers*. MSc Theses, VDM Verlag Dr. Müller Publisher (June 24, 2010), 76 pages, ISBN 9783639270020

**Bhatti M.T.**, *Strategic Analysis of Water Quality: Spatial and Temporal Modeling of the River Chenab, Pakistan*, PhD Theses, VDM Verlag Dr. Müller Publisher (June 10, 2010), 188 pages, ISBN: 9783639264517

Young, W. J.; Anwar, A.; **Bhatti, T.**; Borgomeo, E.; Davies, S.; Garthwaite III, W. R.; Gilmont, E. M.; Leb, C.; Lytton, L.; Makin, I.; Saeed, B. *Pakistan: Getting More from Water*; Working Paper. The World Bank: Washington D.C, 2019; p 191. doi: 10.1596/31160 <https://hdl.handle.net/10986/31160>

Anwar, A.A., Ashraf, M. **Bhatti, M.T.** *Pakistan's Inter Provincial Water Accord Perceptions and Opinions*. Pakistan Council of Research in Water Resources, 2017, ISBN: 978-969-8469-63-4.

**Bhatti, M.T.** (2024). Drought resilience in agriculture areas. In [abstract book of poster session](#), Drought Resilience +10 conference, 30 September – 02 October 2024, World Meteorological Organization, Geneva, Switzerland.  
<https://www.droughtmanagement.info/portal/wp-content/uploads/2024/10/Poster-DR10-Tousif-Bhatti-IWMI-20240919.pdf>

### **CONFERENCE AND SEMINAR CONTRIBUTIONS**

Dr. Bhatti has actively participated in conferences and seminars to present papers, deliver lectures, facilitate dialogues, and moderate panel discussions. He organized an international conference as Conference Secretary and Editor of Proceedings. His contributions to conferences and seminars held across five continents total 37. A complete list is provided below.

| #  | Event                                                                                       | Date and Venue                                    | Contribution Topic                                                                            | Role                           |
|----|---------------------------------------------------------------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------|
| 1  | International Conference on Hydrology and Water Resources (ICHWR-2026)                      | 16-17 Feb 2026, CEWRE, UET Lahore                 | Hydro-informatics                                                                             | Keynote Speaker                |
| 2  | 3rd International Conference on New Trends in Civil Engineering (NTCE-2025)                 | 16 Dec 2025, University of Central Punjab, Lahore | From Science to Practice – Indus Telemetry Delivering on Pakistan's National Water Policy     | Keynote Speaker                |
| 3  | Drought Resilience +10 Conference                                                           | 30 Sep-02 Oct 2024, WMO HQ Geneva                 | Drought Resilience in Agriculture Areas                                                       | Presenter                      |
| 4  | Indus Telemetry Launch Event                                                                | 12 Jun 2024, Peshawar                             | Indus Telemetry                                                                               | Speaker and Master of Ceremony |
| 5  | 18th International Conference: Climate Change, Sustainability, and Resilience               | 7-9 Jun 2024, University of Peshawar, Baragali    | State of Climate in Pakistan-Afghanistan Shared River Basins                                  | Invited Speaker                |
| 6  | Water Professional Network: State of Climate                                                | 25 Jan 2024, Gomal University, DI Khan            | State of Climate and Impact on Shared Water Resources between Afghanistan and Pakistan        | Invited Speaker and Panelist   |
| 7  | Pakistan Water Week                                                                         | 04-08 Dec 2023, Islamabad                         | Pathways for Climate-Smart On-Farm Water Management in Pakistan: Challenges and Opportunities | Technical Session Moderator    |
| 8  | Seminar on Climate Change Risk & Impacts                                                    | 19 Sep 2023, DI Khan                              | Assessment of Climate Hazards in the Gomal Zam Dam Command Area                               | Speaker                        |
| 9  | Seminar on Exploring Options and Pathways: Climate Change Implications for the Water Sector | 28 Aug 2023, Islamabad                            | Climate Change Implications for the Water Sector                                              | Panel Discussion Moderator     |
| 10 | Water Professional Network: Groundwater in Transboundary Kabul, Kurram & Gomal River Basins | 21 Jun 2023, Islamabad                            | Groundwater in Transboundary and National Context                                             | Panel Discussion Moderator     |
| 11 | Pakistan Water Week                                                                         | 24-28 Oct 2022, Islamabad                         | Is Transparency the Key to Resolving Interprovincial Water Disputes?                          | Technical Session Moderator    |
| 12 | Water Governance – Issues and Options in Pakistan                                           | 15 Aug 2022, Islamabad                            | Vision for Improved Surface and Groundwater Governance in Pakistan                            | Presenter                      |
| 13 | 2nd International Conference on Hydrology and Water Management                              | 30 Mar 2022                                       | Verification of Rainfall Forecast for Developing a Farmers Advisory Service                   | Invited Speaker (online)       |
| 14 | Seminar on Discharge Measurement at KP Canals using ADCP                                    | 11 Mar 2022, Peshawar                             | Joint (IWMI-PCRWR-GoKP-ID) Validation of Indus Telemetry with ADCP                            | Speaker                        |
| 15 | Dialogue on Sindh-Balochistan Water Issues                                                  | 20 Aug 2020, Islamabad                            | Methodology Developed for Flow Measurements                                                   | Presenter, Organizer           |
| 16 | Symposium on the Role of ICT in Water Management                                            | 30 Jul 2019, NUST, Islamabad                      | ICT in Delivering on the National Water Policy of Pakistan                                    | Invited Speaker                |

|    |                                                                             |                                                 |                                                                                                                                       |                                              |
|----|-----------------------------------------------------------------------------|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| 17 | Indus Telemetry - Delivering on the National Water Policy Dialogue Workshop | 16 Oct 2018, Islamabad                          | Perception and Opinion: Water Apportionment Accord 1991                                                                               | Presenter                                    |
| 18 | 3rd Indus Basin Knowledge Forum: Managing System Under Stress               | 31 May-02 Jun 2018, Vienna, Austria             | Indus Basin Marketplace Roundtables                                                                                                   | Panelist                                     |
| 19 | Interprovincial Dialogue: Islamabad                                         | 12 May 2017, Islamabad                          | Perception and Opinion: Water Apportionment Accord 1991                                                                               | Presenter                                    |
| 20 | Interprovincial Dialogue: Sindh                                             | 08 Mar 2017, Karachi                            | Perception and Opinion: Water Apportionment Accord 1991                                                                               | Presenter                                    |
| 21 | Interprovincial Dialogue: Punjab                                            | 22 Feb 2017, Lahore                             | Perception and Opinion: Water Apportionment Accord 1991                                                                               | Presenter                                    |
| 22 | Interprovincial Dialogue: Khyber Pakhtunkhwa                                | 26 Jan 2017, Peshawar                           | Perception and Opinion: Water Apportionment Accord 1991                                                                               | Presenter                                    |
| 23 | Water Apportionment Accord 1991: 25 Years On                                | 14 Dec 2016, NUST, Islamabad                    | Perception and Opinion: Water Apportionment Accord 1991                                                                               | Presenter                                    |
| 24 | Water Apportionment Accord 1991: 25 Years On                                | 02 Dec 2016, MUET, Jamshoro                     | Perception and Opinion: Water Apportionment Accord 1991                                                                               | Presenter                                    |
| 25 | Interprovincial Dialogue: Balochistan                                       | 30 Nov 2016, Quetta                             | Perception and Opinion: Water Apportionment Accord 1991                                                                               | Presenter                                    |
| 26 | Water Apportionment Accord 1991: 25 Years On                                | 08 Nov 2016, LUMS, Lahore                       | Perception and Opinion: Water Apportionment Accord 1991                                                                               | Presenter                                    |
| 27 | Visiting Lecture Series                                                     | 10 Feb 2016, Punjab Engineering Academy, Lahore | Canal Operations Planner I and II: Maximizing Delivery Performance Ratio, Minimizing Inequity                                         | Invited Speaker                              |
| 28 | First International Young Engineers Convention                              | 18-19 Apr 2014, UET Lahore                      | Water Apportionment Accord: Perception and Opinions of Young Engineers                                                                | Invited Speaker                              |
| 29 | Revitalizing Irrigation in Pakistan: Plenary Seminar                        | 24 Nov 2014, Islamabad                          | Groundwater Management: The Role of Farmer Institutions                                                                               | Presenter                                    |
| 30 | PCRWR Seminar on Groundwater Assessment and Management in Pakistan          | 30 Sep 2014, Islamabad                          | Institutionalizing Groundwater Monitoring and Management                                                                              | Presenter                                    |
| 31 | 2nd International Workshop on Tethyan Orogenesis and Metallogeny (IWTOMA)   | 12-16 Oct 2014, CUG, Wuhan, China               | Groundwater Monitoring and Management in Pakistan                                                                                     | Speaker                                      |
| 32 | Second Asia Pacific Water Summit                                            | 16-18 May 2013, Chiang Mai, Thailand            | Impact of Climate Change on Water Availability and Adaptation Strategies: Case Studies from Pakistan and Nepal                        | Presenter                                    |
| 33 | Workshop on Climate Change Impacts on Water Resources                       | 03-05 Oct 2012, Lahore                          | Introduction to Climate Change Impacts on Water Resources                                                                             | Presenter                                    |
| 34 | International Conference on Water, Energy, Environment and Food Nexus       | 4-5 April 2012, CEWRE, Lahore                   | Proceedings of International Conference on Water, Energy, Environment and Food Nexus: Solutions and Adaptation under Changing Climate | Editor of Proceedings / Conference Secretary |
| 35 | Knowledge Exchange Strategic Development in Pakistan                        | Dec 2011, Newcastle University, UK              | Centre of Excellence in Water Resources Engineering: Strengths and Collaboration Potential                                            | Talk                                         |
| 36 | International Conference on Water Resources Engineering & Management        | 7-8 Mar 2011, UET Lahore                        | Responses of Design Flood to Change in the Catchment Area of a Dam Site in Baluchistan, Pakistan                                      | Paper Presentation                           |

|    |                                                                 |                                |                                                              |                                               |
|----|-----------------------------------------------------------------|--------------------------------|--------------------------------------------------------------|-----------------------------------------------|
|    |                                                                 |                                |                                                              | (published in proceedings)                    |
| 37 | International Seminar: Water and Environment – A Looming Crisis | 20-22 Aug 2006, UAF Faisalabad | Linkages between Canal Water Deprivation and Farmer's Income | Paper presentation (published in proceedings) |

## **TEACHING AND ACADEMIC EXPERIENCE**

Dr. Bhatti's teaching and research career spans over four years before joining IWMI to pursue applied research. He served as Assistant Professor at the Centre of Excellence in Water Resources Engineering, University of Engineering and Technology, Lahore, a national institute for water-related research and education. He also completed his post-doctoral fellowship at the International Centre of Water for Food Security, Charles Sturt University, Australia.

**Position:** Assistant Professor | 2010-2014 | Centre of Excellence in Water Resources Engineering, University of Engineering and Technology, Lahore

### **Courses Taught (Postgraduate)**

Taught 6 postgraduate courses to students pursuing MSc, MPhil, and PhD degrees in Water Resources Engineering, Water Resources Management, and Engineering Hydrology (3 credit hours each):

- Applied Hydrology (CWR-601)
- Catchment Modelling (CWR-602)
- Irrigation Engineering and Management (CWR-632)
- Environmental Impact Assessment (CWR-691)
- Flood Estimation and Control (CWR-605)
- Computer Applications in Water Resources (CWR-696)

## **COLLABORATIONS**

Dr. Bhatti has applied a philosophy of collaborative research throughout his career. As a faculty member, he established a guest lecture program linking universities with similar degree programs. In 2011, he secured a British Council grant to develop a knowledge-sharing strategy between the Centre of Excellence in Water Resources Engineering, UET Lahore, and Newcastle University, UK. More recently, he led the Peer to Peer (P2P) Learning model under the USAID WMfEP project, connecting water professionals across institutions and universities in Pakistan to build capacity and establish lasting inter-institutional collaborations.

In 2015, Dr. Bhatti collaborated with the International Groundwater Resources Assessment Centre, Netherlands, and became a contributing member of the Global Groundwater Monitoring Network (GGMN), operating under UNESCO and WMO. This collaboration enabled the first upload of Pakistan's groundwater monitoring data to the GGMN platform for global visualization.

## **COUNTRIES VISITED FOR WORK IN PROFESSIONAL CAPACITY**

| Country   | Year(s)    | Purpose of Visit                                              |
|-----------|------------|---------------------------------------------------------------|
| Australia | 2010       | Post-doctoral research fellowship at Charles Sturt University |
| Austria   | 2018       | Panelist in Indus Basin marketplace roundtables               |
| China     | 2009, 2014 | Youth delegation; attending IWTOMA conference                 |
| Jordan    | 2020       | Trainer on groundwater instruments for water professionals    |

|                          |                        |                                                                                                                  |
|--------------------------|------------------------|------------------------------------------------------------------------------------------------------------------|
| Nepal                    | 2012, 2013, 2014, 2023 | Research work across multiple river basins in roles of Team Leader, Consultant, and Regional Researcher          |
| South Africa             | 2019                   | Organized a study tour and workshops for a high-level delegation of professionals from Pakistan and Afghanistan  |
| Sri Lanka                | 2014, 2015, 2016, 2024 | Research meetings and presentations at IWMI headquarters and various forums                                      |
| Switzerland              | 2024                   | Presenter at high-level Drought Resilience +10 Conference at WMO Geneva                                          |
| Thailand                 | 2013                   | Paper presentation at the 2nd Asia-Pacific Water Summit                                                          |
| United Kingdom           | 2011                   | Knowledge exchange strategy development with Newcastle University                                                |
| United States of America | 2018                   | Technical training in data logger programming and flow measurement at Campbell Scientific Inc. and Teledyne Inc. |
| Uzbekistan               | 2019, 2023             | Training on Water Accounting Plus; annual research meeting                                                       |